FOREIGN TRADE DEVELOPMENTS IN UKRAINE, RUSSIA, POLAND, LITHUANIA, BELARUS & MOLDOVA (1996-2006)

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ABSTRACT

This thesis analyses the key developments in foreign trade for Ukraine, Russia, Poland, Lithuania, Belarus and Moldova on a comparative basis between 1996 and 2006. It examines trade developments and restructuring with the region's two major trade blocs: the European Union (EU) and the Commonwealth of Independent States (CIS). Using dependable trade models pioneered by Béla Belassa and Herbert Grubel and Peter J. Lloyd, the analyses involve revealed comparative advantage (RCA) and intra-industry trade (IIT) to determine the extent to which structural changes have or have not occurred, which domestic industries are becoming more competitive and the degree of differentiation present. The reason for choosing the aforementioned measurement indices is straightforward. On one hand, RCA identifies those industries that have become relatively more competitive, and attempts to assess whether a given industry enjoys a comparative advantage in production by means of measuring exports. On the other hand, IIT supposes the opposite of comparative advantage theory, and affirms that differences between countries are not the only rationale for trade, because of the presence of increasing returns in scale economies. Thus, it examines the simultaneous import and export of identical, similar or differentiated products in the same industry often between similar countries. Although both indices are usually considered alternatives to each other, there is good reason to see them as complementary. The results of both indices, therefore, provide critical information from which to assess the degree of trade restructuring.

TABLE OF CONTENTS

List of Tables

CHAPTER 1

CHAPTER 2

CHAPTER 3

List of Figures

CHAPTER 1

CHAPTER 2

CHAPTER 3

CHAPTER 4

List of Abbreviations

ACs:	Accession Countries
BSCF:	Billion Standard Cubic Feet
CBC:	Cross Border Cooperation
CCP:	Common Commercial Policy
CEE:	Central East Europe
CEFTA:	Central European Free Trade Area
CES:	Common Economic Space
CET:	Common External Tariff
C-H-O:	Chamberlin-Heckscher-Ohlin
CIS:	Commonwealth of Independent States
CMEA:	Council for Mutual Economic Assistance
CPSU:	Communist Party of the Soviet Union
EA:	Europe Agreement
EBRD:	European Bank for Reconstruction and Development
EEC:	European Economic Community
EEnC:	European Energy Charter
EFTA:	European Free Trade Association
EIDHR:	European Initiative for Democracy and Human Rights
ENP:	European Neighbourhood Policy
EU:	European Union
EUMAP:	EU-Moldova Action Plan
EUUAP:	EU-Ukraine Action Plan
FDI:	Foreign Direct Investment
FIGs:	Financial Industrial Groups
F-P-E:	Factor-Price-Equalisation
FTA:	Free Trade Agreement
FTOs:	Foreign Trade Organisations
GATT:	General Agreement on Tariffs and Trade
GDP:	Gross Domestic Product
GLI:	Grubel-Lloyd Index
GNI:	Gross National Income
GSP:	Generalised System of Preferences
HIIT:	Horizontal Intra-Industry Trade
H-O:	Heckscher-Ohlin
H-O-S:	Heckscher-Ohlin-Samuelson
IA:	Interim Agreement
IIT:	Intra-Industry Trade
IMF:	International Monetary Fund
IPRs:	Intellectual Property Rights
IT:	Inter-Industry Trade
MES:	Market Economy Status
MFN:	Most Favoured Nation
MIIT:	Marginal Intra-Industry Trade

NEG:	New Economic Geography
NTT:	New Trade Theory
OECD:	Organisation for Economic Co-operation and Development
OPT:	Outward Processing Trade
PCA:	Partnership and Co-operation Agreement
PHARE:	Poland, Hungary Assistance for the Reconstruction of the Economy
PPP:	Purchasing Power Parity
R&D:	Research and Development
RCA:	Revealed Comparative Advantage
ROW:	Rest of the World
SAH:	Smooth Adjustment Hypothesis
SEM:	Single European Market
SES:	Special Economic Space
SITC:	Standard International Trade Classification
SOEs:	State-Owned Enterprises
SPSEE:	Stability Pact for South Eastern Europe
S-S:	Stolper-Samuelson Theorem
TACIS:	Technical Aid to the Commonwealth of Independent States
TBPD:	Thousands of Barrels Per Day
TNCs:	Transnational Corporations
UNCTAD:	United Nations Conference on Trade and Development
US:	United States
USSR:	Union of Soviet Socialist Republics
VAT:	Value-Added Taxation
VIIT:	Vertical Intra-Industry Trade
WTO:	World Trade Organisation

INTRODUCTION

The dissolution of the Soviet Bloc and the Union of Soviet Socialist Republics (USSR) between 1989 and 1991 signified the demise of the Soviet economic model throughout Central and Eastern Europe (CEE). This model isolated the region from world economic forces and competition which consequently produced industrial backwardness, with several reform attempts unable to reverse continuing economic decline. Numerous newly independent states, ranging from those keen to re-establish lost sovereignty to those with little history of independent statehood, or even no such experience at all, faced post-Soviet transition, important considerations of which are liberalisation, stabilisation, institutionalisation and privatisation alongside support for inward foreign direct investment (FDI). Moreover, some states, like Ukraine, prioritised nation building over economic reform in light of a complex and severe economic crisis. The introduction of these post-Soviet states into the modern world economy has involved trade blocs, such as the European Union (EU), one of the main participants in world trade and FDI, and the Commonwealth of Independent States (CIS). The importance of this is further emphasised by the fact that some former Soviet bloc states became Accession Countries (ACs) which joined the EU on 1 May, 2004. Thus, further measures were actively taken here to liberalise trade and promote FDI to initiate and sustain economic reforms. Trade liberalisation not only can facilitate the import of advanced capital commodities, but it can also provide new export markets. A further consideration is the role of incentives which provide investors with greater access to regional labour forces and markets, benefiting from preferential tariff treatments and increased regional trade opportunities in the process.

The aim of the thesis is to ascertain the extent and nature of post-Soviet economic restructuring and development through the analysis of Ukraine's foreign trade flows. This will largely be examined through Revealed Comparative Advantage (RCA) and Intra-Industry Trade (IIT), using trade models devised by Béla Balassa, Herbert Grubel and Peter J. Lloyd which are empirically proven and widely accepted by many international institutions. RCA, IIT and their corresponding models are explained in greater detail in the section on methodology. At this point it is suffice to say that the former is an example of older trade theories emphasising a country's endowments, whereas the latter analyses

trade and factor flows. RCA addresses trade in *different* products; IIT is concerned with trade in *similar* products. It will also examine simpler indicators of trade restructuring, such as the composition of exports and imports, in order to help provide a deeper insight into the degree to which the country's trade structures have, or perhaps have not, changed.

However, Ukraine's changes in trade composition will not be examined in isolation: they will be illustrated on a comparative basis with five additional transition countries and each one's respective trade with the EU *and* CIS. The inclusion of these two prominent organisations and their members is justified on the grounds that they represent the two largest economic trading blocs in Europe, with the latter somewhat positioned as the 'successor' to the former Council for Mutual Economic Assistance (CMEA), an organisation to which each country in this study once belonged. Although the fundamental importance of the EU is widely acknowledged, one cannot underestimate the role of CIS trade in states like Ukraine which remain excluded from EU membership. The CIS often provides markets for particular commodities which would not be competitive in EU trade. Lacking the cohesive nature attributed to the EU, the CIS remains a less developed bloc, yet one which provides and consumes certain commodities that benefit the economies of both these states. As IIT theory states that such trade increases between organisations, countries and regions marked by regional trading agreements and between states which enjoy geographic proximity, similar economic structures and similar factor endowments, the inclusion of trade with the EU *and* CIS is logical to the central arguments herein.

Consequently, the additional countries have been selected for their geographic proximity to Ukraine, their previously shared Soviet economic model and the obvious fact they are at the crossroads of where the EU and CIS meet. Given that many of the industries in these countries could be classified as inefficient, oversized and outdated, the question of modernisation is fundamental to enhanced trade performance. Additional reasons for the inclusion of each country will be presented.

They are:

- Russia (Ukraine's main trading partner and the dominant CIS player);
- Poland (not an ex-Soviet republic, but an EU and WTO member);
- Lithuania (an ex-Soviet republic, and EU and WTO member);
- Belarus (an ex-Soviet republic, neither an EU nor WTO member); and,
- Moldova (an ex-Soviet republic, WTO member but not EU member).

Russia is unquestionably Ukraine's most important trading partner and its immense economic and political role in the CIS, despite its obvious ambivalence to the organisation, makes it a logical choice for inclusion in such analyses. However, the EU is Russia's largest single trading partner, and greater cooperation and regulatory convergence in trade and investment is actively sought by both parties to deepen their relationship. Although Russia is not a candidate for EU membership, it is central to such analyses concerning the EU, CIS and Ukraine. Moreover, Russia is the most important CIS member to engage in large-scale trade with the EU.

Poland has the largest economy of all former CMEA states which joined the EU, and it engages in significant trade with Ukraine. It is the most vocal supporter of Ukraine's EU membership ambitions, and the two countries share a close history, especially in Ukraine's western regions which were under Polish administration at various times. As a leading reformer with a more open economy and private investment sector even during its time in the CMEA, Poland has a richer history and experience of economic reforms. With reference to Lithuania's own accession process, this has allowed it to serve as a 'model'. In addition, it has greatly benefitted from several EU assistance programmes to initiate comprehensive political and economic reforms (e.g. associate status, free trade and customs unions) and advance rapid integration into the organisation. Since the acquisition of EU membership, all of Poland's trade with EU and non-EU states has been replaced by very specific EU directives. In other words, it now has no independent trade policies.

Lithuania is the only country herein which does not share a border with Ukraine; however, it is one of only three former Soviet republics to acquire EU membership, and it shares a border with Belarus, Poland and Russia (Kaliningrad). Therefore, it has had the

same degree of support enjoyed by Poland in terms of economic reform and restructuring during the period of EU accession. Although not as experienced as Poland where reforms are concerned, Lithuania liberalised its trade regime even before the dissolution of the USSR; it was, therefore, a leading reformer amongst the Soviet republics. Its accession process has mostly mirrored that which occurred in Poland, but Lithuania still considers CIS trade to be important: its exports remain competitive in such markets, especially in Russia, and it remains highly dependent upon CIS raw materials and energy inputs, both of which remain a legacy of the Soviet era. Lithuania is unique in that it has maintained interest in CIS markets, unlike many of the former CMEA members which are now in the EU. The aforementioned reasons for Lithuania's inclusion in this study makes it a more logical choice than Slovakia, Hungary or Romania, all of which share a border with Ukraine, or even Latvia and Estonia.

Belarus, as one of the most advanced Soviet republics, has largely foregone the various aspects of economic transition and is one of the more enthusiastic members of the CIS. The organisation remains its largest trading partner, notwithstanding significant increases in EU trade. In many ways Belarus' attitude to economic transition and EU membership has been in stark contrast to Poland's. Having a long border with Poland and Ukraine, Belarus provides an excellent example for comparative purposes: it contrasts Ukraine's middle position regarding the EU and CIS, and it is the only state herein to favour and maintain many of the economic aspects of the former Soviet system. Belarus is economically very much dependent upon Russia, as evidenced by the CIS Customs Union and Russia-Belarusian Union both of which have facilitated its export growth. It has also replaced Ukraine as Russia's second largest trading partner, which means its importance in CIS trade is increasing. Despite being the only country herein to have no intentions to join the EU and no modernised, post-Soviet working agreements with the organisation, the EU has become Belarus' second largest trading partner. Therefore, the importance of the EU, CIS and Russia to Belarus' economic well being cannot be underestimated. The very example of Belarus shows that the EU carries much greater importance to many CIS member states than vice-versa, something evident in the trade flows during this period.

Notwithstanding greater success with economic reforms in the 1990s which helped secured WTO membership before any of the Baltic States managed to do so and the fact it is the recipient of significant financial support from the EU, Moldova has without doubt experienced the greatest economic decline of the selected countries and it is the most politically unstable and divided. In addition, it is one of the poorest countries in Europe. Although it now strongly favours greater EU integration, Moldova is very much connected to the CIS and experiences major problems with CIS trade (e.g. non-transparent bilateral agreements, unilateral exclusions and trade disputes with Russia). Moldova's lack of economic diversity leaves it in a particularly vulnerable position. Nevertheless, the country can serve as a good example of WTO membership benefits to a less industrialised country at the crossroads where the EU and CIS meet. Moldova and Belarus have had very limited historical experience as independent states, and the former faces the immense difficulties posed by a secessionist movement active on its eastern border with Ukraine. Moldova is also the only country in the study to change from a pro-CIS outlook to one which is more favourable to the EU.

It was felt necessary and highly rewarding to undertake a study of such magnitude, in order to build upon limited examples of studies on RCA and IIT in Ukraine and the other CEE states. The literature on RCA for post-Soviet transition states is not vast by any means. Quaisser and Vincentz (2001) and Mykhnenko (2007) have examined aspects of RCA in Ukraine, whereas Fertő and Hubbard (2003) and Fertő (2007) have done likewise regarding CEE. However, more significant literature has been produced on IIT not only in Ukraine (Mankovska and Dean, 2002; Luka and Levkovych, 2004; Konchyn 2005, 2007), but also in CEE (Aturupane *et al*. 1997, 1999; Burgstaller and Landesmann, 1997; Thom and McDowell, 1999; Czarny and Lang, 2002; Gabrisch and Segnana, 2003; Kandogan, 2003a, 2003b; Algieri, 2004; Hildebrandt and Wörz, 2004; Fidrmuc, 2005; Gabrisch, 2006; Černoša, 2007). Analyses of both RCA and IIT are limited to Hoekman and Djankov (1996), Kaitila and Widgrén (1996), Widgrén (2006), Pindyuk (2006) and Palazuelos-Martinez (2007). Only Pindyuk (2006) has analysed RCA *and* IIT in Ukraine, with the aforementioned authors having limited their analyses to selected CEE countries. Therefore, there is significant scope for such work involving CEE transition countries.

Building upon such previous innovative studies, this thesis is unique in that it examines RCA *and* IIT developments on a comparative basis involving the aforementioned countries with the EU *and* the CIS along the borders of where these two organisations meet from the Baltic to the Black Sea. Its contribution, therefore, is important to the fields of study in question. Furthermore, it addresses a central theoretical aspect of IIT. In other words, IIT values should be greater in countries of closer proximity, given a penchant for comparable economic structures. As each country herein was a member of the CMEA, the previous economic structures were analogous. The significant difference for each country has been the process, pace and outcomes experienced during the process of transition in the post-Soviet era.

This work has been organised into five chapters. Chapter 1 examines the Soviet economic model, its operation, domestic and international administration, before addressing its legacy in Ukraine and the question of post-Soviet economic reforms. Following an overview of Ukraine's World Trade Organisation (WTO) accession negotiations, the chapter considers the individual countries' EU and CIS trade policies. Their importance lies in the fact they represent the main framework conditions by which trade is governed and its performance affected. The concluding section illustrates various economic aspects in the aforementioned countries between 1996 and 2006, the chosen time period for the analyses.

Chapter 2 analyses RCA in the EU. It begins by addressing the relevant themes, and progresses to an overview of trade developments considering exports, imports and trade balances. It then identifies the specific industries in the respective states which enjoy greater RCA. Chapter 3 does likewise, but with the emphasis on CIS trade. However, a comparative assessment of such developments involving the EU and CIS is presented. The importance herein is that RCA analysis provides an insight into performance and developments of a key aspect of economic transformation, trade in *different* products. Hence, it facilitates a better understanding of product specialisation, according to existing factor endowments, and intends to emphasise the emerging differences in trade patterns.

The subsequent chapters further analyse trade developments with the EU (Chapter 4) and CIS (Chapter 5) on a comparative basis. However, the focus moves to the

examination of trade in *similar* goods within the *same* industry and the theoretical considerations of what constitutes IIT. Such analysis provides a platform from which an assessment can be given on the extent of change in a country's commodity composition, and the degree to which broad industrial convergence has occurred. These chapters also consider the nature of the relationship between RCA and IIT. Rather than considering both as alternatives, they are seen herein as complements to one another. Detailed analysis on export and import growth is presented, in addition to assessing changes in each country's trade balance and whether the trade specialisation results from RCA or IIT. An important component is the inclusion of each country's top 15 exports and imports, based on the highest monetary values, to both blocs to determine the nature of their respective factor intensities.

An explanation of methodology is offered next, to explain the theoretical models employed and their importance to the research. This section also identifies the various statistical sources employed in the subsequent calculations.

METHODOLOGY

The transition from a command economy, in which all economic coordination originates from planners, to a market economy poses a number of questions related to changing levels of industrial development and trade. As this constitutes a central theme herein, two trade models pioneered by Béla Balassa and Herbert Grubel and Peter J. Lloyd are employed. The analyses are associated with post-Soviet trade and the greater exposure to new markets and increased levels of FDI from Western sources. Such observations arise from the expectation that the introduction of industries to foreign competition should induce an adjustment process, leading to modernisation, greater efficiency and the export of more technologically advanced goods as a consequence. Some convergence between the various countries' commodity compositions with the EU and/or CIS over the short to medium-term is expected, because of greater trade liberalisation in both. Should this prove to be the case, it would be indicative of industrial restructuring.

In order for the proposed models to be useful in explaining such developments, it is essential to use consistent, reliable trade data from established institutions. Given the variations in the quality and/or dependability of the various countries' trade statistics from national sources, data for the subsequent analyses originate from the United Nations Conference on Trade and Development (UNCTAD). The statistical information compiled is based upon three selected years (1996, 2001 & 2006)[1] to measure each country's EU and CIS trade developments. To record any significant transformation(s), any greater convergence needs to be calculated over a period of time: changes in export patterns seldom occur instantly because industrial adjustment requires time. The base year has been chosen as 1996 to reveal the structure of trade for when UNCTAD's first complete three-digit Standard International Trade Classification (SITC), Revision 3, codes, reflecting more detailed commodity groups, were available for each selected country. The SITC, Revision 3, codes are an upgrade over both the SITC, Revision 2, and Harmonised System (1988) codes, including the revisions to the latter in 1996. SITC, Revision 3, contains 4,346 products, and offers a consistent time series for recent, short-term analyses. It is also the most comprehensive database to reflect structural market changes, and to take into account the appearance of new commodities and the need for more

[1] Additional calculations for 2000 and 2004 are presented in Appendix 2.

detailed statistics on given commodity groups. As the most commonly used trade classification system, SITC data have been chosen for their clarity, authoritativeness, consistency and reliability. The SITC codes are appropriate for such economic analyses, because of the classification of goods into groups analogous to the concept of an 'industry'. In addition, import figures are registered at national borders and SITC three-digit classifications are preferable on account of greater accuracy. Consequently, it is possible not only to present factual statements on developments concerning trade composition, but it is also feasible to evaluate them. The results will allow for comment on the extent of trade restructuring. The relevant trade models will now be presented. It is appropriate beforehand, however, to provide a very brief overview of trade theory, given the applicability of the old and new schools of thought on this subject.

The importance of using 1996 as the starting point for the analyses is further shown in that it not only allows the use of data which reflects important changes in methodology, thus providing more comprehensive information, but also that it covers a very reasonable period (1996-2006) during transition to examine changes in the composition of each country's exports and imports. In doing so, the period selected for analyses could, therefore, use better data more relevant to the questions at hand. The selected timeframe also takes into consideration the effects of WTO membership and the EU accession process on selected candidate states, in addition to the immediate aftermath of EU enlargement in the region as a whole. These significant developments affected trade throughout Europe, and afforded the proposed analyses a unique opportunity to consider such developments when assessing changes in each country's foreign trade. Furthermore, each country experienced significant economic contractions before and after the dissolution of the USSR and CMEA, whilst the economic independence of some CIS states was not always evident when the organisation functioned in the rouble zone. The establishment of functional, local currencies in the newly independent states was a difficult process during the initial transitional period. For example, temporary currencies were issued in Lithuania, Moldova and Ukraine between 1992 and 1996. Redenomination of old currencies in Poland, Belarus and Russia was also necessary. Hence, the economic instability and decline in the immediate years following the collapse of the former system has, in effect, made selecting pre-1996 data rather less satisfactory.

The benefits of trade and what creates it were apparent in the eighteenth century when the economist David Ricardo stated that it is driven by international differences in labour productivity and technology. Foreign trade is not only one of the main factors behind economic growth and development, but it is also a form of exchange in RCA and IIT. The Ricardian theory of comparative advantage is a rather simple and empirically proven model. In its original form it is somewhat limited in its applicability, although labour and technology factors still remain key areas of focus in international economics.

Neo-classical trade theory began to scrutinise trade gains from the latter half of the twentieth century, assuming that trade gains are greater between countries whose factor endowments and costs are different. Consequently, this argument was developed further by Eli Hecksher and Bertil Ohlin (H-O) who expanded upon Ricardo's comparative advantage model. The resulting H-O theorem is not limited to the same extent: it further considers the income distribution effects of trade, predicting a country will export those goods using the most abundant supply of resources. However, this was questioned in 1953 in the form of the Leontif Paradox, which illustrates that trade is not necessarily destined to work according to H-O predictions. In other words, a country having an abundant supply of capital relative to labour is not required to export capital intensive goods and vice versa.

Whereas older trade theories generally seek to explain trade effects and how a country's particular endowments can determine its outcome, recent trade theory is not proposing anything new; rather, it examines these issues from a reverse angle because they analyse actual trade and factor flows in an attempt to define a country's factor endowments and industrial structure. This differs from older trade theory which considers a country's endowments and formulates a set of predictions based on the type of trade that is likely to result. Hence, IIT is one of the most important forms of new measurement. Therefore, both approaches are viewed here as complements and not alternatives. The application of more recent models, such as the Grubel-Lloyd Index (GLI), is an additional effective method to the simpler, earlier analysis of trade flows. Thus, the two trade models are:

1) **The Balassa Index –** to measure RCA at industry level; and,
2) **The Grubel-Lloyd Index –** to measure levels of IIT at industry and country level respectively.

1) The Balassa Index of Revealed Comparative Advantage

In addition to anticipated changes in each country's trade composition, expected as a result of greater liberalisation, the exposure of national industries to foreign, or simply greater, competition is expected to reflect an adjustment process. With a view to becoming more competitive, firms in different sectors are to adapt to new capacities and production. The index compares a given industry's export share in a country with the identical industry's export share in a foreign country. Proposed through the measurement of trade flows, this model's application helps determine those industries that have become relatively more competitive; in other words, which exporting industries are revealed as having a comparative advantage in production. For instance, comparative advantages may be revealed if greater productive growth has been realised in some industries, which would partially indicate the exchange of goods from different industries, inter-industry (IT). The main objective is to determine the level of competitiveness of a given industry. The measurement to be used for this purpose is based on Balassa (1965, 1977, 1989) and given as:

$$\mathrm{RCA_{it}} = \frac{\left(x_{it}^{e} - m_{it}^{e}\right)}{\left(x_{it}^{e} + m_{it}^{e}\right)} x100$$

Where: x_{it}^{e} = exports of industry *i* and m_{it}^{e} = imports of industry *i* over time *t*.

When interpreting the results, the net value of any traded commodity (the equation's numerator) is divided by the value of total trade in that commodity (the equation's denominator) and consequently multiplied by 100. This index measures the degree of significance of net flows of a specified commodity group and illustrates the scale of trade flows in any given commodity, producing a range from -100 (no exports by a given country in a given commodity) to 100 (no imports by a given country in a given

commodity). A value between 50% and 100%, for example, would signify a comparatively high degree of competitiveness.

2) The Grubel-Lloyd Index (GLI) of Intra-Industry Trade

IIT can be described as the exchange of *similar* goods between countries from roughly the *same* industries, whereas IT is the exchange of goods from *different* industries. Consequently, the measurement of trade flows between two countries reveals the nature of trade conducted (IIT/IT) and how similar countries are in their factor endowments. For instance, IT implies a difference between two countries' endowments and suggests that one may have a comparative advantage in the production of some good. If so, this is consistent with the Ricardian and Neo-classical schools of thought. In contrast, IIT, the result of two countries being similar in their factor endowments, is more characteristic of the exchange of goods between advanced countries where it has become the dominant form of two-way trade and two-way FDI. An illustration of which is when two countries produce and export motorcars to one another because the various industries involve the manufacture of a number of different models to satisfy a wide variety of consumer tastes. Production plants therefore will be endowed with similar, but different, levels of technology and labour. In general terms, however, the gap between advanced countries has greatly narrowed in respect of technology, capital and skilled labour, the direct result of greater economic integration and FDI. Examples of IIT increasing may indicate industrial modernisation, convergence and efficiency. Furthermore, income levels and patterns of consumer demand must be roughly similar, given that firms have become increasingly specialised in the production and exchange of differentiated goods from the same industries. Therefore, income levels are one of the key determinants driving IIT.

These facts are, of course, important to the proposed research because the thesis aims to produce a picture of events, attempting to determine whether a country's trade has begun to result in the exchange of similar goods. What is the nature then of a country's commodity composition? To what extent is it moving towards its EU trading partners or those in the CIS? The GLI is employed to calculate such developments and is given as:

$$IIT = \left\{1 - \left[\sum \left| x_i - m_i \right| / \sum \left(x_i + m_i\right)\right]\right\} 100$$

Where: x_i = exports of industry *i* and m_i = imports of industry *i*

As both forms of trade (IIT/IT) are experienced, trade sheets constitute the value of total trade in measurement terms, and can be expressed as IIT plus IT equals 100 in the GLI. When a value is closer to 100, it would imply a larger proportion of IIT goods in a country's trade composition. Alternatively, a value closer to 0 would mean a smaller proportion of IIT to the advantage of IT. The proposed models have been chosen to measure anticipated changes and have been used for nearly 30 years by various worldwide institutions. They have consistently been proven to be sound in empirical terms.

Any reorientation of a given country's trade would be expected to lead firms towards modernisation, in order to adjust to new capacities and exploit wider market potential. IIT is expected to increase through the exchange of commodities with the advanced, industrialised countries in the EU, and would further be reflected in a greater proportion of medium- and high-technology goods in a country's export composition. A country's income levels and the extent of integration are fundamental considerations here.

IIT may be categorised as horizontal (HIIT) or vertical (VIIT). On the one hand, HIIT suggests that a specific industry is producing at similar quality and technology levels, originating from a developed industrial structure. The implications of this are demand for highly qualified staff and skilled labour which justifies higher incomes. On the other hand, VIIT suggests a fragmented production process, also known as 'spicing up' the value chain. The implications of this are demand for skilled and unskilled labour, thus indicating lower incomes. Numerous empirical studies suggest that VIIT is the dominant form throughout CEE. The region's lower income levels further support this.

The main statistical sources other than UNCTAD's three-digit SITC, Revision 3, codes will now be presented. The research employed in the initial chapter is less mathematical; hence, it requires a different approach because its nature necessitates a

broader use of local and international sources to establish the general framework. The section on comparative economic aspects makes extensive use of five main sources: the World Bank Database; the International Monetary Fund's *World Economic Outlook* (October, 2008); Laborsta; the Energy Information Administration; and, UNCTAD's Foreign Direct Investment Database. These sources are reliable and widely used for analyses involving macroeconomic, employment and energy considerations.

Having outlined the considerations of the methodology, there is a need to establish important background information and address the various economic aspects which each country experienced. This is addressed in the following introductory chapter.

CHAPTER 1

TRANSITION FROM A SOVIET SOCIALIST ECONOMY TOWARDS CAPITALISM

This chapter begins with an examination of the Soviet economic model,[1] followed by its administration and operation domestically and internationally in the Council for Mutual Economic Assistance (CMEA). The second section highlights its legacy in Ukraine and post-Soviet economic policy. Section 3 provides an overview of Ukraine's World Trade Organisation (WTO) accession negotiations, and its trade policies towards the EU and CIS. This represents the main framework conditions by which trade has been governed: trade policy not only provides further impact on trade performance, but also serves as an objective source of information. Importance is attached to Ukraine's relationship with the WTO, the focus of comprehensive reforms in trade-related policies, because this directly affects its relationships with the EU and CIS. Furthermore, an examination of trade policies presents a platform for comment about levels of market access, and to what extent such agreements have facilitated import and export growth. Such prioritisation results from trade liberalisation and reorientation, considered fundamental aspects of economic reform with macroeconomic stabilisation and institutional reforms. To contextualise the extent of change in Ukraine's trade, five additional transition countries (Russia, Poland, Lithuania, Belarus and Moldova) are examined. Section 4 thus addresses their EU and CIS trade policies. The fifth and final section illustrates their various economic aspects between 1996 and 2006.

1. The Soviet Economic Model, Its Application & the CMEA

The central characteristics of the Soviet economic model included: a single party, the Communist Party of the Soviet Union (CPSU), having control over political and economic life; the state, the Union of Soviet Socialist Republics (USSR), owning the

[1] This is also known in economic literature as: the Stalinist model, the statist model, the administrative economy, the shortage economy, central planning and the command economy. The latter term originates from the German *Befehlswirtschaft*, originally a term for the economy of Nazi Germany with which the Soviet economy shares many characteristics. Its conceptual origins can be traced to economist Otto Neurath before 1914.

basic means of production with economic institutions subordinated to its vision; and, central planning, with market mechanisms regulated to a subsidiary role, as the main coordinating instrument to regulate economic activity. Central planning was seen as a way to guarantee macro-economic and macro-social rationality, whereas a market economy could only be considered to ensure micro-economic rationality, the efficient organisation of production.

The inherent problems were: complete adherence to CPSU policies; 'the Leninist principle of one-man management'; the use of scientific organisations throughout the planning process; Soviet planning methodology where the balance principle, double-entry bookkeeping in physical units, was maintained to deliver consistent plans; the address principle in which a specific organisation was charged with fulfilling a particular target within the plan to achieve its goal; the leading links principle whereby both planners' efforts and material and human resource distribution were directed to meet planned goal targets in ever-changing priority sectors; and, the lacking principle of *khozraschet* (commercial accounting) by which an enterprise should manage profit and loss accounts instead of simply prioritising output results.[2]

As the plan was mandatory and included all economic activity, it was a mechanism opposed to market forces; decisions were made by party officials and the plan was executed according to the state's legal and political sanction, involving specific government ministries and departments, in addition to state enterprises and local agencies. Thus, it served as the instrument by which management was manipulated through party control and socialist ownership. Two particular characteristics were the development of a substantial 'shadow economy', or the official economy's 'safety valve', and the importance of the *nomenklatura* (coded lists of élite CPSU party members) and their role in institutions controlled by the party through appointments of executives, government members and enterprise managers.[3]

This model required *Gosplan*, the State Planning Commission, to define production plans and give orders to functional agencies, like the Pricing and Labour

[2] M. Ellman. *Socialist Planning*. (Cambridge, 1979), pp. 17-18; P. Rutland. *The Myth of the Plan*. (London, 1985), pp. 9-11.
[3] Such appointments on a listed position required CPSU approval, using the relevant party organs. In effect, it qualified the *nomenklatura* with extensive privileges.

offices and the Investment Bank, to coordinate tasks, whereas in capitalist economies the market impulsively realises these. The State Committee of Prices determined wholesale and retail prices, whilst several material and technical supply agencies linked buyers and sellers, according to the manufacturing and allocation process.[4] Along with *Gosplan* were ministries and sub-ministries, e.g. *Vesenkha* (the Supreme National Economic Council) and *glavki*, responsible for administering *pryedpriyatie* (basic enterprise production units). Given the absence of an inter-enterprise market, *Gossnab*, the State Committee on Material Technical Supplies, coordinated the supply and purchase of commodities, ensuring conformity through the issue of selling and purchasing state orders.[5] Moreover, financial controls through *khozraschet* were applied to state-owned enterprises (SOEs), including cost reduction targets.[6] Belousov clarifies the relationship between these organisations and the *nomenklatura*:

> *Gosplan* and *Gossnab* ha[d] for a long time covered the majority of inter-economic ties concerning material balances between producers and distributors of industrial and agricultural products. However, these balances produce[d] inter-economic ties in the major group oriented *nomenklatura*, but only for the coming year. The number and quality of balances significantly decrease[d] for a five-year plan.[7]

Despite the USSR having republican, regional and local administrations, the elected councils of people's representatives (local soviets) had little political and economic authority: SOEs were administered from Moscow through federal ministries. Consequently, there was no genuine economic base in the regions and republics, given the power of all-Union organisations.[8] Furthermore, the absence of 'logical allocation of work' between individual ministries and subordinated organisations created autarchy.[9]

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[4] F. Lemoine. *Le Comecon*. (Paris, 1982), pp. 15-17. See also P. Hanson. *The Rise and Fall of the Soviet Economy*. (London, 2003).
[5] M. Lavigne. *The Economics of Transition: From Socialist Economy to Market Economy*. (Basingstoke, 1995), pp. 5-6.
[6] R. Davies. 'Changing economic systems: an overview', *The Economic Transformation of the Soviet Union 1913-1945*. Davies, Harrison & Wheatcroft (eds.). (Cambridge, 1994), p. 19; A. Zagorodneva. *Osnovy planirovaniya e'konomicheskogo i sotsial'nogo razvitiya SSSR*. (Moskva, 1983), pp. 26-29.
[7] R. Belousov. *Istoricheskiy opit planovogo upravleniya e'konomikoy SSSR*. (Moskva, 1987), p. 339.
[8] Because of the inter-dependency of enterprises throughout the constituent republics, this centralised system could not survive the dissolution of the union.
[9] T. Tuisanen. *From Marx to Market Economy*. (Helsinki, 1991), p. 7.

Planning's central component was drafting 'material balances', a table which identified sources of supply and specific uses for either product groups or individual commodities. This illustrated domestic and internal production for supply and domestic uses, like intermediate outputs, consumption and investment. The balance could be equalised only through 'internal iterative adjustments' and foreign trade. Using coefficients, the planner was expected to estimate resources and uses; however, if production levels were overestimated, the planned uses could not be accounted for, thus consequences existed for the entire production chain.[10] As the exercise was iterative, the planner was required to redraft balances, given that unexpected users' needs in the manufacturing process required their reformulation. The process was never convergent: not enough time was allocated to refine calculations and initial data suffered from bias. Therefore, the enterprise, the initial source of information, would cheat with its figures, providing economic data was used concurrently with the planners' initial information and served as the basis for task formulation and assignment to an enterprise and its evaluation thereof. Hence, a cumulative process ensued whereby initial biases would increase and could not be rectified through subsequent corrections; plan orders were determined by those intended to implement them and not by a decision-making process. The end result was inherent cheating: the horizontal relationships between SOEs and horizontal inter-connections only supplemented the plan to make it workable.[11] In effect, bargaining within the hierarchy became necessary to ensure plan targets.

By failing to consider bankruptcy, transferable currencies and stock market quotations, Soviet economics disregarded profit when measuring corporate success. Rather than ignore entrepreneurship, however, the success of an enterprise was determined by meeting planned, predetermined quotas regarding material input and output. The chosen economic indicator (gross production) illustrated output by units to measure success, proving to be detrimental to economic development because: cost awareness was not considered; excessive demand for raw materials remained constant; the production of non-demand goods remained unchallenged; gross production indicators

[10] F. Seurot. *Les economies socialistes*. (Paris, 1983), pp. 18-25; Zagorodneva, *op. cit.*, pp. 15-18. See also R. Ericson. 'The classical soviet-type economy: nature of the system and implications for reform', *Journal of Economic Perspectives*. Vol. 5, No. 4, (Autumn 1991), pp. 11-27.
[11] Davies, *op. cit.*, p. 19.

were largely non-applicable to other industries; and, product quality was irrelevant when quantity was considered greater than efficiency.[12] Even *perestroika* and *glasnost'* failed to solve these problems. Moreover, money was inactive: pricing remained administered, output volumes were determined by plan targets and an enterprise's survival was linked to its ability to negotiate them, rather than its connection to profitability. Therefore, money had no real influence, despite financial balance being targeted through taxes, currency stipulations and cash and credit controls.

Accordingly, managers of SOEs directed firms regardless of profitability. This took the form of barter, tax offsets and other various non-monetary usages in the absence of effective bankruptcy and arbitrage systems, allowing a firm to continue production in the absence of cash for finished products. Such 'capital' investment could be increased through greater contact with bureaucrats and the acquisition of tax offsets and more privileges, with little to no consideration of resource management.[13] Firms over-reported output to go beyond fulfilling the plan and acquire bonuses; however, they would also under-report resources to obtain greater supplies and investments to fulfil plans. Furthermore, the composite price index was questionable, relative prices were distorted and retail prices were manipulated, thus confusing exchange rates and causing Soviet and Western Gross Domestic Product (GDP) comparisons to be divergent.[14]

According to Karl Marx's theory of reproduction, the producer goods sector must grow at a faster pace than consumer goods. The resulting imbalance is a product of the labour saving aspect of technical progress in which the 'organic composition of capital' is increased. This productive potential overpowers the market's capacity to absorb the product and crises ensue. Whereas Marx claimed this 'law of expanded reproduction' was independent and led to the crises of overproduction, Josef Stalin asserted that it could not happen in a socialist system: demand could not place limitations on economic growth, given the absence of consumer demand supported by the purchasing power of wage-earners. As the planned economy was in response 'to the people's needs', the 'law of expanded reproduction' was thus a voluntarist rule. Therefore, greater investment was

[12] Tuisanen, *op. cit.*, pp. 8-11; Seurot, *op. cit.*, pp. 50-59.
[13] L. Carlsson *et al.* 'The Russian detour: real transition in a virtual economy?', *Europe-Asia Studies*. Vol. 53, No. 6, (2001), pp. 841-867; R. Kravchuk. *Ukrainian Political Economy: The First Ten Years*. (New York, 2002), p. 40.
[14] Lavigne, *op. cit.*, pp. 46-48.

earmarked for the producer goods sector. This would be supplemented by industrialisation, with the aim of extensive growth in the initial phases of development by relocating the agricultural labour force to industrial centres through collectivisation that would finance the industrial sector through the procurement of agricultural surpluses. Soviet economic growth strategy was focused on investment on consumption, heavy industry (mining, steel, chemicals and machinery), the exploitation of natural resources and the material goods sector prioritised over the services sector, leading to the prioritisation of the military-industrial complex and the increased power of its leaders in the *nomenklatura*.

In the 1960s inherent problems encouraged reforms, often including selected elements of a market economy.[15] Moreover, extensive growth became expensive to finance and industrialisation decelerated, creating an array of contradictions that proved untenable with increasing technological backwardness. Consequently, modernisation through increased technology (electronics, nuclear and automation) was prioritised, and Western financial aid was secured to purchase Western machinery, with a view to exporting the final goods back to Western markets. However, the 1973 oil crisis and economic recession in the West hindered this and weakened the terms of trade. Moreover, high oil prices impacted oil-dependent countries exporting manufactured goods.[16] Despite technological prioritisation, there remained a poor link between innovation and industrial application: routine production continued to be advanced over innovation to fulfil plan requirements.

High oil revenues from 1973 to 1985, followed by expanded arms sales and a rise in gold prices in 1979, allowed the state to forego serious reform until the onset of *perestroika* and *glasnost*' and falling oil revenues allowed economic reform to the forefront.[17] Mikhail Gorbachev's reforms included greater emphasis on using indirect methods, like prices and taxes, to influence plan implementation. Although party regulation remained, the authorities increasingly used economic regulators (e.g. prices,

[15] See M. Howard and J. King. *A History of Marxian Economics: Volume I, 1883-1929*. (Basingstoke, 1989); and, M. Howard and J. King. *A History of Marxian Economics: Volume II, 1929-1990*. (Basingstoke, 1992).
[16] By 1980, oil prices had grown 13 times their 1972 levels, whereas export prices for manufactured goods only rose 2½ times. A. Köves. *The CMEA Countries in the World Economy: Turning Inwards or Turning Outwards*. (Budapest, 1985), p. 77.
[17] Lavigne, *op. cit.*, pp. 54-57.

taxes and exchange rates) to implement plan goals, rather than instructions. In other words, experience had taught that imperative planning needed to be reduced if inefficiency was to follow.[18] Moreover, the economy's limited integration into world markets meant relative prices were administered, thus distorted, and energy and transport costs were highly subsidised, creating a transport-intensive economy high in the use of electricity and gas per unit of GDP.[19]

Foreign trade had been the reserve of 'state ownership of the means of production' since April 1918. Foreign Trade Organisations[20] (FTOs) managed trade relations under the direction of the Ministry of Foreign Trade and/or selected industrial ministries. It served as the coordinator between the foreign partner on matters of international currencies and prices, and the domestic firm on matters of domestic currency and prices. Foreign trade was planned, with imports classified as 'resources' and exports as 'uses'. Trade protectionism was used to correct resulting imbalances. The fact trade was planned and prices fixed meant that 'foreign trade [was] a risk factor whose effects [could not] be controlled by the planners in advance'.[21]

At the centre of foreign trade was the CMEA, also known as Comecon. Created in January 1949[22] to 'organise a broader economic cooperation among people's democracy countries and the USSR' through technical assistance and trade,[23] its task was defined as: 'exchanging economic experience, extending technical aid to one another and

[18] Much of the impetus for this originated from the New Economic Mechanism, an example of 'market socialism', introduced in Hungary in 1968. It made some use of the market to operate mechanisms as a basis for enterprises, although many differences do exist.
[19] P. Maurseth. 'Divergence and dispersion in the Russian economy', *Europe-Asia Studies*. Vol. 55, No. 8, (2003), pp. 1165-1185.
[20] The large and powerful FTOs were normally specialised in products and groups of products, an example of which was *Soyuzneftexport*, the world's largest oil exporter.
[21] Tuisanen, *op. cit.*, p. 13.
[22] Despite a TASS communiqué, there exists widespread dispute to the organisation's actual founding date. See J. van Brabant. *Socialist Economic Integration: Aspects of Contemporary Economic Problems in Eastern Europe*. (Cambridge, 1980), p. 44, pp. 31-32.
[23] The founding countries were the USSR, Bulgaria, Czechoslovakia, Hungary, Poland and Romania, with Albania joining a month later and East Germany in September of the following year. Ironically, war reparation obligations from East Germany, Hungary and Romania were not cancelled until 1956. Other countries to join the CMEA were Mongolia (1962), Cuba (1972) and Vietnam (1978). Countries given observer status included North Korea (1957), Yugoslavia (1965), Angola (1976), Laos (1976), Ethiopa (1978), the People's Democratic Republic of Yemen (1979) and Afghanistan (1980). Albania participated from 1949-1961, although it never formally quit the organisation. China participated as an observer between 1956 and 1966, rejecting full membership in 1962. Finland shared a cooperation agreement with the CMEA in 1973, as did Iraq and Mexico two years later. See G. Schiavone. *The Institutions of Comecon*, (London, 1981), pp. 78-104.

rendering mutual assistance with respect to raw materials, foodstuffs, machines, equipment etc…'[24] Attention was not given to the comparative advantages of each individual country and the competitiveness of manufactured products: each country was to concentrate on heavy industry.

Integration meant internationalising the production of manufactured and semi-manufactured goods, resources and services. However, in more concrete terms it was aimed at equalising differences in relative scarcities of goods and services through greater economic integration and the deliberate elimination of trade barriers.[25] The supranationality controversy meant greater compromise, incorporating elements of the market and plan with emphasis on integration. Essentially, the market approach sought to strengthen the role of money, prices and exchange rates, encouraging direct contacts among lower level economic entities, whereas the plan approach called for more joint planning on a sectoral basis through inter-state bodies that would coordinate members' activities in a given sector.

There was a heavy import dependency, an 'unintentional' example of import substitution policy. This followed failed attempts at autarky that had forced it not only to acknowledge the need for imports, but also to increase their volume.[26] However, the lack of competitiveness could not be solved by technology purchases, and declining international investment also limited the amount of technology transfer. By 1985, most members experienced decreasing development, increasing expenses for fuel and raw materials and a greater dependency on the West for credit and hard currency imports, given the sharp rise in interest rates and the strength of the US dollar in international markets which put debt beyond what the USSR could afford. The majority of CMEA members experienced significant increases in external debt: in the USSR it rose from $0.6m in 1970 to $53.9m in 1990, whereas in Poland it went from $0.9m to $44m.[27] Increasingly, the exchange of Soviet fuel and raw material for capital goods and consumer manufactures characterised trade, and interregional trade rose significantly. To

[24] P. Tokareva. *Mnogostoronnee e'konomicheskoe sotrudnichestvo sotsialisticheskikh gosudarstv – sbornik dokumentov*. (Moskva, 1967), p. 44.
[25] Schiavone, *op. cit.*, pp. 32-35.
[26] Köves, *op. cit.*, p. 137; J. Marczewski. *Crise de la planification socialiste?* (Paris, 1973), pp. 190-192.
[27] For further information, see W. Andreff. *La crise des économies socialiste : la rupture d'un systèm*. (Grenoble, 1993), p.300.

illustrate the seriousness of economic decline, Table 1.01 shows the net material product[28] growth rates of selected CMEA countries, all of which show a marked period of decline from 1971-75.

Table 1.01: Annual Growth Rate of Net Material Product, 1951-1990 (in % over five year periods)

Period	USSR	E. Germany	Czechoslovakia	Poland	Hungary	Bulgaria	Romania
1951-55	11.3	13.2	8.1	8.6	5.7	12.2	14.2
1956-60	9.2	7.4	7.0	6.6	6.0	9.6	6.6
1961-65	5.7	3.5	1.9	6.2	4.5	6.6	9.1
1966-70	7.1	5.0	6.9	5.9	6.7	8.7	7.7
1971-75	5.1	5.4	5.7	9.7	6.3	7.9	11.3
1976-80	3.7	4.1	3.7	1.2	2.8	6.1	7.2
1981-85	3.2	4.5	1.8	-0.8	1.4	3.7	4.4
1986-90	1.3	-1.8	1.0	-0.5	-0.5	-0.5	-3.5

Source: *Andreff* (1993, p. 278.)

2. The Legacy of Soviet Economics in Ukraine

The prioritisation and rapid expansion of heavy industries led to declining investment, urbanisation and the neglect of agriculture, the traditional basis of the economy.[29] Significant imbalances between light and heavy industry ensued, and many products were exported to other republics for further manufacturing, helping to entrench economic interdependence. Moreover, technological innovation was virtually halted, with the removal of spontaneity and autonomous initiatives.

Ukrainian economic losses in World War II, estimated to be roughly 45% of the Soviet total,[30] were followed by reconstruction and rapid industrialisation whereby Ukraine, like many other Soviet republics and the CMEA states, experienced exceptional annual growth rates in the range of 13%. Economic planning remained the priority of

[28] Net material product was a common Soviet measurement of net national product (gross national product minus depreciation) minus services.
[29] Urbanisation in Ukraine went from 19.3% of the total population in 1914 to 50% in 1963. Soviet capital investment in Ukraine decreased from 18% of the total in the period 1918-26 to 11% during 1959-65. See N. Fr.-Chirovsky. *The Ukrainian Economy*. (New York, 1965), p. 26 & 29. It was only 12% in 1990. See S. Crowley. 'Between class and nation: worker politics in the new Ukraine', *Communist and Post-Communist Studies*. Vol. 28, No. 1, (1995), p. 44.
[30] A. Motyl. *Dilemmas of Independence: Ukraine after Totalitarianism*. (New York, 1993), p. 129.

Gosplan and more funds flowed out of Ukraine than into it.[31] By the early 1970s stagnation had become an integral feature and Ukraine had been transformed into an appendage of the Soviet military-industrial complex whereby 70% of its GDP consisted of manufacturing and supplying heavy industry together with military-industrial products.[32] The 1973 oil crisis effectively made this more difficult to sustain, and more priority was given to coal and nuclear energy. Greater economic autonomy was afforded to the republics in March 1989, and Ukraine's jurisdiction over its own economy went from 5-6% to 42%.[33] Kulchytsky provides an account of the system in Ukraine as follows:

> The increase of the productivity of labour and the decrease of the cost-effectiveness of production, the qualitative factors of economic growth, played a secondary role. The inability of production to achieve scientific-technological progress was the barrier to attempts at intensification. Modern machinery and advanced technology needed to be 'introduced' by force. The absence of the characteristic competition of the free market contributed to the stagnation of production[34]

Furthermore, Chairman Volodymyr Shcherbytsky (1972-1989) facilitated a series of binding decisions that resulted in the loss of energy self-sufficiency in the late 1970s, despite substantial growth in the energy-intensive heavy industrial sector, as domestic manufacturing was dramatically reduced in favour of similar production in Russia, Turkmenistan and Azerbaijan. In fact, from 1970 to 1989 oil extraction decreased 61%, gas 49%, fuel peat 49% and coal 13%, with only the production of electricity increasing (2.15 times).[35] This critical change in reorientation cannot be underestimated: gas production shrank from a peak of 68,000m³ cubic metres in the mid-1970s to half of that

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[31] I. Burakovskyy. 'U poshukakh modeli ekonomichnoho rozvytku', *Ukraïns'ka derzhavnist' u XX stolitti*. Derhachov (ed.). (Kyïv, 1996), p. 362; S. Udovik. *Gosudarstvennost' Ukrainy* (Kiev, 1999), p. 89.
[32] A. Filipenko. 'Zovnishn'oekonomichni vidnosyny Ukraïny', *Ukraïna na perekhidnomu etapi: polityka, ekonomika, kul'tura*. Stepankova, Dutkevych & Gkhosh (eds.). (Kyïv, 1997), p. 148.
[33] L. Dienes. 'Energy, minerals, and economic policy', *The Ukrainian Economy: Achievements, Problems, Challenges*. Koropeckyj (ed.). (Cambridge, MA, 1992), p. 138.
[34] S. Kul'chyts'kyy. 'Fenomen natsional'noï radyans'koï derzhavnosti', *Ukraïna: utverdzhennya nezalezhnoï derzhavy (1991-2001)*. Smoliy (ed.). (Kyïv, 2001), p. 122.
[35] I. Lukinov. 'Radical reconstruction of the Ukrainian economy: reasons, reforms, outlook', *The Ukrainian Economy: Achievements,Problems, Challenges*. Koropeckyj (ed.). (Cambridge, MA, 1992), p. 35.

in the late 1980s, and the production of oil went from 14m tons in 1970 to 4m tons.[36] This situation was exacerbated by voracious energy requirements, consequently removing funds necessary for important modernisation and diversification.

Industrialisation, collectivisation and subjugation to planning under directives from Moscow created a dependent, distorted and submerged economy. Ukraine was effectively transformed from an exporter to a net importer of energy resources, something which has proven to be its Achilles' heel. It was also made dependent on other Soviet Republics for consumer goods and markets, and its own industrial output was irrelevant in local markets, hence requiring union-directed distribution. As economic growth continued to decline, further investment in developing the mineral resources of the Donbas region was discontinued in favour of Siberia.[37] The subsequent structure of capital and labour was additionally distorted by demands for chemicals, metallurgy, defence, exploration, space projects and CMEA aid. It left a deformed economic structure, resulting in a greater decline of agricultural and industrial production, GDP and national income. The poor, post-Soviet economic performance had its roots in the 1970s when GDP growth declined by half, because of the inefficiency and wastefulness of central planning and its inability to produce a distribution of goods and resources reflective of the real needs of society.[38] Ukraine nevertheless remained an undisputed key player in the USSR: in 1989 it provided 22.6% of total Soviet agricultural output and 17.6% of total Soviet industrial output even though it contained only 2.7% of Soviet territory and 18% of the USSR's population.[39] Table 1.02 illustrates the magnitude of economic decline from the 1970s onwards, particularly the marked decline in GDP, national income and real income.

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[36] E. Whitlock. 'Ukrainian-Russian trade: the economics of dependency', *RFE/RL Research Report* Vol. 2, No. 43, (29 October 1993), p. 39.
[37] G. Ozornoy. 'The Ukrainian economy in the 1970s', *Ukraine after Shelest*. Krawchenko (ed.). (Edmonton, 1983), pp. 73-100; J. Mace. 'Sotsialistynchni ta komunistychni modeli', *Ukraïn'ska derzhavnist' u XX stolitti*. Derhachov (ed.). (Kyïv, 1996), pp. 28-40.
[38] V. Lanovyy. 'Macro- and Microeconomic Crisis in Ukraine: The Social and Political Stakes', *Economic Policy*. No. 19, (December 1994), p.192.
[39] I. Lukinov, *op. cit.*, p. 23.

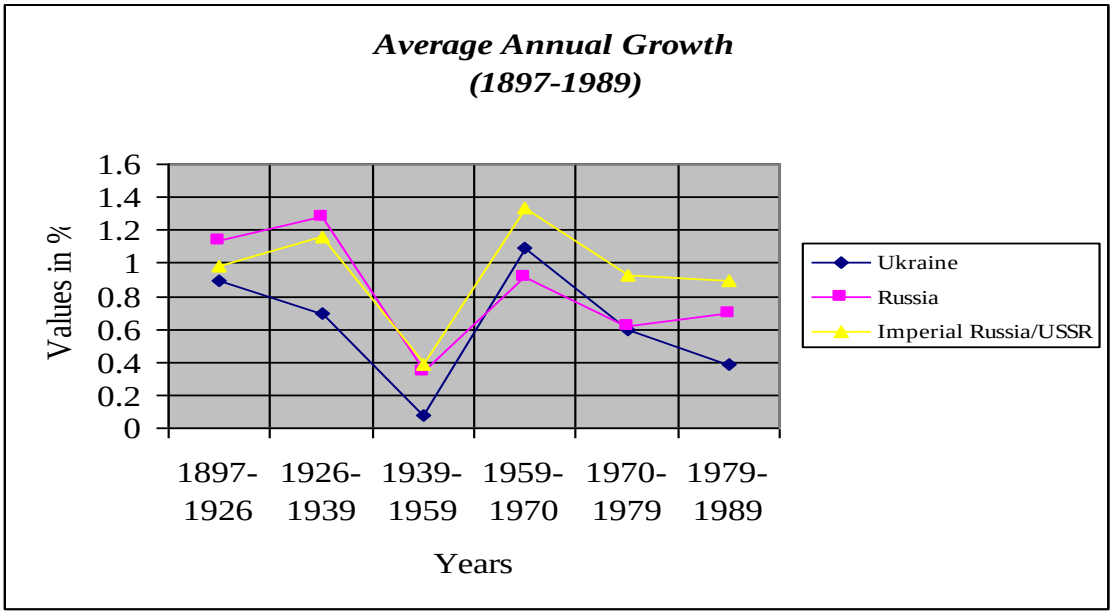
Table 1.02: Selected Indicators for the Soviet Ukrainian Economy (1966-1989) (Values given in %)

	1966-1970	*1971-1975*	*1976-1980*	*1981-1985*	*1985-1989*
GDP	6.7	5.6	3.4	3.3	2.6
Industrial Output	8.5	7.2	3.9	3.4	3.8
Agricultural Output	2.5	3.0	1.6	0.5	2.0
Capital Investment	6.7	6.4	2.1	3.1	5.3
National Income Produced	6.7	4.6	3.4	3.4	3.0
Real Income Per Capita	5.9	3.8	3.2	2.7	2.0*

*covers the period 1986-1989 only.
Source: *Lukinov* (1992, p. 43.)

A further example of severe economic decline is shown in Figure 1.01, with growth rates for Ukraine and Russia in 1989 worse than inter-war levels. Ukraine briefly enjoyed higher growth rates than Russia in the post-war period, and a much more rapid decline than either Russia or the USSR from the late 1960s onwards.

Figure 1.01



Source: *Clem* (1992, p. 65.)

Ukraine's deformed economic relationship with the USSR was not turned upside down by the 1990 declaration of sovereignty or nationalists 'scheming at autarky'. The economic crisis, dated to the third-quarter of 1988, was magnified by an acute political struggle for control. It became catastrophic in the second half of 1990, characterised by a deterioration of fixed capital, a foreign currency crisis, a decline in the supply of labour and a sharp reduction in the production of raw materials, such as oil and coal. This saw the budget crisis deepen threefold, inflation turn to hyperinflation and the standard of living fall sharply.[40] In 1991, Soviet GDP fell 17%, whilst the consumer price index rose 96% and wholesale industrial prices by 240%.[41] Consequently, production and trade relations collapsed, resulting in output shortfalls and reduced overall supplies of needed inputs. As 84% of Ukrainian exports were earmarked for other republics in 1989, this breakdown in trade proved catastrophic.[42] Moreover, Russian imports and exports to Ukraine accounted for only 4-5% of GNP, whereas more than 20% of Ukrainian national income was spent on imports from and exports to Russia.[43] Numerous failed attempts at economic reform and the renegotiation of the 1922 Treaty of Union ended in the August 1991 *putsch* and CPSU abolition. The Belovezhskaya Pushcha Agreement on 8 December laid the USSR to rest and established the CIS.

Ukraine embarked upon independence with no democratic institutions, rule of law, civil society or market, a situation exacerbated by the lack of political institutions engaging in effective taxation, customs and duties, administration and policing. The inherited institutional infrastructure, particularly in the distribution of production and regional specialisation, posed a challenging task to formulating an independent economic policy.[44]

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[40] G. Khanin. 'The Soviet economy – from crisis to catastrophe', *The Post-Soviet Economy: Soviet and Western Perspectives*. Åslund (ed.). (New York, 1992), pp. 10-20.
[41] Motyl, *op. cit.*, p. 127.
[42] R. Shen. *Ukraine's Economic Reform: Obstacles, Errors, Lessons*. (London, 1996), p. 39.
[43] Whitlock, *op. cit.*, pp. 38-42.
[44] Y. Yekanurov. 'Rozvytok struktury vlasnosti', *Ukraïna na perekhidnomu etapi: polityka, ekonomika, kul'tura*. Stepankova, Dutkevych & Gkhosh (eds.). (Kyïv, 1997), pp. 94-95.

2.1 Post-Soviet Economic Transition & Reform

The dissolution of the USSR caused the command economy and the CMEA 'market' to collapse, thus re-orienting the balance of trade, whilst destroying the production and distribution links between Ukraine, the former Soviet Republics and the CMEA. Economic transition, involving a 'restructuring of production and the process of production',[45] has generally involved liberalisation, stabilisation, institutionalisation and privatisation and support for inward FDI. The initial results in Ukraine saw the creation of incomplete, inconsistent and unstable institutions that generated high transaction costs. Nevertheless, it is a lengthy process to construct new systems, given the need for capital, technological and management expertise, and realise a functioning domestic market, in addition to creating a national economic complex with distribution and production links connected to Russia and the other CIS countries *and* the world market. Furthermore, Ukraine needed to address denationalising its economy and making an economic recovery, whilst creating a democratic and pluralist society.[46]

Upon independence few Ukrainian policymakers and élites had any real economic expertise or experience in reform policies and implementation, as Ukraine was largely isolated from Gorbachev's reforms. The state lacked economic institutions and procedures, and faced scepticism and a hostile attitude to reform from oppositionists in parliament.[47] Furthermore, there was no coherent, effective system of taxation, customs and duties were non-existent, economic data were incomplete and/or inaccurate and no real currency was in circulation. [48]

Policymakers were faced with the choice of embarking upon macroeconomic stabilisation, economic liberalisation and structural reform either rapidly (shock therapy) and more or less simultaneously, or cautiously and sequentially (gradualist). Shock therapy involves sudden trade liberalisation, the release of price and currency controls,

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[45] N. Mygind. *Ten Years of Transition from Plan to Market*. (Copenhagen, 2000), p. 2.
[46] M. Bojcun. *Ukraine and Europe: A Difficult Reunion*. (London, 2001), pp. 6-7; J. Stiglitz. *Globalization and Its Discontents*. (London, 2002), pp. 140-142.
[47] J. Tedstrom. 'Ukraine: a crash course in economic transition', *Comparative Economic Studies*. Vol. 37, No. 4, (Winter 1995), pp. 50 & 57.
[48] T. Kuzio. 'Ukraine: a four-pronged transition', *Contemporary Ukraine: Dynamics of Post-Soviet Transformation*. Kuzio (ed.). (New York, 1998), p. 169. See also O. Havrylyshyn. 'The political economy of delayed reform in Ukraine', *Ukraine: The Search for a National Identity*. Wolchik & Zviglyanich (eds.). (Lanham, 2000), pp. 49-68.

and the removal of state subsidies and privatisation. Gradualists argue for a comprehensive and sequenced model designed to reduce the negative effects of increased unemployment and loss of revenue, in addition to providing a more equal distribution of transformation costs. Institutional change is reliant on decentralised information and experimentation with existing institutions locally, and rapid privatisation was discouraged. The argument centres round the invalidity of liberalisation without the lengthy process of privatisation; reform must precede convertibility and the opening of an economy. However, the Ukrainian *nomenklatura* was maintained in many aspects of power, meaning 'shock-therapy' implemented in Russia under Yegor Gaidar and in Poland under Leszek Balcerowicz could be dismissed. Additionally, an argument also revolved around the concept that Ukraine was unique and needed to devise a 'third way' based on its own individual character and experience.[49]

The focus on nation-building priorities increased the economic costs of transition and allowed the old élite to reinvent itself, giving rise to hesitancy and a lack of serious attention to the economy.[50] The perceived priority of nation-building, in combination with the wariness of shock therapy adopted by Poland, Hungary, the Czech Republic and Russia, may explain why Ukraine refuted it then delayed and hesitated, experiencing 'a shock with no therapy' half-way between the former command economy and a market-oriented one.[51] Leonid Kravchuk championed independence and prioritised nation building because 'Ukraine [attempted] to go on its own "personal" journey regarding

[49] For a more in-depth study, see Motyl, *op. cit.*, pp. 146-148; A. Sekarev. 'Ukraina: krizis na fone neyasnoy ekonomicheskoy politiki', *Voprosy ekonomiki*. No. 4, (April 1994), p. 53; Y. Marchuk. 'Osnovy napryamky diyal'nosti uryadu v umovakh rynkovoï transformatsiï ekonomiky Ukraïny', *Ekonomika Ukraïny ta shlyaky ïï podal'shoho reformuvannya: materialy vseukraïns'koï naradu ekonomistiv, 14-15 veresnya 1995r*. Kuras (ed.). (Kyïv, 1996), pp. 20-33; and, L. Kuchma. 'Ekonomika Ukraïny: aktual'ny pytannya ïï suchasnoho rozvytku', Ekonomika Ukraïny ta shlyaky ïï podal'shoho reformuvannya: materialy vseukraïns'koï naradu ekonomistiv, 14-15 veresnya 1995r. Kuras (ed.). (Kyïv, 1996), pp. 4-19.

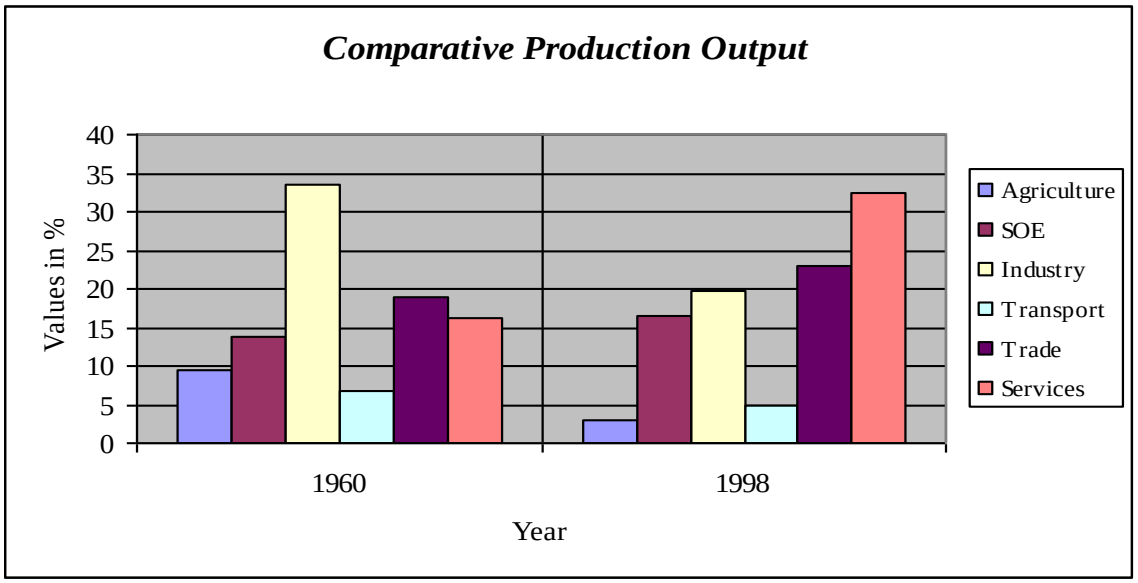
[50] M. Tomenko. 'Nova polityka ta novi politychni syly', *Ukraïna na perekhidnomu etapi: polityka, ekonomika, kul'tura*. Stepankova, Dutkevych & Gkhosh (eds.). (Kyïv, 1997), pp. 21-23.

[51] Kravchuk, *op. cit.*, pp. 7-11; A. Volynskyy, *op. cit.*, p. 38. Vusatyuk notes that support for economic reform in Russia was consistently weak throughout the 1990s. This was a lesson not lost on policymakers in Kyiv. See also O. Vusatyuk. *Ukraïns'ko-Rosiys'ki vidnosyny: problemy vyznachennya*; A. Åslund and G. de Ménil. 'The dilemmas of Ukrainian economic reform', *Economic Reform in Ukraine: The Unfinished Agenda*. Åslund & de Ménil (eds.). (Armonk, 2000), pp. 3-28.; R. Shpek. 'Priorities of reform', *Economic Reform in Ukraine: The Unfinished Agenda*. Åslund & de Ménil (eds.). (Armonk, 2000), pp. 29-48; and, V. Zviglyanich. 'State and nation: economic strategies for Ukraine', *Ukraine: The Search for a National Identity*. Wolchik & Zviglyanich (eds.). (Lanham, 2000), pp. 237-264.

reform to minimise the socio-economic costs of transition'.[52] The influence of economic events on territorial integrity further explained the preference for nation building, even amongst proponents of economic reform. Chernyak claims that, although there were a multitude of errors inherent in the process, 'the common and basic mistake [lay] in the attempt to use market methods in a non-market economy instead of creating [one]'.[53]

The path to a market economy in Ukraine was often beset by strong parliamentary opposition, and reform was slow relative to other transition economies, particularly in areas of privatisation, FDI, legal impediments, competition policy and the supply and distribution system. Although the payment crisis accelerated and corruption and racketeering were commonplace, success was evident in the slowdown of the continuous rapid decline of the economy: inflation fell appreciably, the budget deficit was reduced, the *hryvnya* was introduced and government influence in exchange rate liberalisation, foreign exchange allocation and price liberalisation had been curtailed.

Figure 1.02



Source: *Gregory* (2000, p. 39.)

[52] I. Burakovskyy, *op. cit.*, p. 362; S. Udovik. *Gosudarstvennost' Ukrainy: istochki i perespektivy*. (Kiev, 1999). p. 360.
[53] V. Chernyak. 'Modeľ reformuvannya ukraïns'koï ekonomiky', *Ekonomika Ukraïny ta shlyaky ïï podaľshoho reformuvannya: materialy vseukraïns'koï naradu ekonomistiv, 14-15 veresnya 1995r.*. Kuras (ed.). (Kyïv, 1996), p. 57.

The economy experienced significant change between 1960 and 1998. Figure 1.02 illustrates the decline of industrial and agricultural outputs, both of which decreased by 14% and 6.6% respectively, whereas trade and services increased by 4.2% and 16.2%. Ironically, the output from SOEs grew by 2.7%. Macroeconomic performance improved consistently from 1999/2000 (see Section 5).

3. Ukraine's WTO Accession

WTO accession is not only a complex economic process, but also a legal one where success is dependent upon the political will of the applicant state and WTO member states. Membership restricts a government's ability to set independent trade polices and subjects it to specific regulations. In order to join the organisation, a candidate country must first demonstrate policy conformity with the General Agreement on Tariffs and Trade (GATT), the predecessor of the WTO, and other key WTO agreements. After a period of negotiations in which the terms and conditions of membership are determined, a protocol for accession is produced that the applicant country has three months to ratify. All applicants must negotiate membership conditions, given the absence of universal WTO rules on membership criteria[54], like maximum tariff levels and domestic support for agriculture, and this process involves concession making throughout. Negotiations are conducted on a multilateral basis, through legal reforms to conform to WTO regulations, and a bilateral basis to produce market access commitments. Accession is seen as crucial to solving problematic bilateral trade issues.

An important aspect of the WTO is trade liberalisation. According to the trade liberalisation hypothesis, faster trade adjustment is possible through freeing prices, the exchange rate and foreign trade, in addition to enhancing competition and strengthening the private sector. In doing so, comparative advantage (see Chapter 2) can be better exploited in international trade by domestic producers, providing better investment goods

[54] However, some basic membership trends have emerged in recent years. Current WTO members have pushed commitments upon candidate countries to specific policies, like greater liberalisation and internal reforms, in addition to pressurising them to join the Government Procurement Agreement. In many cases several of the current WTO members were not subjected to such demands, during their own negotiation periods. For further information, see World Bank. *Ukraine's Trade Policy: A Strategy for Integration into Global Trade*. (Washington, 2005), pp. 114-115; and, World Trade Organization. *The Accession Process*. (Geneva, 2002).

through imports and improved market access. Tariffs began to have a significant impact when exchange rates were unified; low real exchange rates made imports uncompetitive not because of quality, but rather high prices. However, import liberalisation enjoyed widespread popular support: it signified the end of inherent shortages. Consequently, low import tariffs replaced import quotas and licenses, with some countries abolishing tariffs outright (Estonia). The deregulation of exports proved more difficult, given the advocacy for regulation from influential exporters. Hence, domestic prices for major commodities (e.g. energy, metals, agricultural produce, chemicals and lumber) have remained below world prices in CIS trade. The dramatic transformation of trade notwithstanding, high inflation destroyed the incentive for enterprises to export, because of the ease of selling in the local market. This resulted in a massive decline of exports, a process only reversed by the decline in domestic demand created by macroeconomic stabilisation. Only then did domestic producers address the question of foreign trade and export liberalisation. Although greater trade liberalisation was advanced through these arrangements, there were notable exceptions in 'sensitive' commodities, defined usually as declining, labour-intensive sectors and those subject to strong political lobbies or policies, like the Common Agricultural Policy. Such policies were in light of what many transition countries keen to join the EU had already undertaken: the deregulation of import and export controls and licensing agreements; the reduction of tariff rates and trade-weighted average levels; the rationalisation and unification of exchange rates; and, the greater acceptance of FDI.

Ukraine applied for WTO membership in November 1993, experiencing a protracted accession process before it was approved in February 2008 and formalised on 16 May 2008. A first draft of the working party's report was only produced in March 2004, despite earlier offers on market access for imports of services (1997) and goods (1999).[55] Membership presents Ukraine with economic considerations like:

- improved international market access for national producers;
- increased FDI inflows and better domestic and foreign market access;

[55] Progress in negotiations was minimal in 1998-99, and only experienced significant advances in 2003. For a comprehensive list of negotiations between 2001 and 2005, see I. Burakovsky. 'Accession of Ukraine to the WTO: new challenges for economic reforms', *Ukraine's WTO Accession: Challenge for Domestic Economic Reforms.* Burakovsky, Handrich & Hoffmann (eds.). (Heidelberg, NY, 2004), pp. 52-3.

- trade regime liberalisation between the EU and Ukraine with free trade;
- reduced tariff and non-tariff restrictions for Ukrainian exports to the EU;
- trade dispute settlements before an impartial panel;
- protection of domestic producers in anti-dumping instances and against unfair imports;
- a regulatory trade policy compliant with WTO regulations and norms;
- the prevention of trade and economic isolation; and,
- the solidification of economic and institutional reforms.

Negotiations of market access for goods and services were near completion by late 2004, with all import tariff lines agreed regarding 'non-sensitive' and 'sensitive' goods (e.g. agriculture, steel, coal, chemicals, textiles, footwear, rubber, plastics, wood and wood products, leather goods, paper, glass and copper). Import tariffs at most favoured nation (MFN) rates on agricultural products is to decline from an average of 15% to around 11% by around 2010, the end of the implementation period. On industrial goods, the average MFN tariff is to remain constant at just below 5%; bound rates during the operational period will be reduced slightly, but remain higher than current average rates. Broadly applicable to weighted and non-weighted tariffs, no significant decrease of tariffs was envisaged earlier, because of the modesty of MFN import tariffs.[56]

A number of trade barriers were eliminated including: quantitative import restrictions on trade in goods, excluding those affected by safeguard and anti-dumping measures, local content stipulations on auto manufacturing and inequitable excise taxes levied on several alcoholic and petroleum products. Earlier progress was made in varying degrees concerning legal reforms with customs, intellectual property rights (IPRs), standards and services.[57]

In 2004, Ukraine provided greater market access in many service sectors, including no limitations on cross-border supply, consumption abroad and commercial

[56] Centre for Economic Policy Studies (CEPS). *The Prospect of Deep Free Trade between the European Union and Ukraine*. (Washington, 2006), p. 47.
[57] For further information, see World Bank, *op. cit.*, p. 116; and, K. Deutsch. 'WTO accession and related trade strategies: lessons for Ukraine', *Ukraine's WTO Accession: Challenge for Domestic Economic Reforms*. Burakovsky, Handrich & Hoffmann (eds.). (Heidelberg, NY, 2004), pp. 59-60.

presence for 139 of 155 service sub-sectors.[58] This involved unlimited access to banking, insurance, transport and telecommunications that were previously limited to a foreign ownership cap of 49%.[59] Growth in services was favourable, with exports here dominated by transport most of which concerned the overland transit of Russian oil and gas to Europe. In fact, many of Ukraine's measures were beyond what the majority of WTO members had enacted.[60] Furthermore, significant convergence in bilateral market access protocols with the EU (2003), US and Australia (2006) were achieved. However, WTO members voiced concern about Ukraine's use of trade safeguard procedures, the convertibility of the *hryvnya*, industrial subsidies and the operation of free economic zones. Particular later concerns (2005-2007) remained in agricultural subsidies, the tariff rate quota for sugar, technical standards, IPRs and market access in audio-visual services.

Although greater convergence was made on changes to customs tariffs, the elimination of restrictions on used car imports, the liberalisation of financial and audit services, and the decrease of export restrictions on ferrous scrap metal and certain agricultural products, draft laws were overdue in 'sensitive' sectors, such as agriculture (export duties on hides, skins, live animals, flax, sunflower and false flax seeds and barriers to sugar imports) and metallurgy (continuing export duties on scrap metal). Outstanding concerns remained regarding: the high transaction costs brought on by weak legal institutions; a lack of transparency pertaining to law and transactions; the vested interests of certain lobbies, oligarchs and political groups; the constant changes in government policies; and, the high amount of corruption in government and business. Such matters were not connected to discriminatory trade policies and/or practices on behalf of the Ukrainian government, thus they were not in violation of WTO regulations, but they increased costs for those wanting to invest or export in the country; hence, they constituted a significant trade policy issue.

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[58] Eremenko *et al*. argue that improved market access might not be important aspects of Ukraine's membership in WTO. Eremenko *et al*., 'Will WTO membership really improve market access for Ukrainian exports?', *Ukraine's WTO Accession: Challenge for Domestic Economic Reforms*. Burakovsky, Handrich & Hoffmann (eds.). (Heidelberg, NY, 2004), pp. 167-188.
[59] World Bank, *op. cit.*, p. 118.
[60] For further details, see CEPS, *op. cit.*, p. 48.

3.1 Ukraine-EU Trade Policies

Ukraine's EU relationship rests on several agreements of which the most prominent two are: the Partnership and Co-operation Agreement (PCA), signed in June 1994 yet only fully initiated in March 1998 for a period of ten years, and the EU-Ukraine Action Plan (EUUAP), under the European Neighbourhood Policy (ENP), adopted in February 2005 upon the expiration of the EU's Common Strategy of 1999 for an initial period of three years. The PCA aims to assist Ukraine concerning the following:

- to present a framework for political dialogue and develop close political relations;
- to promote trade and investment and harmonise economic relations;
- to provide a basis for equally beneficial economic, social, financial, civil, scientific, technological and cultural cooperation; and,
- to support Ukrainian efforts at the consolidation of democracy and the development of its economy, and the completion of transition to a market economy.

Amongst a wide variety of goals within and beyond the scope of the PCA, the EUUAP, with the help of monitoring from PCA-established bodies, aims to accelerate necessary reforms to further more integrated relations with the EU and give priority to:

- WTO accession negotiations;
- encouraging regulatory reform and eliminating restrictions and non-tariff barriers impeding bilateral trade;
- improving the investment climate by combating corruption and simplifying administrative procedures;
- reforming tax and administration, improving public finances; and
- harmonising Ukrainian legislation, norms and standards with the *acquis communautaire*.

Whilst it is official that Ukraine desires EU membership, the EU has stated this is not possible in the medium-term and has only acknowledged Ukraine's aspirations, including the possibility of creating a free trade area. Despite Ukraine's obligation to

synchronise its legislation in customs regulation, company law, securities regulation, banking, taxation, accountancy, financial services, IPRs, technical rules and standards, consumer protection and competition law, the economic and trade provisions of the PCA, based on MFN and national treatment principles, have created only limited benefits and a mixed performance.[61] For instance, steps to liberalise trade have been initiated in accordance with Ukraine's PCA commitments; however, quantitative restrictions on imports and exports, favouring specific local producers and creating excessive certification charges for imports, have all violated it.[62]

Other specific agreements cover bilateral trade in textiles and clothing, with Ukrainian import tariffs set to the same level as EU bound tariffs, quantitative limits on Ukrainian exports of certain steel products until December 2007, science and technology and nuclear energy and cooperation in controlled nuclear fusion. The EU grants Ukraine tariff preferences under the current trade policy regime, the Generalised System of Preferences (GSP), from which EU imports from Ukraine have benefited since 1993.[63] Imports are classified according to three categories, each of which accounts for roughly one-third of import values. They are: goods imported under GSP preferential tariff rates ('sensitive' products), goods imported tariff-free under the GSP ('non-sensitive' products) and goods imported at MFN tariff levels reduced by 15-30%. Although average EU tariffs on imports from Ukraine are quite low by global standards, the EU does not grant Ukraine GSP treatment in many of the country's important export commodities (e.g. iron, steel, fertilisers, fishery products, grains, seeds, fruits and plants), and it exercises quantitative quotas for many commodities in which Ukraine has strong export potential.[64] It does, however, give preferential conditions to imports in certain sectors (e.g. chemical, plants, oils, base metals, minerals, machinery and mechanical appliances). Its tariffs are further complicated because they are calculated in Euros per physical unit of

[61] Such regulatory harmonisation often creates 'regulatory peaks', illustrated by trade disputes involving the EU. See A. Young. 'The incidental fortress: the single European market and world trade', *Journal of Common Market Studies*. Vol. 42, No. 2, (2004), pp. 393-414.
[62] See K. Schneider. 'The partnership and co-operation agreement (PCA) between Ukraine and the EU – idea and reality', *Ukraine on the Road to Europe*. Hoffman & Möllers (eds.). (Heidelberg, 2001).
[63] A new GSP was initiated in January 2006. Stevens and Kennan argue that the GSP regime suffers from numerous weaknesses, like poor contracts, a lack of recourse to dispute resolution and onerous rules of origin, not to mention lesser tariff reduction for non-EU accession countries. See C. Stevens and J. Kennan. *Making Preferences More Effective*. (Brighton, 2004).
[64] For further information, see World Bank, *op. cit.*, pp. 73-86.

output rather than *ad valorem*, and because variable levies are applied to non-tariff barriers in agriculture and voluntary export restraints to industrial sectors, such as textiles and clothing. Duties applied to CIS states were twice those of the ACs.[65]

The EU makes frequent use of defensive, anti-dumping duties, particularly in metallurgical and chemical products, and such duties have had a significant impact on Ukrainian exports. The great success of the large amount of anti-dumping procedures can be partially attributed to the fact that only in December 2005 did the EU grant Ukraine Market Economy Status (MES), when deficiencies regarding bankruptcy legislation and government intervention in price-setting mechanisms were resolved, without which it was difficult for Ukrainian exporters to disprove dumping allegations from EU special interest groups, a problem complicated by calculations having the potential for bias because they are not based on actual prices.[66] The EU's steel import quota and the scope of its anti-dumping actions will be limited with WTO membership. However, such trade defence instruments remain significant towards labour-intensive, 'sensitive' goods, areas in which the CIS enjoys comparative advantages, and in the investment attractive steel and chemical industries. Steel products remain the exception: they are governed by a bilateral agreement that places quantitative restrictions on specific Ukrainian exports. Ukraine also imposes a €30/tonne export tax on ferrous scrap, subsequently influencing the EU to reduce Ukraine's steel quota by 30%. Furthermore, WTO accession is a precondition for a Free Trade Agreement (FTA). In terms of approximation to EU laws, considerable effort has been invested in bringing its market legislation to conform to PCA commitments with only partial results.[67]

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[65] P. Messerlin. *Measuring the Costs of Protection in Europe: European Commercial Policy in the 2000s*. (Washington, 2001), p. 29 & 353; E. Kawecka-Wyrzykowska and D. Rosati. *The Accession of Central European Countries to the European Union: The Trade and Investment Effects on Belarus, the Russian Federation and Ukraine*. (Geneva, 2003), pp.15-16.

[66] Such concerns are to be lessened with Ukraine's implementation of WTO rules, especially on state trading enterprises. Concerns of soft budget constraints notwithstanding, Russia was granted MES in 2002. The US granted Ukraine MES in February 2006.

[67] For further details, see CEPS, *op. cit.*, pp. 51-55. Moreover, Young and Peterson note that the trade agenda now implicates non-tariff barriers to trade welfare, state institutions and institutional reform. See A. Young and J. Peterson. 'The EU and the new trade politics', *Journal of European Public Policy*. Vol. 13, No. 6, (2006), pp. 791-810.

3.2 Ukraine-CIS Trade Policies

The dissolution of the USSR in 1991 signalled the collapse of inter-republican Soviet trade that in 1990 constituted 83% of total Ukrainian exports and 81% of overall imports.[68] In general, CIS countries have not been successful in restructuring their foreign trade or exporting commodities with a higher degree of processing beyond their markets. Ukraine has participated in various bilateral CIS agreements that have sought to restore traditional trade linkages, and create a basis for economic cooperation through 'broad' integration. Although greater economic integration with a political component has long been a primary focus for some CIS members, their economic regimes are shaped by relations with the WTO.[69] Multilateral agreements (the CIS Economic Union, CIS Common Agricultural Market and the CIS FTA) have remained immaterial with poor implementation. Ukraine's situation is more positive concerning bilateral agreements establishing FTAs with CIS members,[70] however comprehensive the exemptions for 'sensitive' products. The FTA with Russia in 1993 considers all goods, except sugar, tobacco, chocolate, confectionary and certain spirits. Ukrainian steel exports are limited by special quotas, as they are with EU trade. Based largely on bilateral trade agreements,[71] CIS free trade tends to be of an intra-bloc nature.[72] They provide duty-free trade in specified goods with exemptions,[73] introduced in protocols deemed inseparable parts of the agreement and subjected to MFN tariff rates, and the free transit of such goods through signatories' territory. In addition, FTAs provide protection, like safeguards, anti-dumping measures and temporary quantitative restrictions for exports and imports. Concerning the latter, they may be introduced on a unilateral basis for a period of up to two years normally in instances where there is a severe shortage of the

[68] Ukraine experienced a dramatic decline of 85% in its trade by 1993. See World Bank, *op. cit.*, p. 1.
[69] Former Soviet republics with WTO membership include Armenia, Georgia, Kyrgyzstan and Moldova. Burakovsky categorises WTO-CIS relations according to three groups. I. Burakovsky. 'Economic integration and security in post-Soviet space', *Swords and Sustenance: The Economics of Security in Belarus and Ukraine*. Legvold & Wallander (eds.). (Cambridge, MA, 2004), pp. 161-63.
[70] Only Turkmenistan did not sign the Plurilateral Agreement on the Establishment of the FTA in 1994. Moreover, the framework agreement has yet to be ratified by all participants. Thus, the FTA has been created only through bilateral trade agreements.
[71] For a full list, see World Bank, *op. cit.*, pp. 152-53.
[72] L. Freinkman *et al*. *Trade Performance and Regional Integration of the CIS Countries*. (Washington, 2004), pp. 27-31.
[73] There is an agreement to eliminate approximately 90% of the current exemptions between 2004 and 2009, with none of them to be phased out before 2012.

specified goods within internal markets, substantial deficits in a country's balance of payments, realised or potential harm for domestic producers and/or as re-export control measures. Although safeguards and anti-dumping regulations for those members who have enacted such laws conform to WTO regulations, their application is unilateral.

Russo-Ukrainian trade is characterised by reciprocal protection measures that have long hampered bilateral trade.[74] Their recurrent usage causes unnecessary disruption to CIS and Russian trade, yet no means exist to resolve such disputes. The lack of competition policy could further mean export subsidies influence CIS trade. Another reason for increasing interest in the WTO is the fact that intra-CIS trade, partially based on barter transactions, is declining, whereas trade with the rest of the world is increasing.[75]

Another aspect of trade conflict was that Russian exports of oil and gas were subjected to value-added taxation (VAT), a clear example of where Russia did not accept the destination principle in taxation of foreign trade. As dependency for Russian oil and gas imports is so acute (see Section 5) and there is a pressing need to maintain prices at a low level, Ukraine lost significant amounts in potential tax revenues by waiving VAT on oil and gas imports to evade double taxation. Estimates of direct VAT loses are placed on average at $650m per annum, or 1.5% of GDP.[76] According to international practice, the destination principle applies to VAT: it is the *importing* country where taxes are levied at their specified rate that compels the *exporting* country to reimburse collected VAT. Deficits in tax collection through exports are normally offset by subsequent gains in taxation, concerning imports where a balance of payment equilibrium exists; hence, the destination principle harmonises the situation regarding domestically produced commodities and imported ones. Given Russia's positive balance of payments, it applied the country of origin principle instead, meaning that the country producing the commodity, therefore, collects VAT and taxes its own exports. The application of indirect taxation, according to whatever principle is chosen, does in itself not constitute an issue, unless a given country has a balance of payment surplus. The use of the destination

[74] An aggregate estimate of such damage was approximately $150m per annum, or the equivalent of 3.5% of Ukraine's exports to Russia in 2003. World Bank, *op. cit.*, p. 154.
[75] S. Djankov and C. Freund. *Disintegration and Trade Flows: Evidence from the Former Soviet Union*. (Washington, 2000), pp. 16-22.
[76] World Bank, *op. cit.*, p. 154.

principle in effect means that Russia circuitously subsidised the importing countries that tax Russian added value.

Initially, intra-CIS trade was conducted using the country of origin principle, whereas trade with the rest of the world functioned according to the destination principle. Only with the creation of individual CIS customs regimes did it become feasible to adopt the destination principle for intra-CIS trade in the late 1990s, when further obstacles to exports in several CIS countries resulted from delayed repayments of VAT refunds. Russia, however, did not switch to the destination principle until 1 July 2001, yet it maintained the country of origin principle for its lucrative energy exports, taxed at 20%, thus adding increased value through double taxation and subsequently depressing intra-CIS trade. In 2004, this practice was halted, as energy exports conformed to the destination principle, although export taxes and levies continue to be applied to Russia's energy exports.[77]

Despite CIS recognition of each member state's standards, established in 1992 with the Mutual Recognition Agreement and concerted efforts to harmonise standards according to the Interstate Council on Standards, Methodology and Certification, such recognition is only applicable to interstate, not national, standards. Mutual recognition is, therefore, a continuing problem, particularly when new national standards are regularly created *ad hoc*. The harmonisation of standards with international regulations poses substantial problems.

Problems with current bilateral trade agreements include substantial uncertainty for market access, because of potential exemptions from FTAs, and inappropriate institutions and regulations to resolve disputes about potential contingency measures in intra-bloc trade affairs. Moreover, the free transit of goods has often not been the case, customs regulations have not been standardised and high transaction costs have often been incurred, despite numerous bilateral agreements.

To complicate matters, substantial differences in members' exports also exist. Belarus, Georgia, Moldova and Tajikistan all have a greater orientation towards other CIS members' markets. In terms of imports, Belarus, Kazakhstan, Kyrgyzstan, Tajikistan

[77] C. Shiells. *Imperfect Competition and the Design of VAT Regimes: The Case of Energy Trade Between Russia and Ukraine*. (Washington, 2002), pp. 3-4; J. de Kort and R. Dragneva. *Russia's Role in Fostering the CIS Trade Regime*. (Leiden, 2006), p. 8.

and Ukraine are more dependent upon other CIS members. Although Ukraine tends to buy from other CIS states, it also sells more outside of it, as does Kazakhstan and Kyrgyzstan. This is in contrast to Georgia and Moldova (WTO members) which import from non-CIS members, and Belarus and Tajikistan which import more from CIS members. Such trends of intra-CIS trade considerably affect the organisation economically and in sub-regional arrangements. Much of the Soviet division of labour and export commodities, largely based on natural resource endowments, remain constant, as does the vulnerability of CIS economies to changes in world market prices. These factors help explain the lack of trade reorientation and the slow increase of trade with more developed market economies. Moreover, trade openness within the CIS declined after 1998 because of: formal and informal trade barriers; inadequate banking systems unable to process transactions reliably and reasonably; ineffectual trade promotion measures; poor business-related services; and, corrupt customs practices.[78]

Ukraine joined the Special Economic Space (SES) in 2003 to deepen integration with Russia, Belarus and Kazakhstan, none of which has WTO membership and in Belarus' case no mutual EU relationship.[79] Although designed to be led by Russia through the use of a single commission where voting weight is based on economic size, this smaller organisation has better prospects for integration than the CIS; the other states are involved in a customs union and member states' policymakers share a more protectionist outlook. The SES has grand objectives. It seeks to build a customs union exclusive of exceptions and limitations that incorporates an integrated strategy on tariff and non-tariff regulations; has unified rules for competition; makes use of state support without protectionist means disturbing intra-union trade; and, attempts to harmonise network regulation and macroeconomic policies. Such objectives are, however, to be implemented gradually, with each member state allowed to decide its multi-level and

[78] A. MacBean. 'Export promotion in transitional economies', *Trade and Transition: Trade Promotion in Transitional Economies*. MacBean (ed.). (Southgate, 2000), p. 7.

[79] The SES is not the first example of a sub-regional bloc within the CIS. Other examples include: EurAsEC (Belarus, Kazakhstan, Kyrgyzstan, Russia, Tajikistan and Uzbekistan); The Russia-Belarus Union, which aims to create a unified state; and GUAM (Georgia, Ukraine, Azerbaijan and Moldova), whose members are opposed to Russian-led integration of the CIS and concerned about transporting Caspian Oil and attracting FDI. Such arrangements are rather unlikely to be competitive enough to ensure substantial benefits from economies of scale and regional specialisation. Uzbekistan was a member of GUAM from 1999-2005 (then known as GUUAM), but left and subsequently joined EurAsEC in 2006.

multi-speed integration under a single commission. Furthermore, signed declarations point towards greater economic integration through a customs and monetary union. However, Ukraine cannot pursue economic integration into the EU and the SES, although it is possible to have an FTA with both because involvement in the SES customs union is irreconcilable with an EU FTA.

4. Trade Policies of Russia, Poland, Lithuania, Belarus & Moldova

As was the case with Ukraine, Russia's EU relationship is based on several agreements, such as the PCA signed in 1994 and put into practice on 1 December 1997 for ten years. This forms the legal basis of their bilateral trade practices and anticipates advancing trade and investment, in addition to containing special provisions concerning economic relations. In effect, it means EU imports from Russia do not generally face any restrictions, with any lasting ones, like those in the steel sector, addressed under separate bilateral agreements. Building upon this, Russia and the EU agreed to expand their cooperation with the Common Economic Space (CES) in May 2003, and the adoption of the Roadmap on the CES two years later.[80] This seeks to establish a freer and more integrated market by 'increasing opportunities for economic operators' to promote more diverse trade and investment, regulatory convergence, market access, the elimination of trade barriers, infrastructure development and trade facilitation.[81] The priority is non-tariff barriers and obstacles to trade and investment by working towards regulatory convergence, although Russia has no EU aspirations. Moreover, it emphasises: IPRs to encourage cooperation between legal entities, to protecting right-holders and combating counterfeit and piracy practices; public procurement discussion to synchronise the two regimes and improve access and transparency; regulatory dialogue on industrial products to harmonise technical regulations and standards; and, enterprise and industrial policy dialogue to improve the regulation and investment environments, with an emphasis on small to medium enterprises. These specific trade-related dialogues joined the energy dialogue, established in 2000, to facilitate sustainable cooperation on energy-related

[80] This is one of four common spaces created by the EU and Russia. The other three are: the Common Space of Freedom, Security and Justice, the Common Space on External Security and the Common Space on Research, Education and Culture.
[81] European Commission. *Russia*. (Brussels, 2007).

issues. The question of energy remains a contentious issue: Russia failed to sign the European Energy Charter (EEnC) over provisions requiring third-party access to its pipelines.

As the EU is Russia's largest single trading partner, it is committed to joining the WTO, having also made its application for membership in June 1993. To advance this, Russia concluded bilateral market access agreements with the EU on 21 May 2004 and the US on 19 November 2006. These measures completed market access negotiations, but the conclusion of multilateral accession negotiations, the 'working party report', is required before membership can be granted. However, many industrial sectors are questionable concerning international competitiveness, especially the processing industries, and Russian industrialists favour greater protectionism. There also remains the question of further reform of Russia's vital energy sector.

The CIS trade regime is wrought with some key inconsistencies, like the proliferation of partial and discerning sub-regional, bilateral and multilateral agreements. CIS procedure, however, explicitly permits the selective formulation of each member's trade policy, an option not open to EU members. Another characteristic is Russia's economic supremacy within the CIS and its corresponding ambivalence towards it, because of its declining economic importance. In 1992, the collapse of the *rouble* zone engendered independent CIS trade and monetary policies. As initial post-Soviet trade contracted considerably in the face of reintroduced price controls and deepening economic crises, bilateral barter trade, a common feature of CMEA trade, reappeared alongside export licences and quotas for certain products on an 'obligatory' list (energy, raw materials and foodstuffs) and an 'indicative' list (intermediate products and consumer goods), with products not specified under either one open to unrestrictive trade in the absence of customs regimes. Consequently, such developments entrenched Russia's dominant position, allowing it to conclude favourable bilateral FTAs with eight of the 11 CIS countries. This policy was copied by others, but it did not put an end to multilateral developments, as the FTA of 1994 and amended one of 1999 indicate. Russia was not forced to comply with either FTA, as it did not ratify either, choosing temporary application instead. Notwithstanding the organisational difficulties and contradictions of the CIS, Russia remains Ukraine's most important trading partner, in contrast to other

members that have experienced significant contractions concerning intra-CIS trade in favour of greater world trade and applied WTO membership.

As an early and leading reformer, Poland was able to redirect its trade orientation before 1991, because of a lesser reliance on the CMEA's payments system, a somewhat more open economy and greater private sector investment.[82] Having been a member of GATT since 1967, Poland already had MFN status, allowing average nominal (non-weighted) customs rates to be raised. With a stated aim to join the WTO and the European Economic Community (EEC), Poland and the EEC signed the Europe Agreement (EA), or Association Agreement, in December 1991, laying the foundation for membership through economic, political and legal technical assistance under PHARE[83] to create and support a market economy. This removed remaining trade controls under 'asymmetry', whereby EU liberalisation was scheduled to occur first. Three months later the Interim Agreement (IA) was signed, with the specific goal of gradually removing all barriers to trade and creating an FTA in non-agricultural products.[84] This saw the measured reduction and eventual abolishment of all payable customs duties, with the intention of providing Polish producers greater access to European markets and allowing foreign producers into the Polish market to facilitate greater competition, albeit one with specific safeguard and restructuring clauses.[85]

Poland was a direct beneficiary of the EU's hierarchy of trade treaties that promoted nations towards full membership. This policy is unavailable to CIS members none of which have associate status, FTAs or an EU customs union. All tariffs were abolished by January 1995, except those in 'sensitive' sectors. The backbone of Polish industry with the greatest export potential and a significant share of the labour force, like many ACs, was concentrated in 'sensitive' sectors that remained subjected to special protocols and specific trade arrangements defined by the IA.[86] A similar agreement was

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[82] D. Rosati. *Foreign Trade Liberalization in the Transition to the Market Economy*. (Vienna, 1993), pp. 7-9.
[83] PHARE (Poland, Hungary Assistance for the Reconstruction of the Economy) was an EU organisation to promote economic and political reform, in addition to providing pre-accession strategic advice for CEE.
[84] B. Hindley. *Helping Transition through Trade? EC and US Policy towards Exports from Eastern and Central Europe*. (London, 1993).
[85] T. Mickiewicz. *Economic Transition in Central Europe and the Commonwealth of Independent States*. (New York, 2005), p. 139.
[86] P. Hare. *Trade Policy during the Transition Lessons from the 1990s*. (Edinburgh, 2000), p. 4; J. Gual and C. Martin. 'Trade and foreign direct investment with Central and Eastern Europe: its impact on Spain',

also signed with the European Free Trade Association[87] (EFTA) countries, which had eliminated import duties in 1993. In terms of liberalisation, this process was completed with EU and Polish imports in 1997 and 1998 respectively. Tariffs and quantitative restrictions were liberalised on EFTA imports by 1999, excluding steel, petroleum products and automobiles.

Another comparable agreement was concluded on a regional basis with several former CMEA countries in the Central European Free Trade Area[88] (CEFTA) in 1992, with a view to increasing exports to Western Europe not only in upgraded or traditional goods, but also new ones that met export market requirements.[89] This illustrated the effect of restructuring on export production composition changes that highlights product differentiation, the effects of which can be seen in the analyses of RCA developments (Chapter 2). Polish exports to CEFTA and EFTA were, however, not liable to the EU's local content rules, whereby locally produced inputs or those purchased from the EU had to constitute 60% of the export's given market value. Consequently, this advanced greater intra-industry trade (see Chapters 3 & 4) and facilitated technology transfer, with the EA making such products easier to trade by eliminating tariffs.

All three agreements accomplished the rapid integration of Poland's foreign trade into the EU, eliminating Polish duties on non-agricultural imports from most other European countries by 2000. Furthermore, Poland's foreign trade policy saw the liberalisation of its non-preferential (MFN, conventional) trade with non-European countries in 1995, when the special terms of accession to GATT became immaterial with the decision to bind duties and reduce tariffs over a six-year period. Such rapid economic transformation helped pave the way for WTO membership on 1 July 1995.

European Trade with Eastern Europe: Adjustment and Opportunities. Faini & Portes (eds.). (London, 1994), pp. 1-8.

[87] At the time this consisted of Austria, Finland, Iceland, Liechtenstein, Norway, Switzerland and Sweden. In January 1995, Austria, Finland and Sweden left EFTA to join the EU.

[88] In 1992 CEFTA consisted of the Czech and Slovak Federative Republic, Poland and Hungary. Of these countries Poland had the lowest share of exports to CIS countries. The organisation subsequently expanded to include Slovenia (1996), Romania (1997), Bulgaria (1999) and Croatia (2002). In May 2004, the Czech Republic, Hungary, Poland, Slovakia and Slovenia left CEFTA to join the EU, followed by Bulgaria and Romania in January 2007. Additional members of the organisation include: the Republic of Macedonia (2006), Albania, Bosnia-Hercegovina, Moldova, Montenegro and Serbia (2007).

[89] B. Hoekman and S. Djankov. *Intra-Industry Trade, Foreign Direct Investment, and the Reorientation of Eastern European Exports*. (Washington, 1996), p. 10.

Poland's EU membership on 1 May 2004 had a fundamental impact on its foreign trade policy. Domestic formulation and implementation of foreign trade and commercial policies were repealed and replaced with EU directives, concerning Poland's trade with EU and non-EU trading partners pursuant to Article 133 of the Treaty. Therefore, Poland's commercial policy is formulated and implemented by the European Commission and the European Council on its behalf. Poland adheres to the Single European Market (SEM) for EU member states and the Common Commercial Policy (CCP) applicable to non-EU states, including the Common External Tariff (CET), non-tariff measures and a host of preferential trading agreements with non-EU trading partners.

Its trade policy with non-EU states is governed by the EU's CCP; hence, it does not have an independent, domestic CIS trade policy. The CCP includes the CET and non-tariff measures, including explicit preferential trading agreements with specific non-EU trading partners, which have reduced customs duties on manufactured goods but not agricultural ones. CIS agricultural imports also face variable levies and technical standards. The CCP has had a greater impact on CIS goods accessing the EU market. Poland's trade before accession with Russia, Ukraine and Moldova was regulated by PCA provisions, meaning tariffs did change for Polish commodities and their access to CIS markets. Likewise, Russia and Ukraine benefit from the GSP that facilitates access of their goods to the Polish market. Other CIS member states that have a PCA with the EU include: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Moldova and Uzbekistan.[90] Trade relations are also complicated by the fact that trade facilitation is easier between fellow WTO members, yet joint CIS and WTO membership only belonged to Armenia, Georgia, Kyrgyzstan and Moldova.

Suffice to say that the complexity of the CIS, its various subgroups and its lack of uniformity compared with the EU, makes it a more difficult bloc with which to deal, and highlights the unquestioned importance of various EU bilateral trade agreements with individual states, rather than the bloc as a whole. CIS production networks are not deeply integrated. Adherence to the principles of the CCP has had minor impact in market access

[90] Belarus and Turkmenistan signed the agreement but it has not come into force, whereas Tajikistan initialled a PCA but has yet to sign it.

in non-EU states. It has nonetheless produced fundamental changes in Poland's imports from non-EU states, because of CET, notwithstanding the fact that Poland's foreign trade policy had largely conformed to the provisions of the CCP before accession. This is because of WTO membership and the aforementioned FTAs, signed with trading partners having similar EU agreements. CET has reduced customs duties on the majority of manufactured goods. Furthermore, EU membership means Poland had to adopt the EU's system of quantitative quotas, anti-dumping and anti-subsidy measures. The importance for comparative trade purposes is that anti-dumping, although rarely employed by Poland before accession compared with the EU, is a particularly sensitive topic for CIS members' EU trade, whereas anti-subsidy measures are non-applicable to the CIS. Consequently, the CIS has become more protectionist-oriented towards EU imports.[91]

Upon independence Lithuania faced many of the same problems other ex-Soviet republics did in that the needs of its domestic economy were subjugated to the union, and its industries were uncompetitive beyond CIS markets. It was also very dependent upon raw material and energy inputs and Soviet demand for its exports, particularly its agricultural products, machinery and machine parts, chemicals, electronics, food processing, light industry and construction materials. However, like Poland, Latvia and Estonia, Lithuania had the added advantage that it could seek EU assistance, including technical assistance and capital investment funds, because of PHARE, signed in September 1991, and the EU accession process. This would prove conducive to implementing economic reforms, albeit never as unanimous as Polish ones.

In 1992, Lithuania joined the IMF and gained observer status within GATT, following the former's advice on stabilisation and structural reform aid. Participation in such international organisations enabled Lithuania to conclude trade and commercial and economic cooperation treaties with the EEC in 1992; Lithuania subsequently acquired MFN status (unlike Poland, Lithuanian did not enjoy GATT membership prior to transition) and concluded an FTA and an EA in July 1994 and June 1995 respectively. The FTA provided Lithuania with EU tariff exemptions on industrial commodities,

[91] M. Błaszczuk and E. Kaliszuk. *Poland's Accession to the EU and its Effects on Trade with Russia and Ukraine*. (Vienna, 2006), pp. 4-10.

textiles and agricultural goods, in addition to accessing much-needed hard currency markets and redirecting trade flows westwards.

Lithuania had a trilateral FTA with Estonia and Latvia, a series of bilateral ones with EFTA and CEFTA countries and with Ukraine and Turkey. Subsequent imports received preferential customs duties. After seven years of accession negotiations, Lithuania joined the WTO on 31 May 2001, having solved outstanding issues in customs duties for agricultural products and domestic support within the industry, export subsidies and trade in audiovisual products. On 1 May 2004 it likewise joined the EU. Membership in both, particularly the latter, has had an influential impact on its foreign trade policy that is in strict conformity to Poland's and those of other EU member states.

Lithuania, unlike Belarus and Ukraine, made a clear decision before the collapse of the USSR to liberalise its trade regime and seek membership of the IMF, WTO and EU. Consequently, CIS trade has decreased, yet remained much more important than in other ACs. There can be little doubt that CIS countries, Russia in particular, continue to be a market for Lithuanian products and provide traditional exports of energy and raw materials. Many competitive Lithuanian products (e.g. fertilisers, wood, furniture and textiles) have increasingly been traded with the more developed EU market. Given Lithuania's need to import raw materials from Russia, a bilateral trade agreement makes practical sense; however, this is not possible with Lithuania's EU membership, as trade policy with the CIS is dictated by the EU's CCP, but it is plausible that this could be achieved when Russia gains WTO membership. Lithuania's CIS trade policy has likewise been dominated by EU policies since membership.

Belarus is unique in that little reform has occurred and much of the former economic system has remained in place, after a brief initial flirtation with economic reform before 1994.[92] The legacy of economic dependency on Russia is paramount to Belarus' nascent capitalist mode. Its official 'socially oriented market economy' can be defined as one where the extensive use of social welfare policies are employed to guarantee social safety nets and high employment rates, alongside mixed private and state ownership in a market economy. Belarus has mostly foregone economic transition and the development of its own national economic system in favour of the interests of

[92] Only two other former Soviet republics maintain Soviet-styled systems: Turkmenistan and Uzbekistan.

Russian capital, subsidies and price controls. This has allowed much of the monopolised, state-controlled system, in which 116 SOEs acting in a quasi-monopoly account for greater than 90% of GDP, to remain intact with continuing Russian assistance.[93]

Having renationalised the banking sector, the authorities make frequent use of credit expansion to foster growth in real GDP, whilst leaving the balance of payments in increasing deficit, as finished products with little signs of improvement in quality remain unsold. This in turn limits increases in export volumes and leaves manufacturers the largest single group of debtors to the state, with barter accounting for 40% or more of all transactions.[94] Furthermore, the state still exercises significant influence over the export sector.

Belarus, unlike Ukraine, has no stated aim of joining the EU. Whilst it is the case that Russia, Ukraine and Moldova have ratified the PCA, Belarus has not. Moreover, it cannot participate in the ENP, a special relationship the EU shares with Ukraine and Moldova to advance political, economic and institutional reform and gradual economic integration. In particular, the EU would offer Belarus 'deeper economic ties and trade relations', with greater market access for sectors like textiles, only providing EU standards are achieved.[95] Despite the fact that the EU is Belarus' second largest trading partner after the CIS, the main regulation of bilateral trade remains the MFN provisions, dating to the 1989 agreement between the EEC and the USSR. However, Russia's growing ties to the EU *vis-à-vis* the PCA, its accession to the WTO and the eventual creation of an EU-Russian FTA should also lead indirectly to closer cooperation with Belarus

The lack of Belarus' formal participation with the EU is contrasted by far greater interest in CIS relations and Russia in particular. The CIS Customs Union of August 1998 involving Russia and Belarus initiated a substantial increase in trade, particularly Belarusian exports. In 1999, the two deepened economic cooperation with The Russia-Belarusian Union. This is significant: as intra-CIS trade has contracted, the opposite is the

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[93] S. Vassilevsky *et al. Analysis of Structural Change, Trade Specialization and Integration Experience of Belarus*. (Vienna, 2006), pp. 1-2.
[94] K. Haiduk. 'Assessing the political and economic situation in Belarus: an awkward partner beyond the enlarged European Union?', *Prospects and Risks Beyond EU Enlargement; Challenges of a Pan-European Policy*. Kempe (ed.). (Opladen, 2003), pp. 115-117.
[95] European Commission. *What the European Union could bring to Belarus*. (Minsk, 2005).

case to such an extent for Belarus and Russia that the former has replaced Ukraine as Russia's second largest trading partner after the EU. Belarusian trade with Russia constitutes more than half of their imports and exports, whereas Russian exports to Belarus are classified as domestic sales in Russia, unlike exports to other CIS members. The Belarusian economy benefits from indirect and direct Russian subsidies, in the form of debt cancellation and rescheduling, low-interest rate credits, substantial barter transactions and additional customs revenues. Finally, low Russian oil and gas prices, combined with lenient repayments, have facilitated much of Belarus' economic strength. Such debts remain unpaid in currency, but rather are concluded in barter transactions that maintain demand for Belarusian commodities already enjoying preferential Russian access in return for subsidised energy imports. Moreover, CIS markets, especially Russia, allow Belarusian manufacturers to remain competitive without facing international competition on a large scale or seeking new markets for their products.[96]

Moldova is perhaps the most complex country here to analyse and understand: it has the weakest sense of national identity, is the most politically unstable, and has suffered the greatest economic collapse of all former Soviet republics, only Georgia and Tajikistan have experienced a similar scale of decline. To complicate matters, Moldova has experienced much greater dislocation because separatists in Transnistria[97] seceded from the republic in 1992.[98]

Despite desiring greater EU integration, Moldova has never been presented with impending membership that would provide a coherent framework upon which to base many reforms. It has, however, received significant financial support from Technical Aid

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[96] A. Wilson and C. Rontoyanni. 'Security or prosperity? Belarusian and Ukrainian choices', *Swords and Sustenance: The Economics of Security in Belarus and Ukraine*. Legvold & Wallander (eds.). (Cambridge, MA, 2004), pp. 45-46; G. Ioffe. 'Understanding Belarus: economy and political landscape', *Europe-Asia Studies*. Vol. 56, No. 1, (2004), pp. 1241-1271.

[97] Also known as Transdniester, its full name is the Pridnestrovian Moldavian Republic, a self-declared independent Soviet Socialist Republic. Situated fully within Moldova's internationally recognised borders, mostly along the Dniester River and the nearby Ukrainian border, it has its own Soviet-era state symbols, capital (Tiraspol), government, parliament, military and police organised within a semi-presidential republic. The territory declared its independence and fought a war with independent Moldova between March and July 1992, and a ceasefire has held since with Russian troops stationed within Transnistria. Far from being an isolated example within the former USSR, one could compare the situation with that in Nagorno-Karabakh (Azerbaijan) and Abkhazia and South Ossetia (Georgia), all of which are *de facto* independent states without international recognition. Moreover, Armenia and Tajikistan are two other former Soviet republics to have experienced significant armed conflict.

[98] Its independence has yet to be recognised by any international organisation or state.

to the Commonwealth of Independent States (TACIS), Cross Border Cooperation (CBC) and the European Initiative for Democracy and Human Rights (EIDHR). In fact, Moldova's early comprehensive reforms meant that TACIS provided €154.6m from 1991 to 2005, including a substantial package to simplify and harmonise its customs procedures that ranked Moldova first in total TACIS financial aid.[99] Moreover, a PCA was signed in November 1994, valid in July 1998, and Moldova was the first former Soviet Republic to join the Council of Europe in June 1995. Moldova's "Concept for the Integration of the Republic of Moldova into the EU" was acknowledged in late 2003, although the decision was made to maintain the PCA as the basis for further cooperation. Furthermore, Moldova benefits from preferential GSP treatment, and it has been involved in the ENP, since February 2005, which could strengthen domestic reforms, provide better possibilities to access the EU market and develop asymmetrical trading privileges. Based on the PCA, the EU-Moldova Action Plan (EUMAP) outlines strategic objectives of cooperation. With a timeframe of three years, it seeks to integrate further Moldova's economic and social structures and prioritise a resolution to the Transnistrian conflict. As a member of the Stability Pact for South Eastern Europe (SPSEE),[100] the EU also encourages Moldova to participate in greater political and economic cooperation, including FTAs with other member states, although this only includes Russia (1993) and Ukraine (1995). Nonetheless, the ongoing problems with Transnistria pose a significant problem for further EU-Moldovan relations, as they do domestically.

Moldova has long been critical of Russian-led economic integration within the CIS. Once in favour of joining the Russian-Belarus Union, it has since 2001 increasingly favoured stronger integration with the EU. It is nonetheless very much interconnected with the CIS, providing preferential trade treatments in agricultural products and energy supplies. Moldova's WTO membership (26 July, 2001) means the proposed CIS Customs Union is unfeasible. Regarding CIS trade, Moldova experiences major problems with non-transparent bilateral agreements, unilateral exclusions, lack of permanency

[99] A. Libman. *Moldova: Structural Changes, Trade Specialization and International Integration Experience*. (Vienna, 2006). p. 31; and, European Commission. *Moldova*. (Brussels, 2007).
[100] Founded on 10 June 1999, its members include: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Republic of Macedonia, Moldova, Montenegro, Romania and Serbia. Ukraine is the only state to have observer status in SPSEE.

concerning agreements and the improper application of measures, such as safeguarding and dumping. It is also frequently involved in trade disputes with Russia.

5. Comparative Economic Aspects

This final section centres on a comparative assessment of the following: population; gross national income (GNI) per capita at purchasing power parity (PPP); GDP; total debt servicing; inflation; current account balance; industry, agriculture and services, valued added, as a percentage of GDP; unemployment; exports and imports of goods and services; the average consumption and production of natural gas, oil, electricity and coal; cumulative FDI inflows; FDI inflows per capita; FDI inflows as a percentage of exports and imports; and, FDI inflows as a percentage of GDP.

Table 1.03: Population (Millions), 1996-2006

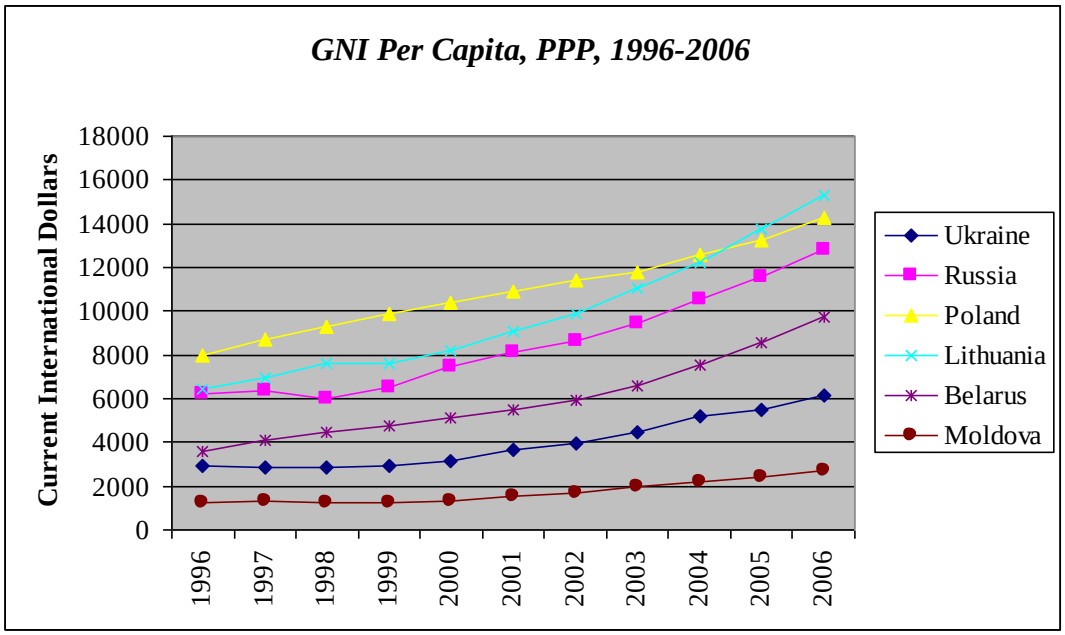
	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
1996	51.06	147.74	38.62	3.60	10.16	4.35
1997	50.59	147.30	38.65	3.58	10.12	4.30
1998	50.14	146.90	38.67	3.56	10.07	4.26
1999	49.67	146.31	38.66	3.53	10.04	4.20
2000	49.18	146.30	38.45	3.50	10.00	4.15
2001	48.68	145.95	38.25	3.48	9.97	4.09
2002	48.20	145.30	38.23	3.47	9.92	4.03
2003	47.81	144.60	38.20	3.45	9.87	3.98
2004	47.45	143.85	38.18	3.44	9.82	3.93
2005	47.11	143.15	38.17	3.41	9.78	3.88
2006	46.79	142.50	38.13	3.39	9.73	3.83
Change	**-4.27**	**-5.24**	**-0.49**	**-0.21**	**-0.43**	**-0.52**

Source: ***World Bank Database*** **(2008).**

Each country's population is illustrated in Table 1.03. Although Russia was the largest, it experienced the greatest population decline (5.24m). Nevertheless, it had 40.63m more inhabitants in 2006 than the combined total of the other five countries, which amounted to 71.5% of Russia's. Experiencing the second greatest decline (4.27m), Ukraine's was a distant second. In 2006, its population of 46.79m was merely 32.8% of Russia's. In comparison, Poland's population was 81.5% of Ukraine's in the same year, qualifying it for third overall. Likewise, it experienced a contraction, but on a much

smaller scale (0.49m). Belarus had almost 30m inhabitants less than Poland in 2006, witnessing a similar overall decline of 0.43m. The two smallest countries were Moldova and Lithuania. Population contractions were again observed: for Moldova this was by 0.52m, whereas Lithuania had the smallest decline at 0.21m. The only country not to experience continuous year-on-year decline was Poland, whose population increased between 1996 and 1998.

Figure 1.03

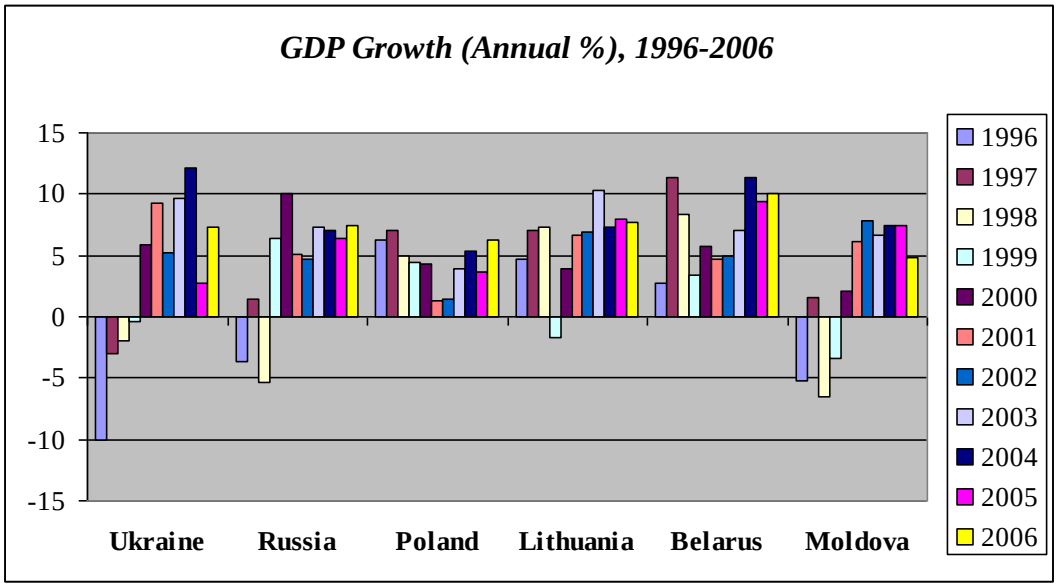


Source: ***World Bank Database*** **(2008)**

A closer examination of each country's market potential is provided by their GNI per capita at PPP, shown in Figure 1.03. Poland was the leader from 1996 to 2004, until it was replaced by Lithuania which experienced the greatest overall growth ($8,870). It had the single best value in 2006 ($15,300). Having increased $6,260, Poland's growth was third in comparison; however, it did rank first in overall average ($10,961.82), followed by Lithuania ($9,830.00). The rankings for the remaining countries were consistent. Russia was third with an average of $8,520.21, but strong growth from 1999 allowed it to record the second best increase ($6,580). Belarus remained fourth throughout ($5,987.27) and fourth in growth ($6,110). A moderate increase of $3,210 kept Ukraine in fifth with

an average of $3,964.55. Moldova not only had the lowest growth average ($1,718.18), but also the poorest increase ($1,410). By 2006, Lithuania, Poland and Russia were classified as high-income countries rather than upper middle-income ones, and Belarus and Ukraine graduated from lower middle-income to upper middle-income countries. However, Moldova remained a lower middle-income country throughout.

Figure 1.04



Source: ***World Bank Database*** **(2008)**

Figure 1.04 shows annual GDP growth. Ukraine had the highest number of negative years with four (1996-1999). In fact, its GDP growth was one of the worst in CEE, having experienced a cumulative decline of 60% from 1991 to 1999.[101] However, Ukraine attained the greatest GDP growth of the aforementioned countries between 1996 (-10%) and 2006 (7.3%) at 17.3%, including the highest growth in a single year (12.1% in 2004) yet an average of only 3.34% (fifth). Despite two years of GDP decline (1996, 1998), Russia was second with 11% growth and an average of 4.26% (fourth). Moldova had three negative years (1996, 1998-99) and recorded the third greatest improvement (10%), yet it also had the lowest overall average (2.62%). Belarus saw its GDP increase by 7.2%, and had the best average (7.21%). The only other country not to experience

[101] C. Pascual and S. Pifer. 'Ukraine's bid for a decisive place in history', *The Washington Quarterly*. Vol. 25, No. 1, (2000), p. 179.

decline was Poland; however, no change was calculated, and its average was 4.44% (third). Lithuania had one negative year (1999), but managed to increase its GDP by 3%. It had the second best average (6.17%).

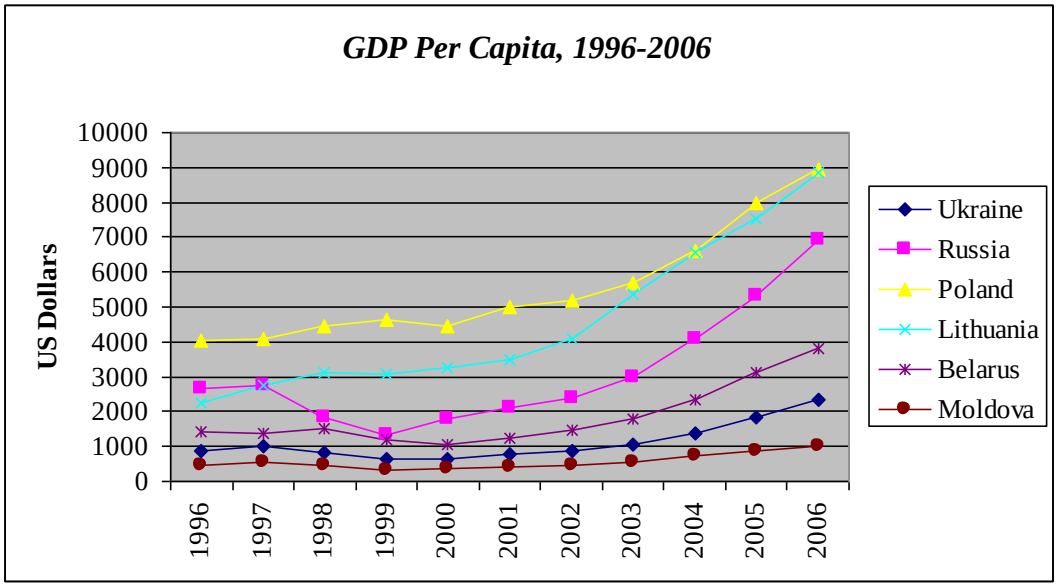
Table 1.04: GDP in Current US$ Billions, 1996-2006

	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
1996	44.6	391.7	156.7	8.2	14.8	1.7
1997	50.2	404.9	157.1	10.0	14.1	1.9
1998	41.9	271.0	172.0	11.2	15.2	1.6
1999	31.6	195.9	167.9	10.9	12.1	1.2
2000	31.3	259.7	171.3	11.4	12.7	1.3
2001	38.0	306.6	190.4	12.1	12.4	1.5
2002	42.4	345.5	198.2	14.1	14.6	1.7
2003	50.1	431.5	216.8	18.6	17.8	2.0
2004	64.9	591.7	253.0	22.5	23.1	2.6
2005	86.1	764.5	304.0	25.7	30.2	3.0
2006	107.8	990.6	341.7	29.8	36.9	3.4
Change	**+63.2**	**+598.9**	**+185.0**	**+21.6**	**+22.1**	**+1.7**

Source: ***World Bank Database*** **(2008)**

Table 1.04 provides GDP values. Russia was not only the strongest country throughout, but it experienced the greatest overall growth, as GDP rose by $598.9bn. Poland was a distant second ($185bn). Despite having a larger population than Poland, Ukraine ranked third ($63.2bn), with a value which was $121.8bn less. Belarus' population was also greater than Lithuania's, but both recorded similar GDP increases of $22.1bn and $21.6bn correspondingly. Although in terms of population Lithuania and Moldova were similar, Moldova's GDP was not only substantially smaller than Lithuania's (by $26.4bn in 2006), but it recorded the lowest growth ($1.7bn).

Figure 1.05



Source: ***IMF, World Economic Outlook*** **(October, 2008).**

Given such divergences in population and GDP, an examination of GDP per capita is shown in Figure 1.05. Poland remained the leading country throughout, but its cumulative increase of $4,902.00 was second to Lithuania's $6,621.71. They had the highest averages at $5,551.36 and $4,575.36 correspondingly. With a value of $8,958.01 in 2006, Poland had the highest value for any given year. Despite its position as the leading country regarding overall GDP, Russia ranked third in GDP per capita growth (+$4,280.89) and in average ($3,101.03). Belarus consistently ranked fourth (+$2,375.26) with an average of $1,850.98, followed by Ukraine (+$1,451.58) whose average was $1,113.53, and Moldova (+$535.60) with the lowest average ($560.10). GDP growth was largely the result of macroeconomic stabilisation policies, strength of foreign demand for certain products and favourable prices.

Table 1.05: Total External Debt (DOD in Current US Billions), 1996-2006						
	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
1996	9.54	126.37	43.29	1.43	1.96	0.84
1997	11.13	127.58	41.54	3.04	2.08	1.08
1998	13.08	177.80	56.74	3.47	2.39	1.07
1999	13.95	174.75	64.97	4.42	2.26	1.02
2000	12.19	159.99	64.83	4.71	2.14	1.69
2001	20.53	152.50	65.71	5.28	2.34	1.64
2002	21.71	147.37	76.68	6.15	2.90	1.80
2003	23.99	175.70	93.75	7.46	3.23	1.94
2004	30.19	196.80	97.33	10.47	4.03	1.95
2005	33.30	229.07	98.82	12.56	4.74	2.05
2006	49.89	251.07	125.83	18.96	6.12	2.42
Change	**+40.35**	**+124.70**	**+82.54**	**+17.53**	**+4.16**	**+1.58**

Source: ***World Bank Database*** **(2008).**

Values for total external debt are illustrated in Table 1.05. Russia led all countries in debt growth, calculating an increase of $124.7bn, and maintained the highest level of debt throughout. With a significant increase of $27.01bn alone in 2006, Poland's overall debt grew by $82.54bn. Debt increases in Ukraine were almost half of Poland's ($40.35bn), with growth in Lithuania ($17.53bn) almost half of Ukraine's. Belarus and Moldova saw the slowest debt increases at $4.16bn and $1.58bn respectively.

Figure 1.06

Source: ***World Bank Database*** **(2008).**

Figure 1.06 illustrates how debt servicing was applied as a percentage of the exports of goods, services and income. Poland had the leading percentage from 2001: recording the highest single value (34.68% in 2004), the greatest average (20.51%) and the second in overall growth (17.94%). Lithuania saw the highest growth (19.15%) and the second-ranked average (15.82%). Ukraine ranked third in growth (11.95%) and fourth in overall average (12.71%). Debt servicing in Russia was generally lower, a point reflected in its growth (6.94%) and average (11.3%). Although Moldova's increase of 4.01% seemed inconsequential, it maintained a significant average of 15.74% (third). The lowest increase (0.93%) and average (3.37%) were recorded in Belarus.

Table 1.06: Inflation (% End of Year Averages), 1996-2006

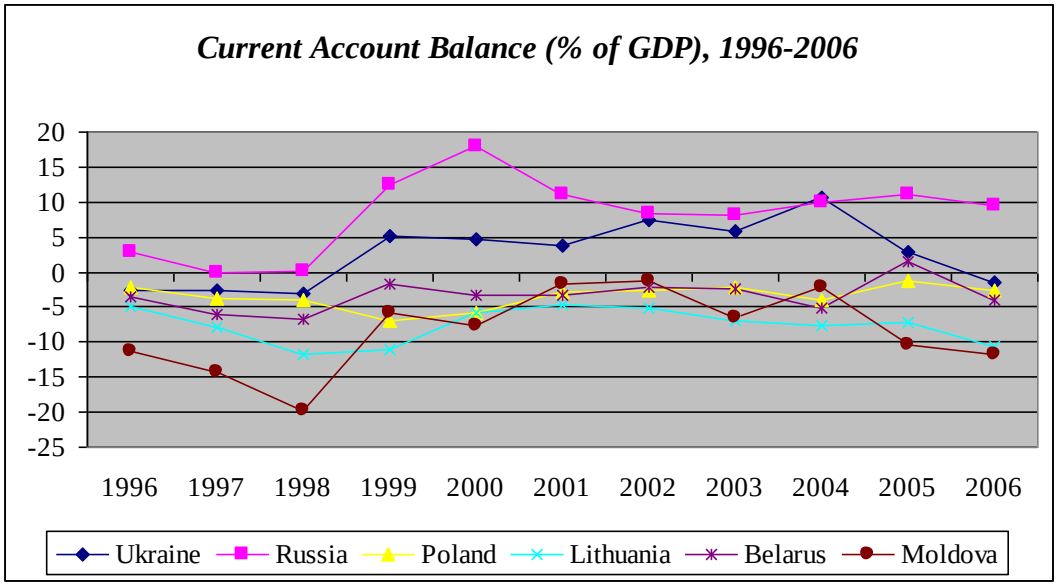
	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
1996	39.72	21.80	18.50	14.90	39.30	15.10
1997	10.12	11.00	13.20	8.48	63.11	11.10
1998	19.99	84.40	8.60	3.07	181.75	18.20
1999	19.22	36.50	9.80	0.43	251.20	43.80
2000	25.82	20.20	8.50	1.62	107.50	18.50
2001	6.12	18.60	3.60	2.09	46.12	6.40
2002	-0.57	15.10	0.80	-0.90	34.79	4.37
2003	8.24	12.00	1.70	-1.32	25.37	15.75
2004	12.31	11.70	4.40	2.84	14.44	12.63
2005	10.28	10.90	0.70	3.02	7.94	10.09
2006	11.63	9.00	1.40	4.54	6.62	14.07
Average	**14.81**	**22.84**	**6.47**	**3.52**	**70.74**	**15.46**

Source: ***IMF, World Economic Outlook*** **(October, 2008).**

Table 1.06 illustrates inflation end of year averages. Lithuania was the most successful: with an average of 3.52%, inflation was kept in single-digit figures on all but one occasion (1996), and twice deflation was recorded (2002 & 2003). Its inflation was reduced overall by 10.36% (fifth). Poland also was successful in keeping inflation in single digits: its average was 6.47% and inflation was reduced by 17.1%. Ukraine was the only other country to experience deflation (2002) and its average was ranked third (14.81%), followed closely by Moldova (15.46%). Ukraine was more successful at lowering inflation than Moldova: the values for each were 28.1% (second) and 1.03% (sixth) respectively. Numerous attempts at stabilisation and/or liberalisation were

abandoned at various times in Ukraine, and loose budgetary discipline had caused hyperinflation earlier.[102] Moreover, price liberalisation in combination with direct and indirect subsidies and credits to SOEs contributed further to the problem.[103] As was the case with GDP, stability only occurred after 2000 when inflation was brought under control and budgetary discipline became more widespread. With an average rate of 22.84%, inflation posed a greater problem in Russia, but percentages fell steadily from 1998 to allow an overall reduction by 12.8% (fourth). Inflation proved to be a significant problem in Belarus: it was the only country to record three-digit figures (1998-2000), the highest of which was 251.2% in 1999, and its average (70.74%) was 47.9% greater than Russia's. Nevertheless, inflation fell steadily from 1999 onwards, allowing Belarus the best overall reduction at 32.68%.

Figure 1.07



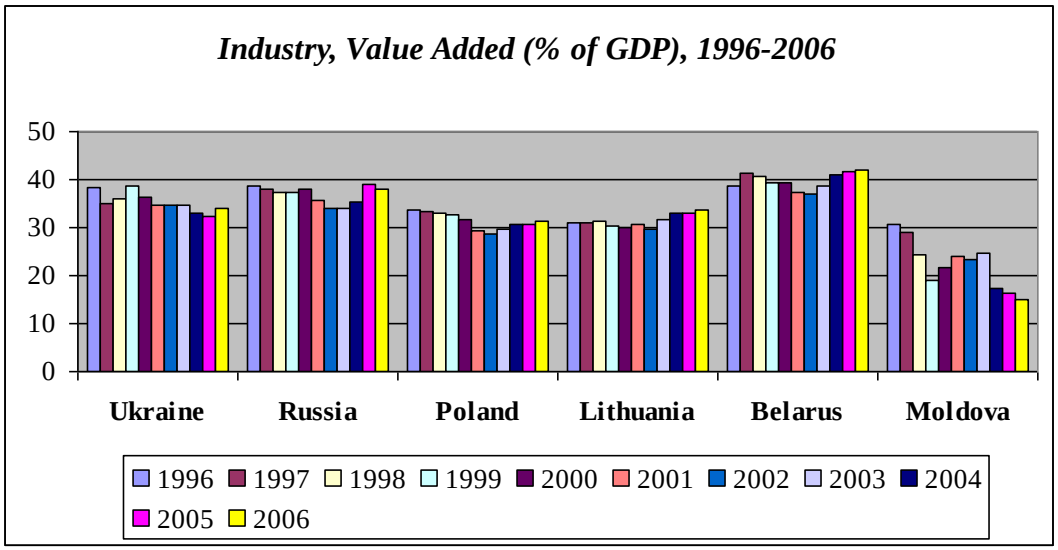
Source: *IMF, World Economic Outlook* (October, 2008).

Current account balances as a percentage of GDP are shown in Figure 1.07. Russia had not only the highest recorded average (8.34%), but also the highest degree of

[102] G. de Ménil. 'From hyperinflation to stagnation', *Economic Reform in Ukraine: The Unfinished Agenda*. Åslund & de Ménil (eds.). (Armonk, 2000), pp. 55-64.
[103] Volynskyy, *op. cit.*, pp. 47-49; I. Lunina and V. Vincentz. 'The subsidation of enterprises in Ukraine', *Ukraine at the Crossroads: Economic Reforms in International Perspective.* Siedenberg & Hoffman (eds.). (Heidelberg, 1999), pp. 119-129.

change between 1996 and 2006 (+6.77%). On five occasions its percentage was in double digits, the highest of which was 18.04% in 2000. Ukraine was the only other country to record a positive average percentage (2.78%) and an increase in its figures (+1.16%). Poland and Belarus had similar averages of -3.45% and -3.35% and similar declines of 0.61% and 0.36%. Lithuania experienced the greatest decrease (5.74%) and the second lowest average (-7.61%). Moldova's average (-8.42%) was the lowest, but its change was minimal (-0.53%).

Figure 1.08

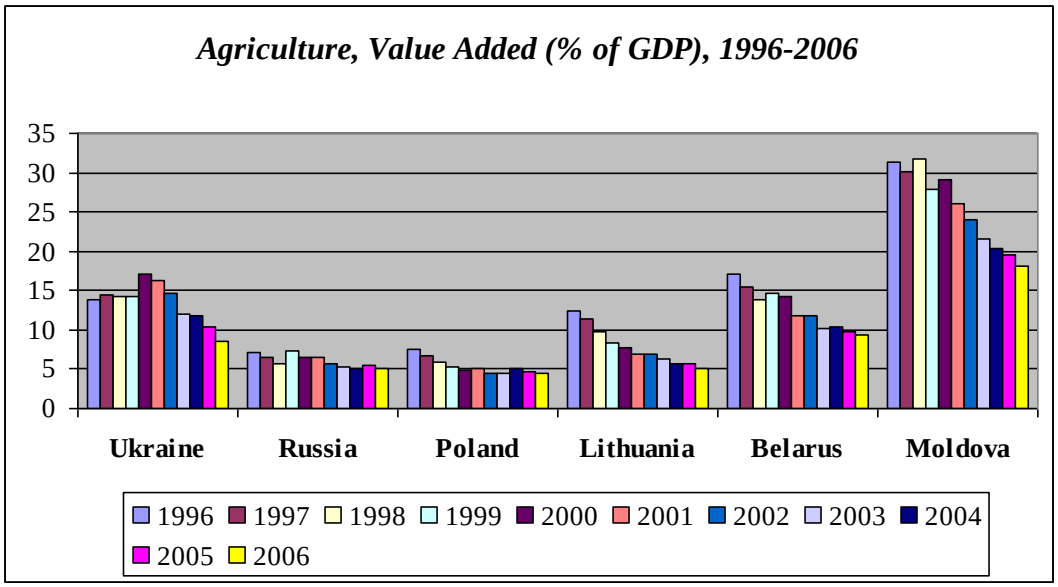


Source: *World Bank Database* (2008).

Figure 1.08 examines industry, value added, as a percentage of GDP. For the exception of Moldova, each country recorded an average greater than 31%. Belarus not only had the highest average (39.66%), but also recorded the greatest increase (3.42%). It also had the highest single year value (42.01% in 2006). Lithuania was the only other country to record growth. Russia ranked second in average (36.84%), but experienced a decline of 0.76%. Ukraine's average (35.24%) was third, but its value contracted by 4.1%. Lithuania and Poland had similar averages of 31.41% and 31.35% correspondingly. However, the former increased its percentage (2.75%), whereas the latter saw a contraction (2.37%). Moldova not only had the poorest average (22.32%), but

also experienced the greatest decline (15.63%). The overall average for the six countries was 32.8%.

Figure 1.09



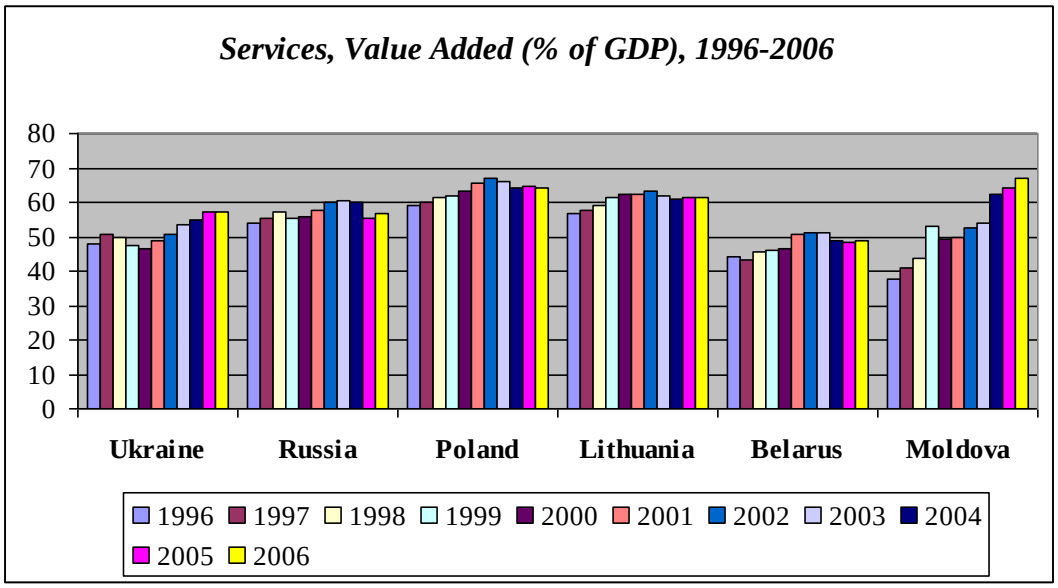
Source: *World Bank Database* (2008).

Figure 1.09 illustrates the value of agriculture, value added, as a percentage of GDP. The values for each country were much lower than industry (see Figure 1.08), except for Moldova. However, percentages fell universally. With an average of 25.44%, the importance of agriculture to Moldova's economy was evident, yet its cumulative decrease was the greatest (13.3%). Moldova also had the highest value in a given year (31.76% in 1998). Only two other countries had double-digit averages: Ukraine (13.44%) and Belarus (12.58%). They also witnessed contractions of 5.21% (fourth) and 7.73% (second) respectively. In Ukraine, unprofitable agricultural collectives, like those in industries, were heavily subsidised, further increasing the budgetary deficit and spurring inflation in the early 1990s.[104] In addition, the shipment and storage of agricultural products, where between 30-50% of harvests were lost, continued to be a serious

[104] L. Kistersky. 'Economic reasons for the political crisis in Ukraine', *Brown Journal of Foreign Affairs*. Vol. 1, No. 1, (Winter 1993-1994), p. 175.

problem, as is the dependency on energy imports.[105] Lithuania's average was fourth (7.85%), followed by Russia (6.03%) and Poland (5.32%). The corresponding decreases for each country were 7.33% (third), 2.1% (sixth) and 3.05% (fifth). Only Moldova had a higher average value for agriculture than industry (+3.12%). The greatest discrepancy in average values for industry and agriculture was recorded for Russia (30.81%). The differences for the other four countries ranged from 21.8% (Ukraine) to 27.09% (Belarus). The total average for the six countries was 11.78%, a figure 21.02% less than that recorded for industry.

Figure 1.10



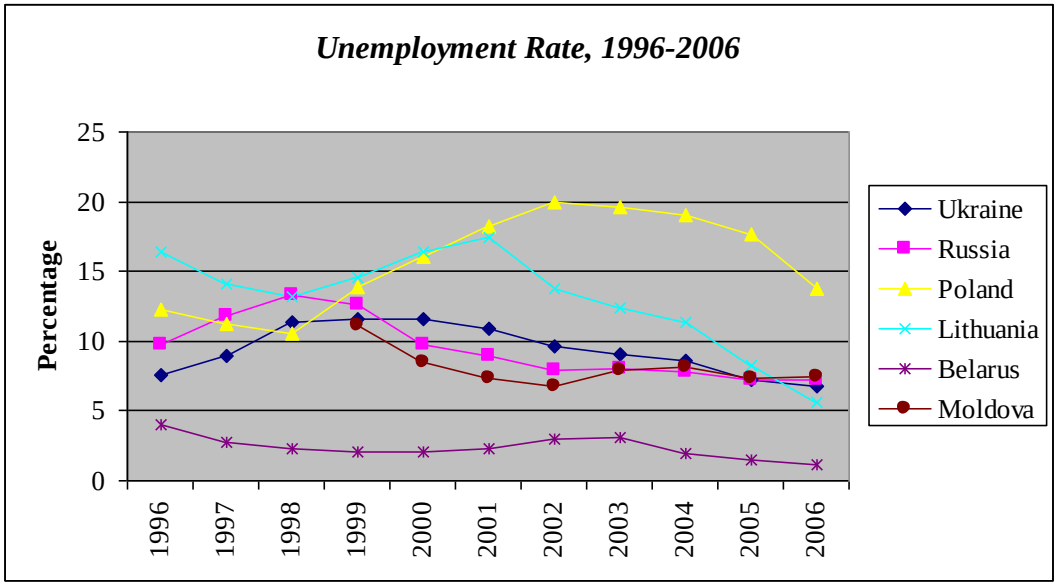
Source: ***World Bank Database*** **(2008).**

Data for services, value added, percentage of GDP, are shown in Figure 1.10. Unlike agriculture, where each country experienced a contraction, services expanded; in fact, each country's percentage indicated that services were more important as a percentage of GDP than either industry or agriculture. Poland had the highest average (63.33%), and the third greatest growth (5.42%). Lithuania ranked second in average (60.74%), and fourth in growth (4.59%). Russia's average was 57.13%, but it had the lowest increase (2.85%). Moldova and Ukraine had similar averages of 52.24% and

[105] Sekarev, *op. cit.*, p. 38.

51.32%. Moreover, they experienced significant growth of 28.92% (first) and 9.31% (second) respectively. Moldova's percentage of 66.81% in 2006 was the greatest recorded value for any given year. Following modest growth of 4.31%, Belarus' average of 47.76% was the only one recorded below 50%. The greatest discrepancy recorded between services and industry was in Poland (31.98%), and between services and agriculture Poland also exhibited the greatest difference (58.01%). The smallest difference between services and industry was found in Belarus (8.1%), whereas for services and agriculture it applied to Moldova (26.81%). The overall average for the six countries was 55.42%. This was 22.62% greater than in industry and 43.64% greater than in agriculture.

Figure 1.11

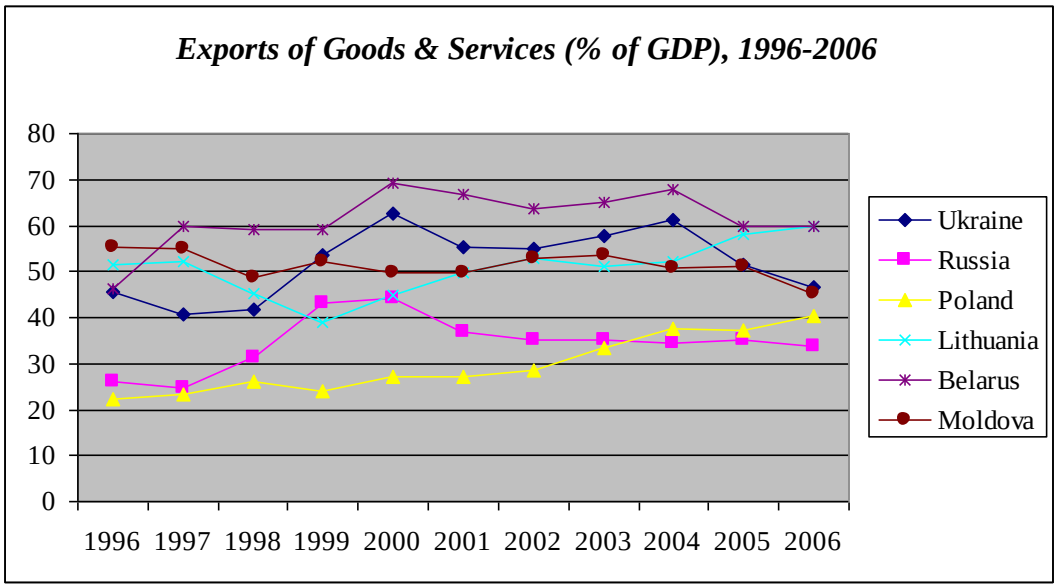


Source: ***Laborsta*** **(2007)**

Unemployment rates are presented in Figure 1.11. An interesting legacy of planned economies was their ability to keep unemployment virtually non-existent. After independence, however, assessing the true extent of unemployment posed significant problems: most unemployment remained hidden and a significant number of employees either worked in the rapidly growing unofficial sector or remained 'on leave' from their employer. Poland clearly had the highest unemployment average at 15.65%, leading all

countries from 2001 onwards. It was the only country to experience an increase (1.5%), and it recorded the highest single year value (19.9% in 2002). Lithuania had the second highest average at 13.05%, but was the most successful in unemployment reduction (10.8%), especially from 2001. Similar averages were recorded for Russia (9.47%) and Ukraine (9.38%), with the former reducing unemployment by 2.5% compared to 0.8% in the latter. A decrease of 3.7% in unemployment allowed Moldova to record the second lowest average of 8.05%; however, data from the first three years (1996-1998) was not available. Belarus had the lowest unemployment rate throughout: recording an average of only 2.39% and a reduction of 2.8%.

Figure 1.12

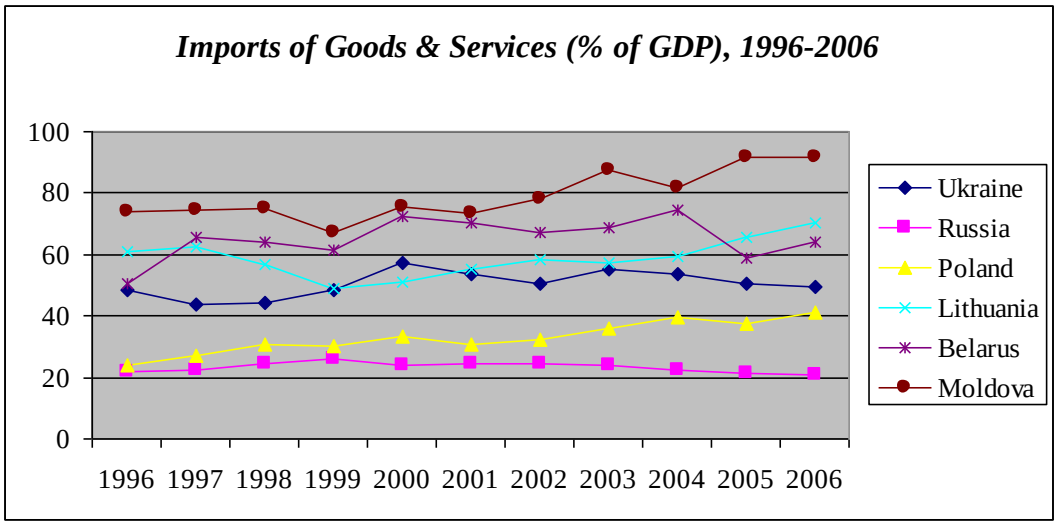


Source: ***World Bank Database*** **(2008).**

Figure 1.12 illustrates the exports of goods and services as a percentage of GDP. Belarus had the highest percentage from 1997 onwards and the best overall average (61.53%). This represented an increase of 13.57% (second). It also had the highest value in a given year (69.21% in 2000). Ukraine had the second best average (51.99%), but the lowest overall increase (0.97%). With an average of 51.24%, Moldova ranked third; however, it was the only country to experience a decline (10.04%). Lithuania's average was 50.59% and it saw an increase of 8.25%. Only Russia and Poland had averages

below 50%: Russia's was 34.54%, and an increase of 7.72% was calculated, whereas Poland's was 29.71%, despite total growth of 17.98% (first).

Figure 1.13

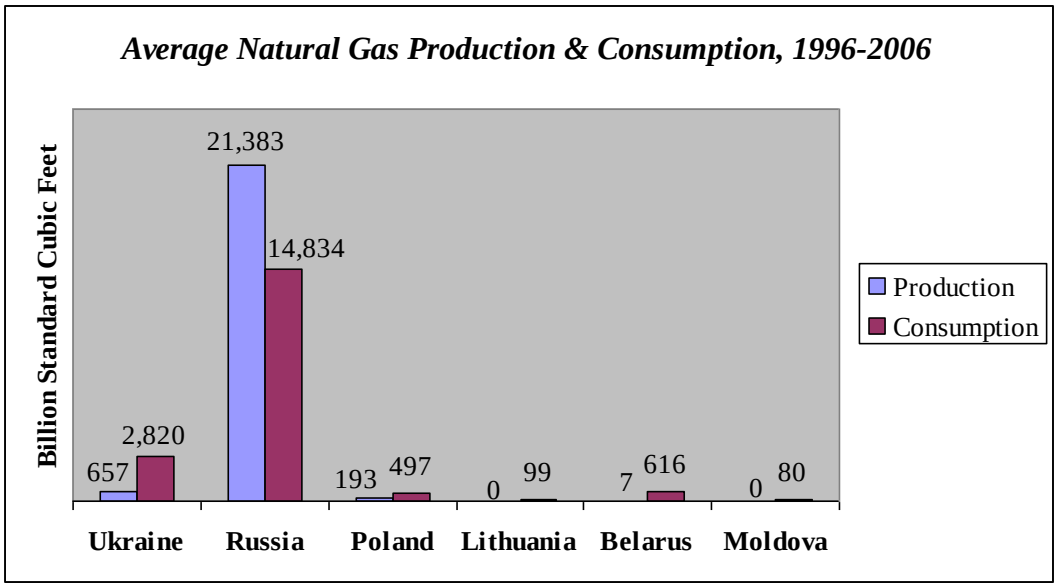


Source: ***World Bank Database*** **(2008).**

Figure 1.13 illustrates the imports of goods and services as a percentage of GDP. With a leading average of 79.12%, Moldova consistently ranked first. Such was their importance that figures in 2005 and 2006 were 91.67% and 91.79% correspondingly, and overall growth was the highest (17.87%). Belarus, which had the greatest percentage in exports, was second in imports as a percentage of GDP with an average of 65.29% and a cumulative increase of 13.78%. Having experience growth of 9.16%, Lithuania ranked third in average (58.71%), followed by Ukraine's average of 50.47% (+1.27%). The same two countries again had averages below 50%, but the ranking was reversed: Poland witnessed substantial growth of 17.21% to finish with 32.91%, whereas Russia's was 23.3% and it was the only country to record a decline (0.77%). Only Russia and Ukraine had greater averages for exports than imports at 11.24% and 1.52% respectively. Moldova experienced the greatest discrepancy between the two, as its figure for imports was 27.88% greater. The corresponding values for Lithuania, Belarus and Poland were 8.12%, 3.76% and 3.19%.

Given the importance of energy issues to the aforementioned countries, it is necessary to provide a brief overview of each one's gas, oil, electricity and coal sectors. The numerous problems concerning energy constitute an important consideration, illustrated by the fact that Ukraine, for example, imported $15bn worth of fuel annually and was the world's largest gas importer in the 1990s.[106] Moreover, as noted, Ukraine was transformed from an exporter to a net importer of energy sources during the 1970s. Consequently, by 1991 it depended upon Russia for 100% of its natural gas supplies and 88% of its oil, whilst capable of meeting only 60% of its own primary energy needs.[107] Energy dependency and the need for imports played a significant role in each country.

Figure 1.14



Source: ***Energy Information Administration*** **(2008)**

An illustration of the average production and consumption of natural gas in billion standard cubic feet (BSCF) is provided by Figure 1.14. Not only was Russia the leading country here, but it was also the only self-sufficient one. The others were all dependent upon natural gas imports, most of which originated from Russia. In terms of domestic

[106] M. Balmaceda. 'Gas, oil and the linkages between domestic and foreign policies: the case of Ukraine,' *Europe-Asia Studies*. Vol. 50, No. 2, (1998), p. 258.
[107] A complete explanation of subsidies and statistical analysis is given in G. Krasnov and J. Brada. 'Implicit subsidies in Russian-Ukrainian energy trade', *Europe-Asia Studies*. Vol. 49, No. 5, (1997), p. 826.

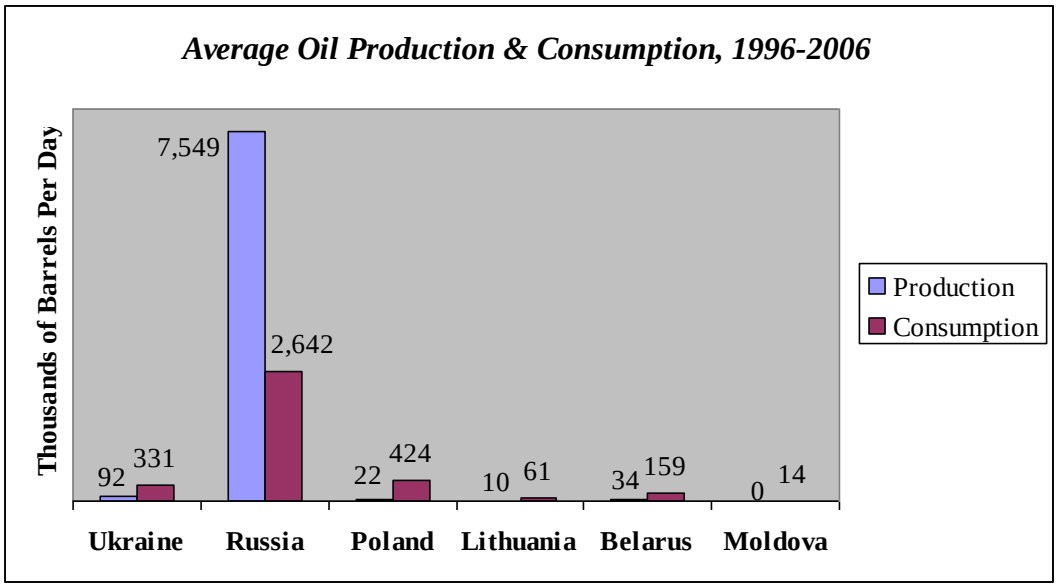
production, Poland was able to meet 38.8% of its own requirements on average, followed by Ukraine (23.3%) and Belarus (1.1%). Lithuania and Moldova did not produce natural gas. Russia increased its production by 1,932 BSCF. Likewise, Ukraine and Poland produced more, but only by 46 and 35 BSCF correspondingly. In contrast, Belarus saw production fall by 5 BSCF. Consumption increased in each country, except Ukraine (-374 BSCF). The largest increase was calculated in Russia (2,094 BSCF), followed by Belarus (246 BSCF), Poland (112 BSCF), Moldova (23 BSCF) and Lithuania (11 BSCF). The gas sector was by far the most important energy one in Ukraine and the one with the most severe financial difficulties. An example of the effect of gas imports was that in 1997 the total amount was $5bn, or more than 50% of net energy totals, and over 25% of all Ukrainian imports.[108]

Given Ukraine's indebtedness to Russian energy imports, much of the country's oil and gas infrastructure was opened to Russian investors, as part of a debt-for-equity scheme.[109] Natural gas, exported until 1978, and oil were not initially subjected to transactions at full world prices; a comprehensive agreement was signed in early 1994 to lower transit fees for Russian natural gas through Ukraine to Europe and natural gas prices for Ukraine. This indicated the existence of subsidies, with Russia financing a large part of Ukraine's purchases of oil and gas. In 1996, debt to Russia for the delivery of energy supplies amounted to $5bn.[110] In return for reduced prices of imported natural gas, Ukraine lowered transit fees and used the remainder of transit revenues to reduce the current account deficit and pay off debts to Russia for gas deliveries until 1996, when the price subsidy component of transfers was eliminated.[111] The need for energy and the dependency on foreign energy imports removed funds from modernisation and diversification projects.[112] Interestingly, the Russian government's decision not to

[108] C. von Hirschhausen and V. Vincentz. 'Energy policy and structural reform', '*Economic Reform in Ukraine: The Unfinished Agenda*. Åslund & de Ménil (eds.). (Armonk, 2000), p. 167.
[109] R. Puglisi. 'Clashing agendas? Economic interests, elite coalitions and prospects for co-operation between Russia and Ukraine', *Europe-Asia Studies*. Vol. 55, No. 6, (2003), p. 839.
[110] Krasnov and Brada, *op. cit.*, p. 827.
[111] An example was when Russian gas imports declined from $80/1000m³ to $50/1000m³ in return for a reduction in transit tariffs by 31%. From 1996 *Gazprom* began to supply natural gas to Ukrainian enterprises at world prices. The reduction in subsidies can be seen as a reaction to Ukraine's refusal to provide Russia with political and strategic benefits. E. Foster. *L'économie de l'Ukraine: une progression uncertaine vers l'Union européenne*. Les Études du CERI, No. 73. (December, 2000), p. 15.
[112] Dienes, *op. cit.*, p. 133.

discontinue the supply of energy exports, and to bear the financial consequences of non-payment can be attributed to: Ukraine's control over Russian export pipelines; Russia's vested interest in Ukrainian economic stability, given the dependency on energy supplies; and, international pressure which supports Ukraine's position in return for a guarantee to surrender strategic missiles to Russia.[113] Nonetheless, Ukraine has paid above average world prices for oil and gas imports, partly because of Russian excise taxes.[114]

Figure 1.15



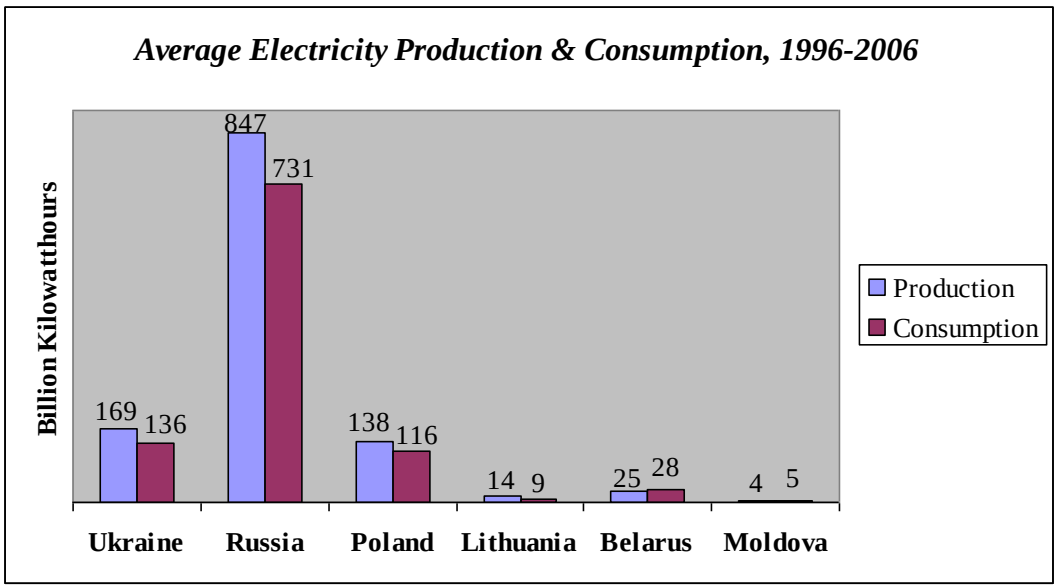
Source: ***Energy Information Administration*** **(2008)**

Figure 1.15 shows the average production and consumption figures in thousands of barrels per day (TBPD) for oil, including crude oil, natural gas plant liquids, other liquids and refinery processing gains. Russia was once again the leader in production and consumption and the only self-sufficient one. The others were not only dependent upon oil, but the majority of their imports again originated from Russia. Concerning domestic production, Ukraine was capable of meeting on average only 27.8% of its needs, followed by Belarus (21.4%), Lithuania (16.4%) and Poland (5.2%). Moldova did not have any domestic production. Four countries witnessed growth in their production:

[113] Krasnov and Brada, *op. cit.*, p. 839.
[114] A. Toritsyn and E. Miller. 'From east to west, and back again: economic freedom and Ukrainian foreign policy', *European Security*. Vol. 11, No. 1, (2002), p.14.

Russia (3,658 TBPD), Poland (27 TBPD), Ukraine (23 TBPD) and Lithuania (2 TBPD). As was the case with gas production, Belarus also experienced a decrease in oil production (0.14 TBPD). Oil consumption increased in half of the countries: Russia (211 TBPD), Poland (141 TBPD) and Lithuania (3 TBPD), whereas it declined in Ukraine (50 TBPD), Belarus (38 TBPD) and Moldova (4 TBPD).

Figure 1.16

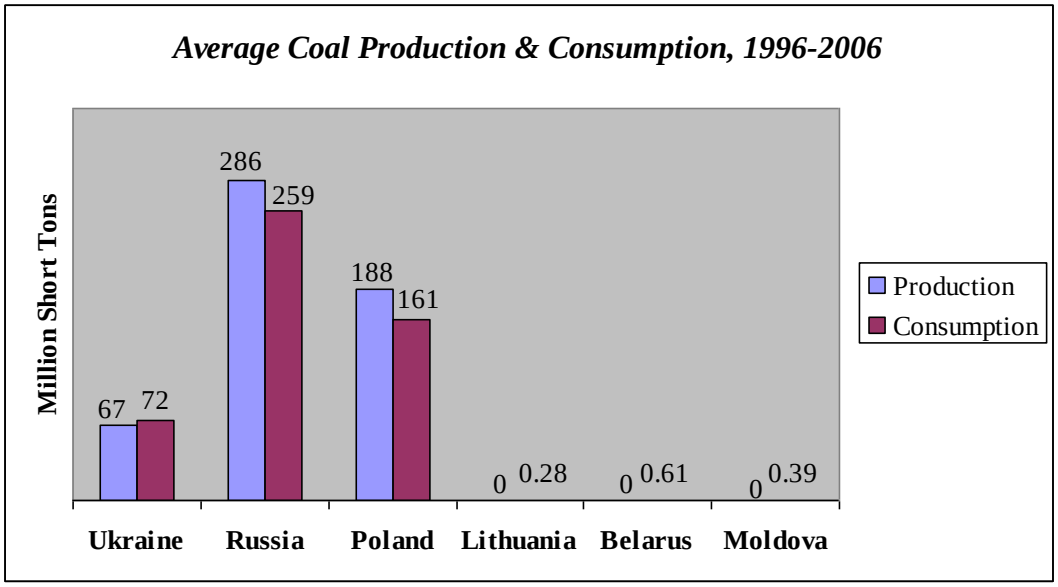


Source: ***Energy Information Administration*** **(2008)**

Figure 1.16 illustrates average electricity production and consumption in billion kilowatt hours (bn kWh). Russia again led in production and consumption; however, Ukraine, Poland and Lithuania were also self-sufficient. Unlike, higher dependency rates for gas and oil imports, domestic production was capable of meeting a greater proportion of needs for the two countries that were not self-sufficient. For example, Belarus and Moldova could satisfy 89.3% and 80% of their respective needs on average. Likewise, four countries witnessed increased production: Russia (134bn kWh), Poland (18bn kWh), Ukraine (9bn kWh) and Belarus (8bn kWh). However, Lithuania and Moldova saw contractions of 3bn kWh and 2bn kWh respectively. Electricity consumption in each country grew, except in Moldova (-0.04bn kWh). The greatest growth occurred in Russia (117bn kWh), with lesser increases in Poland (14bn kWh), Belarus (3bn kWh), Lithuania

(2bn kWh) and Ukraine (1bn kWh). This was the only energy sector in Ukraine that did not require imports, and production (65% thermal, 25% nuclear and 10% hydro) was consistently maintained higher than consumption levels. Although production here is self-sufficient, Ukraine is dependent upon Russian nuclear fuel for reactors.

Figure 1.17

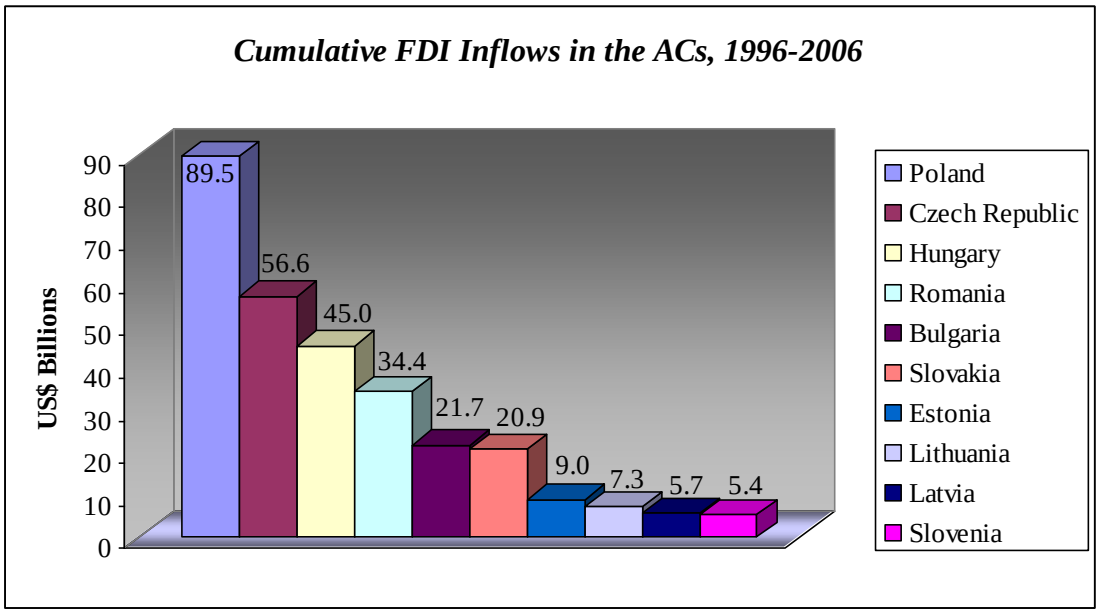


Source: ***Energy Information Administration*** **(2008)**

Average coal production and consumption figures in million short tons (m S/T) are shown in Figure 1.17. Russia was again the leader, a position it also enjoyed in the gas, oil and electricity sectors. Russia and Poland were the only self-sufficient countries. Although Ukraine met 93% of its domestic needs on average, Lithuania and Belarus did not produce any coal and were completely dependent on imports. Moldova did produce coal between 1996 and 1998, but its average production was only 0.01m S/T. Moreover, its decline was 0.04m S/T. Russia managed to increase its production (39m S/T), whereas for Ukraine this figure was 5m S/T. However, Poland experienced significant contraction (51m S/T). Coal consumption only increased in Lithuania (0.069m S/T), whereas decreases were as follows: Russia (51m S/T), Poland (34m S/T), Ukraine (1.3m S/T), Moldova (1.2m S/T) and Belarus (1m S/T). Of the aforementioned sectors, coal clearly exhibited the greatest decline.

In Ukraine, the coal industry poses a great political and economic challenge, however. With the increased usage of atomic power plants because of the inefficiency and dilapidation of the Donbas coal fields, the need to import energy supplies and industry energy-intensiveness continuing to grow, this has also proven to be a problem: consumption was higher than production, thus necessitating the need to import from Russia and Poland (20%).[115] Substantial reserves exist, but production is unprofitable: loses equalled 2-3% of GDP in 1998 and restructuring is hampered by political and financial considerations.[116]

Figure 1.18



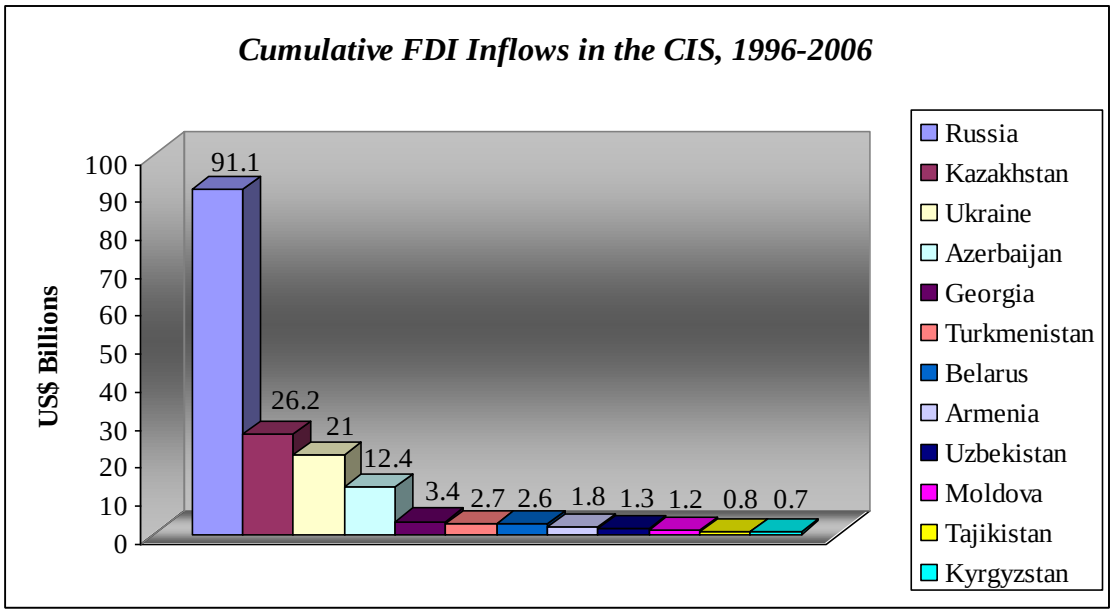
Source: *UNCTAD* (2008).

Figure 1.18 shows cumulative FDI inflows in the ACs. Although high levels of investment are not surprising in the Czech Republic, Hungary and Slovakia, significant inflows to Romania and Bulgaria, especially in 2006, serve as further proof of the importance of EU economic directives in preparation for accession, an important aspect of which includes openness to investment and greater privatisation. In particular, efficiency-seeking FDI was important, given competitive labour costs. As was the case

[115] L. Lovei and K. Skorik. 'Energy sector reform in Ukraine: mid-term report', *Ukraine at the Crossroads: Economic Reforms in International Perspective*. Siedenberg & Hoffman (eds.). (Heidelberg, 1999), p. 340.
[116] von Hirschhausen and Vincentz, *op. cit.*, p. 173.

with Russia, the bulk of investment in these two countries occurred after 2003, when preparations for their accession in 2007 were being finalised. Investment in Lithuania ranked eighth, higher than only Latvia and Slovenia. In UNCTAD's *Transnationality Index*[117] for 2004, Estonia, Slovakia, Hungary and the Czech Republic recorded above-average (simple) figures for developed economies, whereas the opposite held true for Poland, Latvia, Slovenia and Lithuania. Romania and Bulgaria recorded above-average (simple) performances for South-East Europe and the CIS.

Figure 1.19



Source: *UNCTAD* (2008).

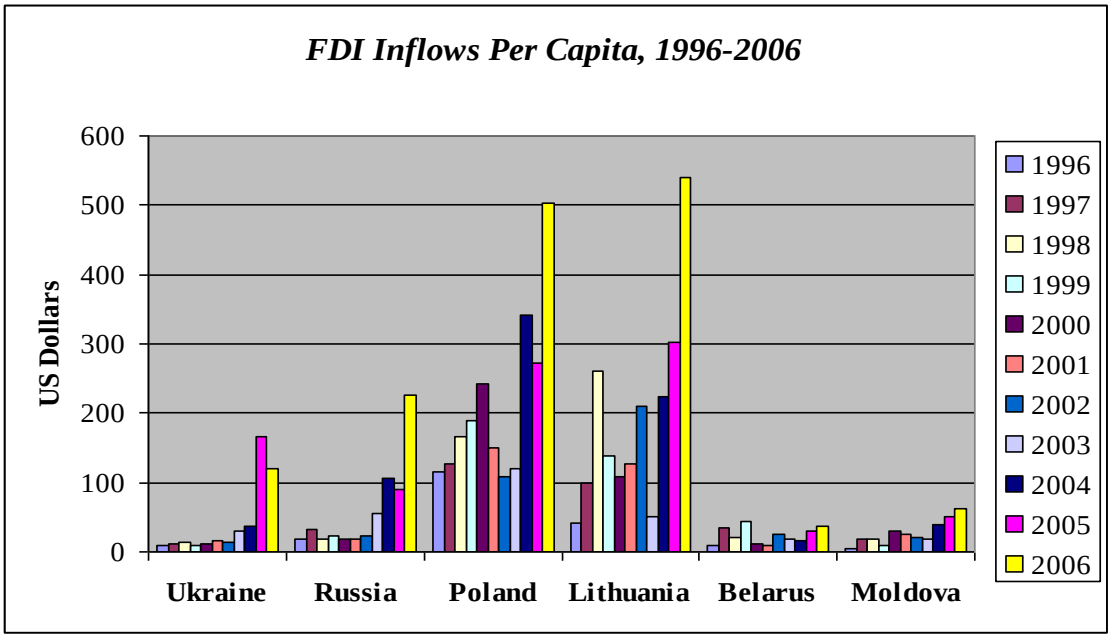
Figure 1.19 illustrates cumulative FDI inflows in the CIS. Although Russia's values were greater than Poland's, the most apparent difference between cumulative inward FDI in the ACs was the significantly lower inflows in the latter. In fact, Kazakhstan was ranked second in the CIS with $26.2bn, following unprecedented investment in 2006, which was similar to Bulgaria ($21.7bn), but less than the Czech Republic ($56.6bn), Hungary ($45.0bn) and Romania ($34.4bn). Cumulative inflows in

[117] This is based on the average of four shares: FDI inflows as a percentage of GFCF; FDI inward stock as a percentage of GDP; value-added of foreign affiliates as a percentage of GDP; and, the employment of foreign affiliates as a percentage of total employment. All averages are based on 2004 figures, except the former which includes a three-year period (2002-2004).

Kazakhstan, Ukraine and Azerbaijan amounted to only 65.42% of that received by Russia. Furthermore, eight CIS countries had lower inflows than the last placed Slovenia ($5.4bn). Total inflows to the ACs reached $295.26bn, whereas CIS inflows were only $165.20bn, or 55.95% less. Each CIS country had a below-average (simple) score in *Transnationality Index* in 2004. Investment in the CIS was largely for the purpose of exploiting raw materials and could be classified as vertical FDI. The lack of product differentiation and high R&D intensive input in many investment projects was another indication of this, as was the existence of factors such as higher transaction and transport costs and factor and product prices (Caves, 1971, 1974, 1996; Chen, 2000). The motivations here were natural resource-seeking and market-seeking to supply regional markets.

However, cumulative inflows cannot illustrate the wider picture. Given variations in important variables, such as population and economic size, there is a need to examine the greater importance of FDI inflows on a per capita basis.

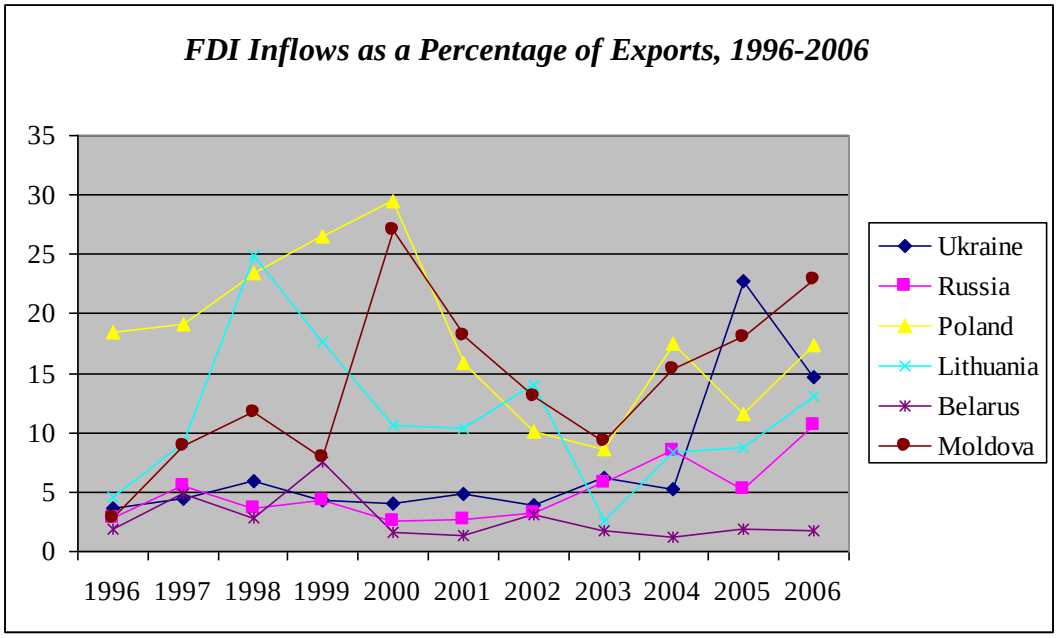
Figure 1.20



Source: *UNCTAD* (2008).

Figure 1.20 illustrates FDI inflows per capita. Although Poland's cumulative FDI inflows were $1.642bn less than Russia's, it ranked first in FDI inflows per capita with an average of $212.21 and second in overall change, having increased its amount by $386.84. Poland was also the only country to maintain a figure greater than $100 throughout. With an average of $191.37, Lithuania ranked second in average and first in growth ($497.68), compared to fourth in cumulative FDI. However, it experienced greater frequency with larger fluctuations. Russia had an average of $57.18 and growth of $208.81, followed by Ukraine with an average of $40.32 and an increase of $110.09. Both passed the $100 mark twice for a specific year. Belarus and Moldova ranked fifth and sixth in cumulative FDI and both were also at the bottom two in per capita FDI in averages and differences. Moldova's average was $27.13, whereas for Belarus the figure was $23.30. Neither country managed to reach a per capita figure of $100. In growth, Moldova's rose by $57.65 and for Belarus the figure was $26.13.

Figure 1.21

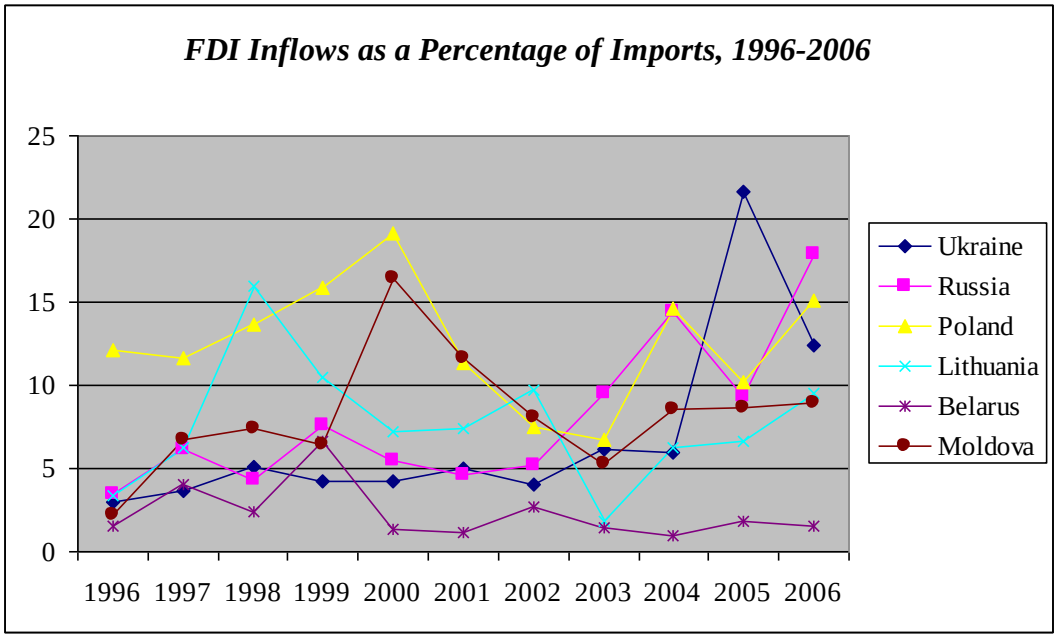


Source: *UNCTAD* (2008).

Figure 1.21 illustrates FDI inflows as a percentage of exports. What is apparent is the degree of change and volatility for Poland, Lithuania and Moldova. For example, Moldova experienced the greatest influence, as its 1996 figure of 2.89% had increased

19.93% by 2006. Consequently, it went from fourth place to first, despite having the lowest cumulative FDI inflows and stocks and the second lowest inflows and stocks on a per capita basis. Ukraine experienced the second largest increase (10.99%), although its 2006 figure of 14.61% fell by 8.21% from the previous year to finish third. Ranked second in FDI inflows and stock per capita, Lithuania witnessed the next largest increase (8.48%) to finish with 13.02% (fourth). It was followed by Russia, the leading country in cumulative FDI flows and stocks and third on a per capita basis, at 10.66% (+7.81%). Despite being ranked second in cumulative FDI inflows and stocks and second in FDI per capita, Poland experienced a slight decrease of 1.07% to finish second at 17.34%. However, this marked a significant decline from the leading 29.52% recorded in 2000. The only other country to experience a decrease was Belarus, where cumulative FDI inflows and stocks were only higher than in Moldova and per capita inflows and stocks were the lowest. In 2006, its FDI inflows as percentage of exports stood at 1.79% (-0.06%). Belarus was the only country where this did not become greater than 10%

Figure 1.22

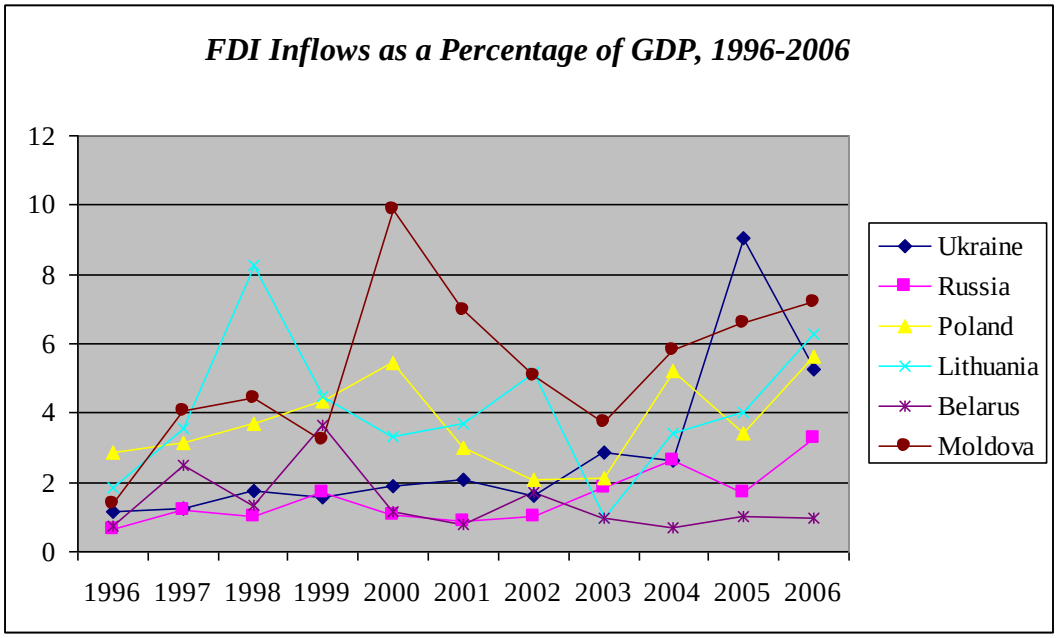


Source: *UNCTAD* (2008).

Figure 1.22 shows FDI inflows as a percentage of imports. Contrary to developments in FDI inflows as a percentage of exports, each country witnessed growth.

The greatest increase was recorded for Russia at 14.43% to finish with a figure of 17.88%. This value was greater than FDI inflows as percentage of its exports (10.66%). Russia was the only country to record a better value for FDI inflows as a percentage of imports; it ranked fourth in the growth of FDI inflows as a percentage of exports. Ukraine again recorded the second greatest increase: FDI inflows as a percentage of imports rose by 9.48% to 12.44% (third). However, this was a marked decline of 9.16% from its 2005 value, a similar experience was recorded for exports (-8.21%). In 2006, Ukraine's FDI as a percentage of imports figure was lower than its value for FDI as a percentage of exports (14.61%). The third largest increase was calculated in Moldova (6.71%), which had the highest growth in FDI inflows as a percentage of exports to 8.93%. However, this was significantly less than the country's figure for FDI inflows as a percentage of exports (22.82%). In fact, this difference (13.89%) marked the greatest discrepancy for any country in the increase of FDI inflows as a percentage of exports and imports. Despite growth of 6.16%, Lithuania finished at only 9.5%, a figure less than its value for FDI inflows as a percentage of exports (13.02%). Poland again did not witness much change, but it did see growth of 3.01% to 15.12% (second overall). Similarly there was a decline in such values after 2000, a peak year for world FDI, when the single greatest value for any country was recorded (19.09%). Poland's value of FDI inflows as a percentage of imports was also lower than the same value for exports (17.34%). Finally, the lowest increase was calculated for Belarus (+0.08%) where FDI inflows as a percentage of imports stood at 1.59% in 2006. This value was 0.2% less than the country's value for FDI inflows as a percentage of exports, in which Belarus also had the lowest value.

Figure 1.23



Source: *UNCTAD* (2008).

Figure 5.10 shows FDI inflows as a percentage of GDP, in which each country witnessed growth. Moldova experienced the greatest single increase, as values grew by 5.81% to a leading 7.21%. This was, however, less than its highest recorded value of 9.9% in 2000. The amount of growth was also less than the greatest increase recorded for FDI inflows as a percentage of exports (19.94%) and imports (14.43%). Nonetheless, Moldova had the highest amount of FDI inflows as a percentage of GDP six times. Lithuania experienced the second largest growth (+4.42%) and had 6.28% in 2006. Having experienced growth of 4.09%, Ukraine calculated the third largest increase to finish with 5.26%. However, this value had been 9.06% the previous year. Poland and Russia experienced similar growth of 2.77% and 2.63% to values of 5.65% (third) and 3.29% (fifth) respectively. Belarus again not only experienced the lowest growth (+0.24%), but had the lowest value in 2006 at only 0.96%.

6. Conclusion

The Soviet economic model meant the CPSU guarded economic affairs, the state owned the means of production and central planning controlled economic activity. *Gosplan* defined production and orders, whereas *Gossnab* 'synchronised' commodity supplies and purchases. It was not only complex and bureaucratic, but it showed little regard for efficiency, profit and economic representation in the regions and republics. Large-scale industrialisation and collectivisation, creating economic interdependency and regional prioritisation, ensued. It focused on heavy industry and natural resource exploitation, with material goods prioritised at the expense of services. Consequently, Ukraine acquired a deformed economic structure, and experienced stagnation. Declining growth, a technology lag and increasing external debts spelt the end of the CMEA and USSR in 1991. Post-Soviet transition in Ukraine has been difficult and complicated, involving nation building, democratisation and marketisation, as priority was given to the former at the expense of economic reforms. With no genuine restructuring process formulated and supported, the economy went from recession to depression, only beginning to show growth in 1999-2000. Energy imports continued to weaken Ukraine's position, and much needed FDI never fully materialised.

Ukraine's WTO accession negotiations were difficult and prolonged. The process ensured: market access for goods and services were improved; many trade barriers concerning quantitative restrictions, content stipulations and excise taxes were eliminated; MFN tariff rates further stimulated trade; and, several bilateral market access protocols were established. Although Ukraine seeks EU membership, there remains no specific commitment. The PCA and EUUAP preserve and reinforce transparent and open trade relations. In particular, the former liberalised trade in key areas (textiles and clothing), with Ukrainian import tariffs equal to EU bound tariffs; however, violations existed in continuing quantitative restrictions on imports and exports, disproportionate certification charges and favouring specific domestic producers and agricultural products. The GSP has benefited Ukrainian exports, but it does not apply to many fundamental export commodities (steel, iron, fertilisers and several agricultural products). Moreover, the EU employs steel import quotas and anti-dumping duties against Ukrainian chemical and metallurgical products. The CIS operates free trade, but this tends to be intra-bloc

and largely formulated by bilateral trade agreements. Such allow for specified protectionism and they are unable to resolve trade disputes or formulate a competition policy. Great uncertainty exists about market access, because of defence measures in intra-bloc trade, and the fact customs regulations and national standards do not exist, despite CIS recognition of its member states' standards.

As was the case with Ukraine, the legal basis of Russia's EU trade is the PCA. The CES aims to create a greater integrated market and economy with regulatory convergence. Another exceptional aspect is energy-related issues outside the EEnC. Poland's GATT membership facilitated earlier customs reform and tariff liberalisation towards meeting EU and WTO membership. The EA advanced greater trade liberalisation, but restructuring was required in the 'sensitive' sectors. Poland's EU integration was facilitated by its hierarchy of trade treaties helped by the IA. EU membership in May 2004 ended independent trade policy outright, replacing it with directives formulated and implemented by the European Commission and European Council. Consequently, the CCP is applied to non-EU trading partners. Lithuania underwent the same process and trade is likewise governed by the same conditions. Belarus favours close ties with Russia (e.g. the Customs Union and the Russia-Belarusian Union) and the CIS, and it does not prioritise the WTO or participate in closer EU economic partnerships. Unlike Russia, Moldova and Ukraine, Belarus does not have a PCA, and it does not share the ENP with Ukraine or Moldova. EU trade is governed by MFN provisions dating back to 1989. Since 2004, Moldova has favoured greater EU integration through the PCA, ENP and EUMAP. It further remains a significant beneficiary of TACIS, CBC, and EIDHR. Its CIS trade policy is independent, but often characterised by problems of transparency with bilateral agreements, unilateral exclusions and the application of quantitative quotas, safeguarding and dumping measures.

Russia's population is not only the largest, but also greater than all others combined. In GNI per capita PPP Poland and Lithuania were leaders, whereas Moldova was the poorest. Ukraine achieved the greatest GDP growth, but had a poor average. Belarus experienced steady growth here to record the best average. In terms of current GDP, Russia's value was greater than the combined amount; however, an examination of

GDP per capita revealed Poland and Lithuania were leaders. Moldova was consistently the poorest, but also accumulated the least debt. Russia and Poland had the greatest debts, with Poland and Lithuania the most successful in servicing this as a percentage of exports of goods, services and income. Lithuania led in inflation management, whereas Belarus suffered bouts of hyperinflation. Russia experienced the highest average and growth in its current account balance, as a percentage of GDP, contrasted by Moldova having the lowest. Only Belarus and Lithuania witnessed growth in industry, value added, as a percentage of GDP, whereas values fell throughout for agriculture. Moldova was the only country to have greater percentages for the latter. Values not only universally increased in services, but this sector was also the most buoyant. Unemployment was prominent in Poland, yet almost negligible in Belarus. Regarding exports of goods and services as a percentage of GDP, Belarus was the leader, but second to Moldova in such imports. Russia dominated all aspects of energy production and consumption, with the others being mostly energy dependent. Russia and Poland were the largest recipients of cumulative FDI inflows. Inflows into the ACs were greater than those into the CIS. When inflows were examined on a per capita basis, however, the situation changed: Poland and Lithuania were the leaders, followed by Russia, Ukraine, Moldova and Belarus. FDI inflows as a percentage of exports, which is a good example of export-oriented FDI, illustrated that Moldova experienced the greatest growth in 2006. The growth of FDI inflows as a percentage of imports reflected different results. In 2006, Russia and Poland were ranked first and second and Ukraine was third. Such growth was less significant in Poland and Lithuania and almost negligible in Belarus. Inflows were also measured as an average percentage of GDP in which Moldova experienced the greatest increase. This was a significant development, given the country's low cumulative and per capita inward FDI flows. Lithuania ranked second, with Russia and Belarus finishing fifth and sixth. In order to ascertain one aspect of change in foreign trade, the next chapter examines and analyses RCA in trade with the European Union.

CHAPTER 2

THEORY & EMPIRICAL ANALYSES OF REVEALED COMPARATIVE ADVANTAGE WITH THE EUROPEAN UNION

This chapter analyses RCA in EU trade between 1996 and 2006. The first section addresses relevant themes in the literature. Section 2 outlines structural changes in each country's foreign trade with the EU. The following section identifies specific industries that illustrate RCA in EU trade. To allow for greater comparative analyses, the top 30 RCA export commodities of each country are presented in tables. This information allows for an assessment of RCA developments which is presented in the third section. Balassa's model illustrates RCA trade patterns and their evolution, or lack thereof, providing a platform to examine the performance and development of a key aspect of economic transformation because comparative advantage theory reveals trade in *different* products between countries. The examination of RCA, therefore, facilitates a better understanding of product specialisation, according to existing factor endowments. Such analysis intends to highlight emerging differences in countries' trade patterns, explained by the theoretical considerations of RCA and differences in factor endowments. In cases where different countries trade in *similar* products from the *same* industry, an analysis of IIT serves as the basis for description and explanation (see Chapters 4 & 5). As Ukraine's economy is rather open, with foreign trade turnover greater than GDP[1], economic openness and participation in international trade are often cited as keys to economic growth and greater competitiveness (Barro & Sala-i-Martin, 1995; Berg & Krueger, 2003; Choudri & Hakura, 2000; Dollar & Kraay, 2001; and, Krueger, 1998).

1. Revealed Comparative Advantage (RCA)

Although economists have yet to arrive at a general consensus concerning theoretical explanations of competitiveness and comparative advantage, prominent theories of trade concerning comparative advantage exist in the Ricardian (1817) and the Eli Heckscher-Bertil Ohlin (H-O) theorems (Heckscher, 1949; Ohlin, 1933). In classical

[1] L. Freinkman *et al. op. cit.*, pp. 27-31.

Ricardian theorem, comparative advantage is assumed, with technological differences between countries, under the supposition that homogeneous products, constant returns to scale and perfect competition exist and that transport costs are irrelevant. Ricardo believed that two commodities are produced by one production factor, labour, at a stable cost; hence, a country will export commodities that can be produced at a cheaper cost than other countries. Thus, perfect specialisation occurs, inter-country wage differences remain and intra-country distributional problems do not exist. Ricardo further makes the point that variables in trading partners may be observed when an economy embarks upon the transition from a closed one to an open one, because of a considerable impact on the distribution of labour and on trajectories (e.g. the profit rate and capital accumulation). The direction of trade is dependent upon comparative advantages present when an economy opens to trade. The most important attribute of perfect competition is the operation of market forces, influencing the behaviour of producers and consumers. A notable shortcoming of the Ricardian theorem is its inability to explain the impact trade has on a country's income distribution and what determines comparative advantage.

However, no economist had presented a full theory as to why countries export certain goods and yet import others. This prompted Heckscher and Ohlin to create the dominant trade theory of the twentieth century: the H-O theorem assumes that technologies, tastes, commodity qualities and production factors are the same across all countries. This suggests that supply-side differences exist, with particular factor endowments for all countries. Therefore, comparative advantage is the product of cost differences that are the result of inequalities in countries' factor prices. Countries with relative amounts of capital are considered to export capital-intensive commodities, whereas those with relative amounts of labour will export labour-intensive ones. Comparative advantage, according to a country's factor endowments, is predicted to produce increasing specialisation: production uses relatively abundant factors, and imports those that use scarce ones. The main distinguishing feature between the Ricardian and H-O theorems is differences concerning the postulation of production functions.

Building on this, Paul Samuelson converted the model into a solvable general equilibrium system by specialising it to two commodities, two factors and two countries (the 2x2x2 case), in order to create the Heckscher-Ohlin-Samuelson (H-O-S) theorem. This assumes constant returns to scale, something Ohlin placed second to

differences in factor endowments. The principle of comparative advantage deriving from relative price determination, the differences in pre-trade relative prices across countries in conjunction with supply and demand, forms the basis of predictions within classical trade theories. Classical and neoclassical economists argue that the best possible commercial policy is free trade, based on comparative advantage that some argue cannot be accepted as given. Moreover, comparative advantage is not considered a necessary condition for trade; rather, it is viewed as sufficient and something that can be created.

There exist further theorems intimately related to the H-O theorem. First, the Stolper-Samuelson (S-S) theorem argues that tariff imposition makes the relative price of labour-intensive commodities increase, and that, under the assumption of perfect competition and constant returns, any rise in the relative price of a commodity increases the return to the factor most intensively used in the production of that commodity, thus causing the return to the other factor to decrease (Stolper & Samuelson, 1941). Second, the Factor-Price-Equalisation (F-P-E) theorem states that factor prices, not necessarily for each single one but for relative factors, between countries that do not differ in technology become equal under free trade in goods and greater competition, and that such equalisation is not affected by the international immobility of world market factors (Samuelson, 1948, 1949). In other words, only freedom of goods and services is sufficient, as inter-country wage differences disappear. Third, the Rybczynski theorem states that a decline in a commodity's relative price will occur when the supply of one of the factors of production is increased; this creates an enhancement in the production of that commodity using more of that specific factor (Rybczynski, 1955). In sum, the H-O and Rybczynski theorems address quantities of factors of production and commodity outputs, two economies in trading equilibriums, whereas the S-S and F-P-E theorems are concerned with commodity prices and factor prices in an open or closed economy. The S-S and Rybczynski theorems are subsequently used to prove the H-O and the F-P-E theorems.

Adam Smith's view of foreign trade was based on what can be called absolute advantage; in other words, a country exports goods involving lower production costs than those incurred by its trading partner(s). Absolute advantage may already exist, or be acquired, and it is path dependent on an economy's evolution. Smith considered commodity exchanges caused specialisation, and the division of labour in a market

economy (Smith, 1976). He addressed the positive and normative elements of trade theory, whereas it has since become standard practice to separate the two, with the former explaining reasons for specialisation and the latter concerned with the advantages of free trade and the implications of trade restrictions. Although Smith's theory of foreign trade is considered inferior to Ricardo's, mostly for his inability to discover the role of competitive costs (Bloomfield, 1975; Myint, 1977), Smith asserted that the division of labour, dependent on the extent of the market, plays a fundamental role in wealth creation and is in accordance with the 'productivity' trade theory. With trade serving to increase productivity levels through the stimulation of the division of labour, the market itself can be extended by the addition of an export sector. Consequently, absolute advantage is endogenously determined by a country's development path and trade patterns. Thus, factor endowments do not determine the role in establishing a country's trade patterns, but they support the process. The 'productivity' theory proposes a pattern of cumulative causation in which trade influences a nation's advantages, by means of an irreversible feedback process. It, therefore, makes Smith 'the intellectual forefather of the new theories of international trade' examined in the following chapters.[2]

Another particular trade consideration is the 'availability' theory of Kravis (1956), stating that a country will export resources or goods unavailable in foreign markets. This is an example of comparative, or even absolute, advantage. Further arguments have been made by Krugman (1980) that economies of scale influence trade specialisation, and Hanusch and Pyka (2005) who emphasise the neo-Schumpeterian view that trade specialisation and competitiveness are related to the learning processes and the attainment of new technology. A country's growth rate may also be permanently reduced by improper specialisation (Lucas, 1988; Young, 1991; Grossman & Helpman, 1991). The evolution of international trade can further be determined by factor accumulation (Findlay, 1970, 1995; Deardoff, 1974). In sum, there are many various sources of comparative advantage, such as different technologies, factor endowments, tastes and a country's ability to maximise economies of scale. According to the H-O theorem, different countries have various factor endowments in different proportions or, according to the 'availability' trade

[2] A. Maneschi. *Comparative Advantage in International Trade: A Historical Perspective*. (Cheltenham, 1998), p. 48.

theory, a country may have resources to the exclusion of other countries, a particular interest in early trade.

The H-O theorem states that relative factor scarcity, factor endowment ratios measured relative to a set of countries or the rest of the world, determines comparative advantage(s). However, Balassa notes particular difficulties in measuring comparative advantage because relative prices cannot be observed under autarky.[3] Balassa (1965) postulates comparative advantage may forego the inclusion of all constituents which affect it, suggesting that observed trade patterns using non-observable, pre-trade relative prices are required to present comparative advantage that is indeed 'revealed'. The Balassa indices were justified in that "revealed" comparative advantage can be indicated by trade performance regarding manufacturing products in the sense that the commodity pattern of trade reflects relative costs and differences in no-price factors. Hence, RCA is the inference of comparative data from observed data, and this has become a common method to analyse trade data. Therefore, his resulting index attempts to determine whether a country has a comparative advantage, without attempting to analyse the underlying factors that may or may not contribute to it. The definition of RCA has, however, been subject to revision and adaptation since its initial formulation (Kunimoto, 1977; Bowen, 1983; Vollrath, 1987, 1989). In addition to sub-global and regional levels in conjunction with Balassa's index, Vollrath (1991) measures RCA at a global level and Gual and Martin (1995) and Dimelis and Gatsios (1995) extend its application to measuring bilateral trade between two countries or trading partners.

Related research into RCA in CEE has been conducted by several authors. Hoekman and Djankov (1996) use SITC two-digit and four-digit level classifications for 1990, 1993 and 1996 to measure CEE exports. They conclude that, with the notable exception of the Czech Republic, little change occurred with the broad structure of trade, and that, for the exception of Poland, the role of FDI is irrelevant statistically, or has a negative association as regards RCA. Kaitila (1999) analyses trade between the EU and the Czech Republic and Hungary in 1997, focusing on extent and dependency using CN four-digit trade data. Kaitila and Widgrén (1999) further extend this application to trade between the EU and the Baltic States in 1996, concluding that the Baltic States compete against each other in the EU market, but

[3] B. Balassa. *Comparative Advantage, Trade Policy and Economic Development.* (New York: 1989), pp. 42-44. The first empirical RCA study was conducted by H. H. Liesner in 1958.

have geographically dispersed trade. Kaitila (2001) addresses differences in changing RCAs for the ACs, highlighting changes for those requiring greater levels of skilled labour and capital-intensive industries. Tochitskaya and Aksen (2001) use RCA to analyse the impact on the competitiveness of Belarusian products in the CIS Customs Union from 1995-2000. They postulate that such participation produces no improvement in domestic exports structure and no new comparative advantages. Fertő and Hubbard (2003) posit that Hungary managed to sustain its RCAs in agriculture and food processing during transition, but experienced weakened Balassa indices. Fertő (2007) extends his examination of them to conclude that they did not change radically throughout the 1990s in CEE: trade patterns converged in the Czech Republic, Hungary, Poland and Slovenia, and polarised in Estonia, Latvia, Lithuania and Slovakia. He concludes these countries are moving towards technological and capital-intensive products, with the Baltic States retaining primary and natural resource-intensive ones. Widgrén (2006) examines the Baltic Sea region to illustrate how capital-intensive RCAs are shifting from physical to human ones, particularly in Poland and Estonia. Palazuelos-Martinez (2007) provides an in-depth examination of RCAs between Spain, Hungary, the Czech Republic, Slovakia and Slovenia, concluding that all five have similar export structures in labour-intensive and traditional capital-intensive commodities. His empirical research reveals that the Czech Republic and Hungary are gaining advantages in research and development (R&D) and technology-intensive exports, like chemicals, electronics, telecommunications and machinery, whereas Slovakia and Slovenia maintain advantages in more traditional industries, such as iron and steel in the former and furniture and household equipment in the latter. The growth of some former 'sensitive' commodities in the new member states is a direct consequence of new EU membership. Pindyuk (2006) conducts a study of Ukraine's trade with the CIS, EU-15 and EU-10 (ACs) to determine changes in specialisation patterns from 1996 to 2002 at the one-digit SITC level. She concludes that significant differences exist, depending on export destination. Strong RCAs in CIS trade are evident in beverages, tobacco, chemicals, machines and transport equipment, whereas for the EU-15 they are in crude materials, and in fuels, chemicals, beverages and tobacco for the ACs. The vast majority of Ukraine's RCAs were in CIS trade, and many were in commodities with a low degree of processing. Mykhnenko (2007) focuses on a comparative analysis of Poland and Ukraine from 1992-2002, stating that they have developed similar RCAs

in technological intensity, enjoy advantages in low-technology products and resource-based manufacturing, and have become more competitive in low, medium and high technology commodities. Quaisser and Vincentz (2001) conclude that Ukraine's exports to the EU were mostly raw materials and labour-intensive commodities and sensitive goods with low levels of processing. In other words, RCAs fully open to EU trade defence instruments. An additional problem here is that such exports have been shown to provide the necessary investment to upgrade to the next processing stage, especially when EU trade orientation influences enterprise restructuring (Akimov, 2001).

Other research investigating the effects of factor endowments and comparative advantage has been conducted by Freudenberg and Lemoine (1999), Landesmann (2000) and Inotai (2004). The former posits trade patterns of CEE states with the EU changed in part to diverse factor endowments, because of income level disparities, whereas the latter two highlight the diverse product specialisation within the EU. Largely based on the H-O theorem and trade liberalisation between the EU and the ACs, many of the studies conclude that specialisation in CEE states has evolved from the labour-intensive, resource-intensive and energy-intensive sectors towards more diversified products. Hence, these states have become more competitive and now have comparative advantage in less labour-intensive industries and commodities than Greece or Portugal (Landesmann, 2000; Landesmann & Wörz, 2006). Lastly, Djankov and Hoekman (1997) postulate their trade structures and RCAs have been modernised by the effects of FDI in imports, especially intermediate inputs and machinery.

In addition to the anticipated change in a country's trade composition, expected as a result of greater liberalisation, the exposure of a given industry to foreign competition is anticipated to reflect an adjustment process whereby firms in different sectors are to adjust to new capacities and production lines, thus becoming more competitive.[4] The RCA index compares a given industry's export share on a national basis with the identical industry's share in another country, trading bloc or world exports. Proposed through the measurement of trade flows, this model's application will help determine those industries that have become relatively more competitive; in other words, the exporting industries revealed to have a comparative

[4] European Communities. *The Single Market Review*. *Trade, Labour and Capital Flows: the Less Developed Regions*. (Brussels, 1998), pp. 1-28.

advantage in production. For instance, if greater productive growth has been realised in traditional industries, partially indicating the exchange of goods from different industries (inter-industry), then comparative advantages may be revealed.[5] RCA attempts to assess whether a given industry enjoys a comparative advantage in production by means of measuring exports. Based on Balassa (1965, 1977, 1989) and used by the European Commission to assess the extent of convergence following the implementation of the Single Market Programme, the formula used to calculate RCA and assess the share of total trade in a given commodity group is defined as:

$$\text{RCA}_{\text{it}} = \frac{\left(x_{it}^{e} - m_{it}^{e}\right)}{\left(x_{it}^{e} + m_{it}^{e}\right)} x100$$

Where: x_{it}^{e} = exports of industry *i* and

m_{it}^{e} = imports of industry *i* over time *t*.

When interpreting the results, the net value of any traded commodity (the equation's numerator) is divided by the value of total trade in that commodity (the equation's denominator) and consequently multiplied by 100. This index measures the degree of significance of net flows of a specified commodity group and illustrates the scale of trade flows in any given commodity, producing a range from -100 (no exports by a given country in a given commodity) to 100 (no imports by a given country in a given commodity). A value between 50% and 100%, for example, would signify a comparatively high degree of competitiveness. Furthermore, it measures the degree of IIT in a group of commodities, something investigated in the following chapter. Before addressing the empirical analyses of RCA in EU trade, an overview of each country's trade developments is presented in the following section.

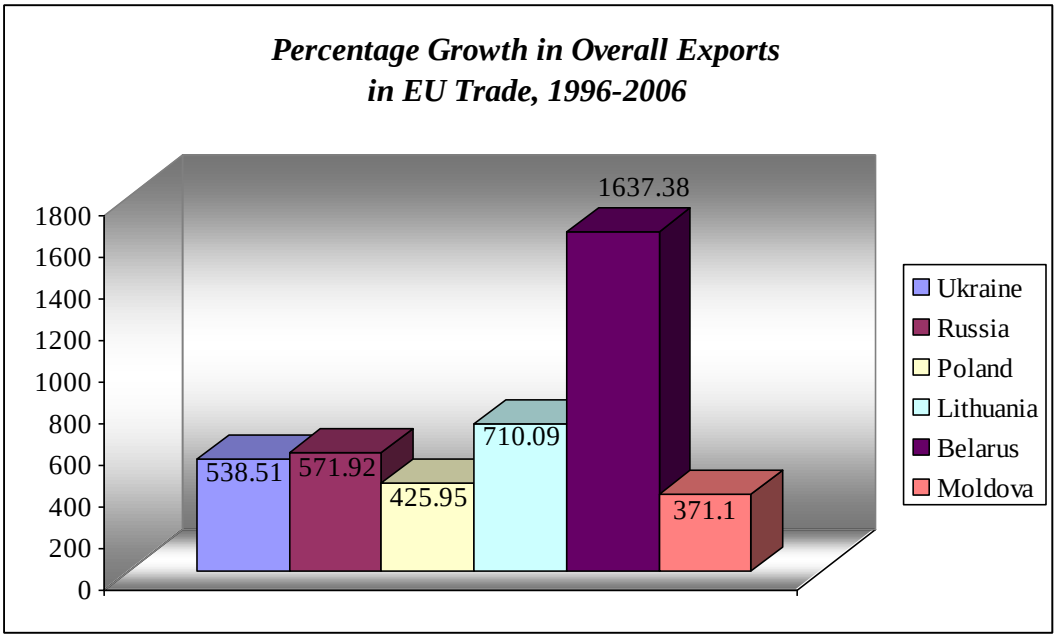
2. Changes in EU Trade (1996-2006)

In order to help establish the extent to which each country's trade structures with the EU have changed over the period in question, this section examines growth in overall exports and imports and changes in trade balances. To identify where such increases or decreases occurred, a further examination of changes in SITC industries as a

[5] R. Faini. *European Union Trade with Eastern Europe: Adjustment and Opportunities*. (London, 1995), pp. 37-39.

percentage of overall exports/imports and the percentage changes in exports/imports by SITC industries is provided in table format.

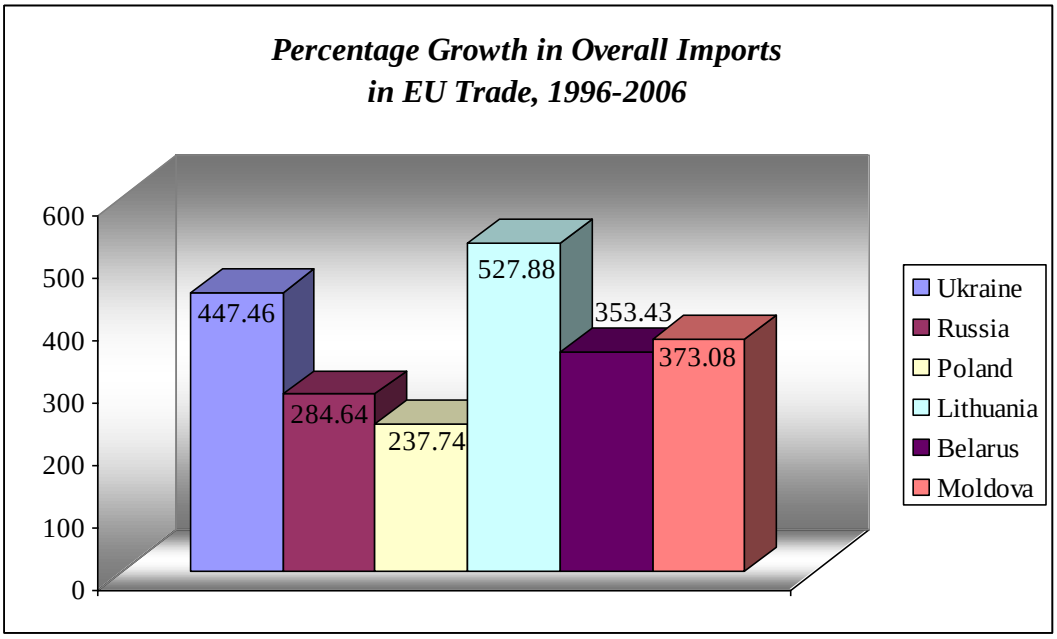
Figure 2.01



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 2.01 illustrates comparative export growth. Despite having no bilateral trade agreements or clearly defined working relationship with the EU, Belarus had the best performance. In fact, its exports grew by $8,467.421m, constituting a substantial improvement of 1,637.38%. Moreover, much of this occurred between 2001 and 2006, and the growth percentage was more than double that of the next placed country. Lithuania improved by $7,834.311m, which signified an increase of 710.09%. Both were heavily involved in exporting SITC 3 commodities westwards from modernised refinery plants. Russia and Ukraine had similar growth of 571.92% and 538.51%, but the differences in monetary terms were quite vast: Russia's exports increased by $145,407.081m, whereas Ukraine's growth was $9,168.825m. Poland's increase was 425.95%, as exports grew by $68,643.888m. Given the size and limitations of its economy and the inherent political problems plaguing the country, it was not surprising that Moldova experienced the least degree of export growth at 371.1% ($289.886m).

Figure 2.02

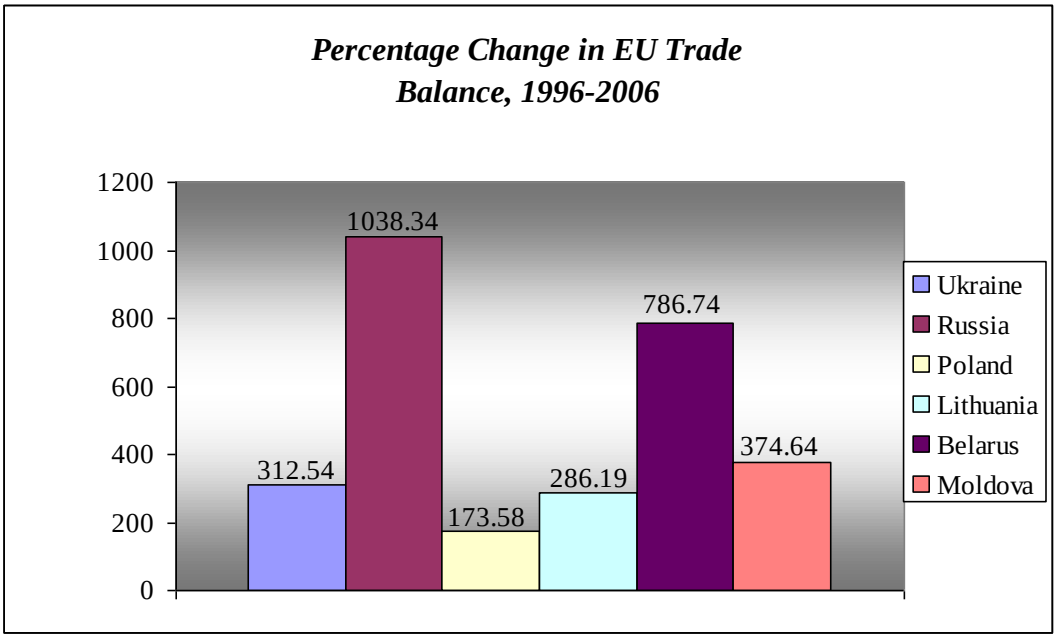


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As illustrated by Figure 2.02, Lithuania was the leading country in import growth at 527.88%, as imports rose by $10,214.928m. This was, however, less than the figure calculated for its export growth. Ukraine placed second (447.46%), but in monetary terms imports rose by $12,760.153m which was higher than the monetary increase observed in its exports. Moldova and Belarus had similar values of 373.08% and 353.43%, but there was a vast difference in the actual monetary values of $660.435m and $3,885.870m respectively. Moldova was the only country to have a higher percentage increase in imports instead of exports. Belarus had the greatest difference between its export and import growth figures (1,283.96%). Import growth in Russia was only 284.64%, yet in monetary terms the amount was still the highest ($44,785.625m). Poland had the lowest increase of imports at 237.74% ($55,844.131m).

Having illustrated the significance of export and import growth, a closer inspection of each country's trade balance offers another important insight. This is shown in Figure 2.03.

Figure 2.03



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Despite having the third ranked export growth, Russia experienced the greatest change in its balance which improved by 1,038.34%. In fact, Russia's lower import growth helped contribute to a positive balance which rose by $100,621.456m. Having the greatest percentage of export growth and the greatest difference between export and import growth, Belarus was second in improving its balance. Not only did it witness growth of 786.74%, but it also saw its balance rise by $4,581.551m which facilitated a change from a negative to positive balance. Moldova's negative balance grew by 374.64% ($370.550m), and it was noticeable that its export and import growth, in addition to its growth in negative balance, was rather uniform: all three were at 371.1%, 373.08% and 374.64%. Ukraine likewise did not manage to reverse its negative balance, as growth was calculated at 312.54% ($3,591.328m). Lithuania and Poland, the two new EU members, experienced the lowest degree of change in their trade balances. However, there was a key difference between both: Lithuania's growth of 286.19% ($2,380.617m) increased its negative balance, whereas Poland's lower increase of 173.58% ($12,799.757m) facilitated a shift to a positive balance. Only Belarus and Poland managed to reverse negative balances.

Given the fact that each country experienced overall growth in exports and imports, a closer examination of where export growth occurred is outlined in the following two tables. Table 2.01 identifies percentage changes in exports, according to the ten identified SITC industries in column one. Only values less than 1,000% will contain two decimal places. However, data do not reveal the actual changes in each SITC industry in overall exports. Hence, this information is provided in Table 2.02.

Table 2.01: Percentage Changes in Exports by SITC Industries, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	405.32	314.39	510.45	1,038	86.75	137.07
1 Beverages & tobacco	75.43	82.01	1,750	63,987	29,676	74.85
2 Crude materials	271.25	156.28	239.47	142.28	251.65	78.38
3 Mineral fuels	716.86	571.08	319.57	11,069	463,286	9,500
4 Animal & vegetable oil	3,491	7,533	1,029	96,590	23,949	3,744
5 Chemicals & related	322.62	165.57	502.13	368.08	347.11	98.74
6 Manufactured goods	1,575	270.39	338.49	509.94	672.81	1,027
7 Machinery/Transport	580.20	187.29	763.50	935.67	312.24	3,679
8 Misc. manufactured prd	287.35	23.08	172.07	467.19	96.57	684.24
9 Not classified	-83.08	N/A[1]	20,397	18,521	17,907	-100.00

[1] No exports in 1996.

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As evident from Figure 2.01, Belarus experienced the greatest increase in exports in EU trade. Table 2.01 illustrates that this growth was heavily concentrated in SITC 3 (463,286%), the most significant increase in an industry for any country, and SITC 9 (17,907%). Lithuania had the second highest growth in overall exports, much of this attributed to SITC 4 (96,590%) and SITC 1 (63,987%). The lowest overall export growth was recorded in Moldova, although its leading industry (SITC 3 at 9,500%) had a value greater than the leading one in Ukraine (SITC 4 at 3,491%) and Russia (SITC 4 at 7,533%). Poland saw its largest increase in SITC 9 (20,397%). The greatest percentage changes were observed in SITC 4 (Ukraine, Russia and Lithuania) and SITC 3 (Belarus, Moldova). To illustrate further the magnitude of export growth, contractions were calculated only in two industries: SITC 9 in Ukraine (-83.08%) and Moldova (-100%). It should be kept in mind, however, that, with the exception of SITC 3 in Belarus, these industries with the leading values were not significantly export-oriented.

Table 2.02: Changes in SITC Industries as a Percentage of Overall Exports, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-1.18%	-0.18%	+1.16%	+3.44%	-5.11%	-17.05%
1 Beverages & tobacco	-0.45%	-0.10%	+0.45%	+1.51%	+0.05%	-6.11%
2 Crude materials	-8.73%	-4.45%	-1.33%	-12.05%	-10.62%	-9.57%
3 Mineral fuels	+2.92%	-0.08%	-1.26%	+21.14%	+75.43%	+0.04%
4 Animal & vegetable oil	+3.55%	+0.10%	-0.10%	+0.30%	+0.21%	+1.82%
5 Chemicals & related	-5.08%	-3.63%	+0.75%	-7.10%	-11.79%	-1.18%
6 Manufactured goods	+23.55%	-8.55%	-4.42%	-3.83%	-12.97%	+6.99%
7 Machinery/Transport	+0.54%	-1.72%	+15.74%	+3.70%	-8.53%	+3.53%
8 Misc. manufactured prd	-5.50%	-1.28%	-12.68%	-8.09%	-26.80%	+21.68%
9 Not classified	-9.62%	+19.89%	+1.49%	+0.98%	+0.13%	-0.15%
Main Export Industry	2→6	3→3	6→7	8→3	8→3	0→8
Main Import Industry	7→7	7→7	7→7	7→7	7→7	7→7
Most Profitable Industry	2→6	3→3	8→8	2→3	2→3	0→8
Least Profitable Industry	7→7	7→7	7→5	7→7	7→7	7→7

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Having established in which SITC industries exports increased or decreased in each country, it would help to contextualise this further by examining changes in SITC industries as a percentage of overall exports. In doing so, this provides a clearer picture of where export growth occurred, relative to other industries in overall export share. This is important because relative size could be shown by the previous method. Table 2.02 illustrates changes in percentage values for the ten SITC industries in each country from rows one to ten. In addition, the final four rows identify the leading SITC industry, according to exports, imports and profitability, and any subsequent change (i.e. the main export industry changing from 6 → 7).

The substantial growth Belarus experienced in SITC 3 was mirrored by the industry's increase in the share of overall exports by 75.43%, the greatest growth as a percentage of total exports in either EU or CIS trade. However, this was the only example where the industry with the leading percentage change also experienced the greatest increase as a percentage of overall exports. Therefore, SITC 3 was unquestionably the industry driving Belarusian exports to the EU. Moreover, this industry, on average, accounted for 36.63% of total exports between 1996 and 2006, so it was an influential export industry by all measurements. This provided an interesting contrast with SITC 9, the Belarusian industry with the second largest growth in Table 2.01, because it was evident that it only grew by 0.13% in terms of total exports. This can be explained by the fact that, although growth in monetary

figures was substantial, the industry, as a whole, was not significant in terms of increasing its exports relative to other industries. In fact, its average contribution was only 0.29% of total exports. Clearly, the significant growth in SITC 3 as a percentage of overall exports affected other industries in Belarus: SITC 8 & 6 experienced the greatest contractions at 26.80%, the highest export decline recorded in any country, and 12.97% respectively. Nevertheless, both witnessed growth in monetary figures, as the previous table illustrates.

Moldova was the only other country to experience its greatest percentage change in SITC 3 (see Table 2.01). However, this industry only rose by 0.04% in its share of total exports, the lowest increase calculated in any country, and averaged just 0.02% of overall exports. This was comparable to the position of SITC 9 in Belarus. Moldova witnessed its greatest growth in SITC 8 (21.68%), an industry with a substantial average of 50.69% of all exports. Although Lithuania's greatest percentage increase in exports was in SITC 4, this industry grew in overall exports by only 0.30% and remained rather insignificant overall. Lithuania's highest growth in terms of overall exports was 21.14% in SITC 3, the same industry in which Belarus recorded its greatest increase. Ukraine and Russia witnessed their greatest percentage changes in exports occur in SITC 4; however, in terms of a percentage of overall exports the results were different. In Ukraine, SITC 6 rose by 23.55% and had a significant average of 26.55% of total exports. On the other hand, Russia had no exports calculated for SITC 9 in 1996, and the industry averaged only 6.63% of total exports. Nevertheless, it increased its share of overall exports by 19.89%. Despite significant growth in SITC 9 for Poland, the percentage of this industry's overall exports grew by only 1.49% and remained insignificant on average. Poland's highest growth was calculated in SITC 7 (15.74%), representing the lowest increase for a leading industry. The leading figures calculated here represented significant export industries.

Regarding each country's main export industry, only Russia's remained constant (SITC 3). Lithuania and Belarus experienced a change from SITC 8 to SITC 3, whereas Moldova's changed from SITC 0 to SITC 8. Another example of a country developing a main export industry which formerly was associated with another country's was Ukraine in which SITC 6 replaced SITC 2. The latter was Poland's main export industry initially, but changed to SITC 7. The main export industry for Russia, Lithuania and Belarus was SITC 3. The main import industry for all remained SITC 7 throughout. The most profitable industry followed an identical pattern as the

main export industry for Ukraine, Russia and Moldova. Lithuania and Belarus again experienced parallel developments here from SITC 2 to SITC 3. Poland was the only country not to have its main export industry the same as its most profitable one, as SITC 8 retained its position as the most profitable. The least profitable industry remained constant with SITC 7 throughout, like each country's main import industry. The sole exception was in Poland where SITC 5 became the least profitable.

In the comparison of the percentage changes in exports by SITC industries (Table 2.01) and the changes in SITC industries as a percentage of overall exports (Table 2.02), it was clear that a weak relationship existed. In fact, only on one occasion was the same industry identified as the leader in both (SITC 3 in Belarus). The relationship between the leading growth in a given SITC industry as a percentage of overall exports and the main export industry was significantly stronger: the industry with the highest growth in each country became the main export industry in Ukraine, Poland, Lithuania, Belarus and Moldova. Russia, the only country to maintain the same leading export industry, was the sole exception: SITC 3 contracted by 0.08%. No other country experienced a decline in its main export industry. Concerning the most profitable industry, the relationship involving industry growth as a percentage of overall exports was also evident in Ukraine, Lithuania, Belarus and Moldova. Neither Russia nor Poland had their most profitable industries experience any export growth. In fact, Poland's most profitable industry (SITC 8) contracted considerably by 12.68%. On average, this industry accounted for almost one-fifth of total exports.

A closer examination of where import growth occurred is outlined in the following two tables. Table 2.03 identifies percentage changes in imports, and Table 2.04 addresses changes in SITC industries as a percentage of overall imports. These tables are the same as Table 2.01 and Table 2.02 respectively; however, they are concerned solely with import figures in EU trade.

Table 2.03: Percentage Changes in Imports by SITC Industries, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	176.25	125.40	174.55	415.41	323.13	474.48
1 Beverages & tobacco	51.52	169.23	271.58	432.38	-28.55	139.36
2 Crude materials	335.77	125.55	179.77	438.57	641.55	224.14
3 Mineral fuels	527.37	183.00	213.79	197.14	1,105	1,051
4 Animal & vegetable oil	174.53	134.24	156.58	434.21	456.43	4,156
5 Chemicals & related	597.28	431.84	282.90	678.12	481.97	644.64
6 Manufactured goods	512.66	278.42	250.17	503.79	353.07	566.16
7 Machinery/Transport	616.92	376.97	227.94	571.93	506.67	210.97
8 Misc. manufactured prd	249.25	116.64	164.34	475.93	130.84	423.25
9 Not classified	23.99	6,187,000	63,504	481.20	-20.79	847.92

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As Figure 2.02 illustrates, Lithuania experienced the greatest increase in total imports. Table 2.03 shows the greatest amount of this was in SITC 5 (678.12%), the second lowest value amongst each country's leading figure. Russia had the single highest import growth for a given industry (SITC 9 at 6,187,000%). Although Poland experienced the lowest overall import growth, it had the second highest increase for a specific industry. This was also calculated in SITC 9 (63,504%), the only industry to have leading percentage change in more than one country. Poland was one of two countries to have its greatest increase in imports match its greatest increase in exports in the same industry. The other country to achieve this was Belarus, where SITC 3 imports rose by 1,105%. No country experienced a decline in imports for an industry with the leading growth in exports. Moldova's greatest increase (4,156%) was in SITC 4, an industry which experienced leading high monetary growth in exports for Ukraine, Russia and Lithuania. Ukraine, second in terms of overall imports, had the lowest leading growth (SITC 7 at 616.92%). The only negative percentages were recorded in Belarus (SITC 1 & 9). With the exception of SITC 7 in Ukraine and, to a lesser extent, SITC 5 in Lithuania, the leading figures represented minor import industries.

Table 2.04: Changes in SITC Industries as a Percentage of Overall Imports, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-5.56%	-6.08%	-1.10%	-1.94%	-0.65%	+1.14%
1 Beverages & tobacco	-2.45%	-0.74%	+0.05%	-0.26%	-7.56%	-1.07%
2 Crude materials	-0.49%	-0.82%	-0.50%	-0.37%	+0.61%	-1.08%
3 Mineral fuels	+0.32%	-0.22%	-0.25%	-1.37%	+0.70%	+0.71%
4 Animal & vegetable oil	-0.16%	-0.34%	-0.11%	-0.07%	+0.10%	+0.41%
5 Chemicals & related	+4.29%	+5.34%	+2.04%	+2.98%	+4.32%	+6.18%
6 Manufactured goods	+2.00%	-0.22%	+0.90%	-0.77%	-0.01%	+8.53%
7 Machinery/Transport	+9.89%	+8.99%	-1.09%	+2.69%	+10.80%	-15.93%
8 Misc. manufactured prd	-3.90%	-6.22%	-2.00%	-0.81%	-6.80%	+1.09%
9 Not classified	-3.94%	+0.30%	+2.06%	-0.08%	-1.51%	+0.03%
Main Export Industry	2→6	3→3	6→7	8→3	8→3	0→8
Main Import Industry	7→7	7→7	7→7	7→7	7→7	7→7
Most Profitable Industry	2→6	3→3	8→8	2→3	2→3	0→8
Least Profitable Industry	7→7	7→7	7→5	7→7	7→7	7→7

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Table 2.04 provides an overview of where changes in imports occurred in SITC industries as a percentage of overall imports. The leading figures for import growth were lower than those for export growth in each country. Figure 2.01 and Figure 2.02 illustrate that this would be the case, except in Moldova. The largest percentage changes were calculated in Russia and Poland (SITC 9). However, increases as a percentage of overall imports were small: 0.30% in Russia and 2.06% in Poland. Moreover, this industry's imports were insignificant on average. In exports, the relationship between the leading industry in percentage changes and changes as a percentage of overall exports was strong with SITC 3 in Belarus. SITC 7 remained the leading import industry in each country, and this dependency was most pronounced in growth as a percentage of overall imports in Belarus (10.80%), the highest recorded value, Ukraine (9.89%) and Russia (8.99%), whereas in Moldova imports from this industry declined by 15.93%, more than any industry in any other country, and by 1.09% in Poland. Imports of SITC 7 commodities averaged between 34.43% (Moldova) and 41.08% (Russia). These significant numbers, combined with low export growth outside of Poland, explain why this industry was also the least profitable one in each country, except in Poland. The largest increase in Moldovan imports was calculated in SITC 6 (8.53%), and for Polish imports in SITC 9 (2.06%), the lowest increase of the leading values. However, SITC 6 averaged 27.27% of total Moldovan imports, whereas SITC 9 in Poland was a minor industry by comparison.

The lowest import growth was calculated in Moldova (SITC 9 at 0.03%), as was the highest contraction (SITC 7 at -15.93%). Lithuania's largest import growth occurred in SITC 5 (+2.98%), an industry which had an average value of 14.62% of total imports. These leading figures calculated represented major import industries, except for SITC 9 in Poland.

The relationship between the leading values in percentage changes in imports by SITC industries (Table 2.03) and changes in SITC industries as a percentage of overall imports (Table 2.04) was stronger than it was for the same comparison with exports (Table 2.01 & Table 2.02). For example, leading figures regarding imports were calculated in the same industries in Ukraine (SITC 7), Poland (SITC 9) and Lithuania (SITC 5), whereas for exports this was only noted in Belarus (SITC 3). However, there were also examples where leading growth in monetary figures did not translate into greater percentages in overall imports. This was most notable in Russia (SITC 9 increased by 0.30%), Belarus (SITC 3 increased by 0.70%) and Moldova (SITC 4 increased by 0.41%). The relationship between SITC industry growth as a percentage of overall imports and the main import industry was not as evident as it was regarding the main export industry. Only in three countries was the highest growth mirrored by the main import industry (Ukraine, Russia and Belarus). This was evident in exports for each country, except Russia. In terms of the least profitable industry, the relationship between industry growth as a percentage of overall imports was evident only in Ukraine, Russia and Belarus (SITC 7).

Having identified the main structural changes in EU trade, the results of the RCA analyses shall now be presented in the following manner. A table will be provided for each individual year (1996, 2001, 2006) and contain the top 30 RCA commodities for two specific countries in tandem (Ukraine & Russia/ Poland & Lithuania/ Belarus & Moldova) with each trading organisation (EU or CIS). The first column on the left-hand side specifies a given commodity's rank. The second and fourth columns state the commodity with its three-digit SITC code for each of the two countries identified. The third and fifth columns present the numerical RCA value, obtained from the aforementioned equation. Table 2.05 summarises each SITC one-digit industry used in reference to broader changes in a given country's RCAs.

Table 2.05: Classification of SITC One-Digit Industries	
SITC	**Applicable Commodities**
0	Food & live animals
1	Beverages & tobacco
2	Crude materials, inedible, except fuels
3	Mineral fuels, lubricants & related materials
4	Animal & vegetable oils, fats & waxes
5	Chemicals & related products
6	Manufactured goods classified chiefly by material
7	Machinery & transport equipment
8	Miscellaneous manufactured articles
9	Commodities & transactions not classified elsewhere

* For a detail list of the abovementioned commodities, please refer to Appendix 1.

3. RCA Results: EU Trade in 1996

Table 2.06 shows RCA percentages for Ukrainian and Russian EU trade in 1996.

Table 2.06: RCAs in EU Trade for Ukraine & Russia, 1996 (1-30)

	Ukraine	RCA	Russia	RCA
1	045 OTHER CEREALS, UNMILLED	100	281 IRON ORE, CONCENTRATES	100
2	265 VEG. TEXTILE FIBRES	100	289 PREC.METAL ORES, CNCTRTS	100
3	281 IRON ORE, CONCENTRATES	100	333 PETROLEUM OILS, CRUDE	100
4	282 FERROUS WASTE & SCRAP	100	681 SILVER, PLATINUM,ETC.	100
5	286 URANIUM,THORIUM ORES	100	343 NATURAL GAS	99.9901
6	287 ORE,CONCENTR.BSE METLS	100	325 COKE,SEMI-COKE,RT.CARBN	99.9562
7	322 BRIQUETTES, LIGNITE,PEAT	100	282 FERROUS WASTE & SCRAP	99.9340
8	288 NON-FERROUS WSTE,SCRAP	99.8478	247 WOOD ROUGH, ROUGH SQRD	99.9112
9	672 INGOTS ETC.IRON OR STEEL	98.9796	268 WOOL, OTHER ANIMAL HAIR	99.9044
10	211 HIDES,SKINS, EX.FURS,RAW	98.8940	683 NICKEL	99.8829
11	793 SHIP, BOAT, FLT.STRUCTRS	98.4594	672 INGOTS ETC.IRON OR STEEL	99.7591
12	562 FERTILISER,EXCEPT GRP272	98.1252	211 HIDES, SKINS (EX.FURS),RAW	99.6358
13	223 OILSEED (OTH.FIX.VEG.OIL)	98.0075	344 PETROLEUM GASES, NES[1]	99.6028
14	792 AIRCRAFT, ASSOCTD.EQUIP	97.9911	351 ELECTRIC CURRENT	99.5838
15	689 MISC.NON-FERR.BSE METAL	97.5512	246 WOOD IN CHIPS, PARTICLES	99.2412
16	678 WIRE OF IRON OR STEEL	96.7310	288 NON-FERROUS WASTE,SCRP	98.9154
17	677 RAILWAY TRACK IRN,STEEL	96.3002	261 SILK	98.8395
18	842 WOMEN/ GIRL CLTHNG,XKT	94.9255	689 MISC.NON-FERR.BASE METL	98.1641
19	222 OILSEED (SFT.FIX VEG.OIL)	94.5180	272 FERTILISERS, CRUDE	98.1240
20	247 WOOD ROUGH, RGH SQRD	93.7331	562 FERTILISER,EXCEPT GRP272	98.0201
21	043 BARLEY, UNMILLED	91.3918	342 LIQUEFIED PROPANE,BUTNE	97.7461
22	037 FISH ETC. PREPD,PRSVD.NES	89.5103	687 TIN	97.0032
23	841 MENS,BOYS CLTHNG,X-KNIT	87.4061	321 COAL,NOT AGGLOMERATED	96.2773
24	525 RADIO-ACTIVE MATERIALS	87.3145	671 PIG IRON, SPIEGELEISN,ETC	95.3812
25	277 NATURAL ABRASIVES, NES	86.9425	222 OILSEED(SFT.FIX VEG.OIL)	94.4541
26	335 RESIDUAL PETROL.PRODCTS	86.9065	525 RADIO-ACTIVE MATERIALS	94.2969
27	579 PLASTIC WASTE, SCRAP ETC	86.2410	248 WOOD, SIMPLY WORKED	94.2772
28	421 FIXED VEG.FAT, OILS, SOFT	84.4463	334 PETROLEUM PRODUCTS	93.7583
29	522 INORGANIC CHEM.ELEMNTS	83.7761	682 COPPER	93.3151
30	248 WOOD, SIMPLY WORKED	83.1755	245 FUEL WOOD, WD CHARCOAL	93.1116

[1] Not elsewhere specified.

Source: own calculations based on UN Comtrade three-digit data, 1996.

Ukraine's EU trade in 1996 displayed 12 SITC 2 commodities (see Table 2.05 for reference) in the top 30 RCA percentages. As the largest RCA industry, SITC 2 was also the greatest export industry at 20.86%. In RCA results five of these goods (SITC 265, 281, 282, 286 & 287) achieved a perfect score of 100% which means no imports were recorded. Vegetable textiles and fibres (SITC 265) had the highest revenue of all top RCA values ($134.003m). Bearing in mind the absence of necessary draft laws on

export duties on hides, skins, flax, false flax seeds, sunflower and barriers to sugar imports, live animals and metallurgy products with continued export duties, it is worth considering the significant RCA percentages for some of these products. Moreover, Ukrainian steel exports were subjected to EU import quotas and Polish tariffs, yet RCA totals for SITC 672, 677 & 678 were from 96.3002% to 98.9796%. Ukraine's iron and steel exports were faced with an excess of EU trade defence instruments. Other significant problems for the industry were the lack of product diversification, technologically dated production capacities, poor efficiency and labour productivity and low value-added goods. Although the EU accused Ukraine of discriminating against foreign buyers through the usage of high import taxes, it offered protection and preferences for animal or vegetable oils (see SITC 222, 223 & 421), and processed fruit and vegetables, none of which had significant percentages here. Given their trade values, preferences seemingly had little influence on Ukrainian exports. In 1996, the PCA was not applicable to Ukraine or Russia.

Russia's EU trade shared certain similarities with Ukraine's. For instance, SITC 2 commodities were also the most dominant with 13 values, and they shared seven such goods (SITC 211, 222, 247, 248, 281, 282 & 288). They also had four additional commodities in common (SITC 525, 562, 672 & 689). Despite the dominance of SITC 2 commodities, two of which had perfect percentages (SITC 281 & 289), Russia's strength in EU trade lay in SITC 3 commodities. This industry accounted for 62.57% of exports, placing eight commodities from 93.7583% to 100%. Moreover, this industry had the top three goods with the highest gross export revenues (SITC 333, 334 & 343), with trade in the former alone valued the highest of top RCA commodities ($6,489.069m). Russia's RCAs were more concentrated amongst SITC 2, 3 & 6 (28 of 30), whereas Ukraine's were more dispersed. Higher world prices for Russian oil and gas explain the rising profit margins, something even more evident by 2006. Such dependency, however, makes the country vulnerable to fluctuations in world markets and commodity conjunctures, and is largely a continuation of Soviet trade westwards.

Table 2.07: RCAs in EU Trade for Poland & Lithuania, 1996 (1-30)				
	Poland	**RCA**	**Lithuania**	**RCA**
1	245 FUEL WOOD, WD CHARCOAL	100	283 COPPER ORES, CNCENTRTES	100
2	274 SULPHUR,UNRSTD.IRN PYRS	100	284 NICKEL ORES, CONCTR, MTE	100
3	282 FERROUS WASTE & SCRAP	100	287 ORE, CNCNTR. BASE METALS	100
4	289 PREC.METAL ORES, CNCNTR	100	289 PREC.METAL ORES, CNCTRTS	100
5	325 COKE,SEMI-COKE, RET.CRBN	100	333 PETROLEUM OILS, CRUDE	100
6	351 ELECTRIC CURRENT	100	342 LIQUEFIED PROPANE, BUTNE	99.9726
7	961 COIN NGOLD, NCURRENT	100	288 NON-FERROUS WASTE, SCRP	99.7975
8	321 COAL,NOT AGGLOMERATED	99.9471	322 BRIQUETTES, LIGNITE,PEAT	99.7297
9	793 SHIP, BOAT, FLT.STRUCTRS	98.6809	247 WOOD ROUGH, ROUGH SQRD	99.6526
10	681 SILVER,PLATINUM, ETC.	96.9359	282 FERROUS WASTE & SCRAP	99.2831
11	841 MENS,BOYS CLTHNG,XKNIT	96.1123	011 BOVINE MEAT	98.8986
12	842 WMEN,GIRL CLTHNG, XKNIT	95.6080	248 WOOD, SIMPLY WORKED	98.8381
13	896 WORKS/ART,ANTIQUE ETC	94.8076	265 VEGETABLE TEXTILE FIBRES	98.8192
14	288 NON-FERROUS WASTE,SCRP	94.6197	023 BUTTER, OTHER FAT O/MILK	97.8122
15	666 POTTERY	88.8665	562 FERTILISER,EXCEPT GRP272	96.7041
16	322 BRIQUETTES, LIGNITE,PEAT	87.2825	024 CHEESE & CURD	91.8974
17	248 WOOD, SIMPLY WORKED	87.0314	211 HIDES, SKINS (EX.FURS),RAW	90.2970
18	612 MNUFCT. LEATHER ETC. NES	85.4590	842 WMEN, GIRL CLTHNG,XKNIT	90.2731
19	059 FRUIT, VEGETABLE JUICES	85.0842	689 MISC.NON-FERR.BASE METL	88.5950
20	843 MENS,BOYS CLTHING,KNIT	84.9940	841 MENS,BOYS CLTHNG,X-KNIT	87.4313
21	635 WOOD MNUFACTURES, NES	84.8247	671 PIG IRON, SPIEGELEISN,ETC	81.4520
22	686 ZINC	83.8559	246 WOOD IN CHIPS, PARTICLES	78.2263
23	058 FRUIT, PRESRVD, PREPRD	83.4240	793 SHIP, BOAT, FLOAT. STRCTRS	74.1424
24	682 COPPER	82.4955	022 MILK & CREAM	73.8552
25	247 WOOD ROUGH, ROUGH SQRD	77.9714	611 LEATHER	71.4073
26	022 MILK & CREAM	76.3254	776 TRANSISTORS, VALVES,ETC.	71.3059
27	023 BUTTER, OTHER FAT O/MILK	76.3092	843 MENS,BOYS CLOTHING,KNIT	68.5820
28	821 FURNITURE, CUSHIONS,ETC.	75.8395	635 WOOD MANUFACTURES, NES	67.9758
29	246 WOOD IN CHIPS, PARTICLES	73.9986	666 POTTERY	67.6858
30	283 COPPER ORES, CNCNTRATES	71.8681	592 STARCHES, INULIN,ETC.	67.6626

Source: own calculations based on UN Comtrade three-digit data, 1996.

Poland (9 of 30) and Lithuania (11 of 30) also experienced a dominance of SITC 2 commodities, as evident in Table 2.07. Because of an EU FTA signed in 1994, Lithuania already had EU tariff exemptions on industrial goods, agricultural products and textiles, with many industrial commodities enjoying no duties. Such an arrangement was also a mechanism to help the country reorient its trade towards the EU, and access hard currency markets. Poland experienced a similar development earlier. In terms of perfect values, Poland, like Ukraine, had seven, yet they shared only one (SITC 282: ferrous waste & scrap), with seven additional goods from various categories below 100% (SITC 247, 248, 288, 322, 793, 841 & 842). Likewise, Lithuania shared one perfect commodity with Ukraine (SITC 287: ore, concentrated,

base metals), and 12 non-perfect goods (SITC 211, 247, 248, 265, 282, 288, 322, 562, 689, 793, 841 & 842). As was the case with Russia, however, neither Poland nor Lithuania had the largest share of their exports originating from SITC 2. For Poland, SITC 6 accounted for 26.56% of its exports, with the highest RCA value in silver, platinum etc… (SITC 681) at 96.9359%. SITC 8 represented 27% of Lithuania's exports, the highest RCA value of which was women and girls clothing, xknit, (SITC 842) at 90.2731%, a commodity subjected to quantitative restrictions in Ukraine-EU trade until 1998. However, Poland's three largest goods in gross revenue were not from SITC 6, but SITC 8, with furniture, cushions etc… (SITC 821) valued the most profitable ($1,237.235m). Lithuania's highest value export commodity was also not from its main export industry (SITC 8), but in SITC 562: fertiliser, except GRP 272, another 'sensitive' commodity and traditional export ($139.695m). Ukraine also had a high percentage of 98.1252% (ranked twelfth) for this commodity, but not for the former. Women and girls clothing, xknit, (SITC 842) was the second most profitable commodity for Poland ($1,014.171m) and Ukraine ($114.520m) and the third most profitable for Lithuania ($88.537m). Nevertheless, Ukraine did not have equal access to the EU market for this good, although it had a higher RCA value than Lithuania. The dispersion of top RCA percentages for Poland and Lithuania was similar to Ukraine's in that it was not largely concentrated over three SITC one-digit industries.

Table 2.08: RCAs in EU Trade for Belarus & Moldova, 1996 (1-30)				
	Belarus	**RCA**	**Moldova**	**RCA**
1	245 FUEL WOOD, WD CHARCOAL	100	035 FISH,DRIED,SLTED, SMOKED	100
2	247 WOOD ROUGH, ROUGH SQRD	100	043 BARLEY, UNMILLED	100
3	261 SILK	100	211 HIDES, SKINS (EX.FURS),RAW	100
4	272 FERTILISERS, CRUDE	100	247 WOOD ROUGH, ROUGH SQRD	100
5	289 PREC.METAL ORES, CNCTRT	100	263 COTTON	100
6	322 BRIQUETTES, LIGNITE,PEAT	100	268 WOOL, OTR ANIML HAIR	100
7	685 LEAD	100	282 FERROUS WASTE & SCRAP	100
8	883 CINE. FILM EXPSD.DEVELPD	100	288 NON-FERROUS WASTE,SCRP	100
9	562 FERTILISER,EXCEPT GRP272	99.9917	322 BRIQUETTES, LIGNITE,PEAT	100
10	266 SYNTHETIC FIBRES	99.8612	525 RADIO-ACTIVE MATERIALS	100
11	282 FERROUS WASTE & SCRAP	99.6597	675 FLAT-ROLLED, ALLOY STEEL	100
12	288 NON-FERROUS WASTE,SCRP	99.4856	689 MISC.NON-FERR.BASE METL	100
13	267 OTHER MAN-MADE FIBRES	98.2977	222 OILSEED(SFT.FIX VEG.OIL)	99.6006
14	722 TRACTORS	97.3750	682 COPPER	99.3216
15	265 VEGETABLE TEXTILE FIBRES	97.0579	059 FRUIT, VEGETABLE JUICES	98.1194
16	248 WOOD, SIMPLY WORKED	96.6330	843 MENS,BOYS CLOTHING,KNIT	96.7409
17	211 HIDES, SKINS (X.FURS), RAW	96.5894	842 WMEN, GIRL CLTHNG,XKNIT	93.8183
18	579 PLASTIC WASTE, SCRAP ETC	95.7969	845 OTHR.TEXTILE APPAREL,NES	93.4754
19	515 ORGANO-INORGNIC CMPNDS	95.2304	841 MENS,BOYS CLTHNG,XKNIT	88.9755
20	693 WIRE PRODUCTS EXCL.ELCT	94.6466	831 TRUNK,SUIT-CASES,BAG,ETC	84.0898
21	842 WMEN, GIRL CLTHNG,XKNIT	87.7374	057 FRUIT,NUTS EXCL.OIL NUTS	82.4807
22	671 PIG IRON, SPIEGELEISN,ETC	84.1258	844 WMEN,GIRLS CLTHNG.KNIT	68.4166
23	058 FRUIT, PRESRVD, PREPRD	81.1293	421 FIXED VEG.FAT, OILS, SOFT	66.4237
24	634 VENEERS, PLYWOOD, ETC.	79.1900	659 FLOOR COVERINGS, ETC.	64.9877
25	678 WIRE OF IRON OR STEEL	78.6524	122 TOBACCO, MANUFACTURED	55.7173
26	694 NAILS, SCREWS, NUTS,ETC.	76.2285	058 FRUIT,PRESRVED,PREPARD	48.8415
27	037 FISH ETC. PREPD,PRSVD.NES	71.9793	931 SPEC.TRANSACT.NT CLASSD	43.1895
28	635 WOOD MNUFACTURES, NES	69.5691	611 LEATHER	36.8935
29	263 COTTON	68.8723	737 METLWRKING MACH, NES	34.1179
30	683 NICKEL	66.0185	515 ORGANO-INORGIC COMPNDS	33.9526

Source: own calculations based on UN Comtrade three-digit data, 1996.

One of the most obvious characteristics illustrated by Table 2.08 was that RCA percentages for Moldova-EU trade were significantly lower than elsewhere. For example, from the commodity ranked twenty-sixth (SITC 058: fruit, preserved, prepared) the values were less than 50%, therefore suggesting a much lower level of RCA. In EU trade these features were unique to Moldova, but something not applicable to CIS trade. Consequently, Moldovan-EU trade is the weakest in RCAs, with a number of goods regularly below 50%.

Belarus and Moldova also had a greater representation of SITC 2 commodities. Belarus had 13, but Moldova had the lowest with seven. Concerning common goods shared with Ukraine, Moldova had 12 (SITC 043, 211, 222, 247, 282,

288, 322, 421, 525, 689, 841 & 842), as did Belarus (SITC 037, 211, 247, 248, 265, 282, 288, 322, 562, 579, 678 & 842). Furthermore, neither country experienced a dominance of SITC 2 commodities in overall exports: this was in SITC 8 (30.22%) for Belarus, despite having only two high ranked commodities, and SITC 0 (34.32%) for Moldova. Therefore, only Ukraine experienced a dominance of SITC 2 commodities in its highest RCA percentages and overall exports. Belarus' single highest export good was women, girls clothing, xknit, (SITC 842) at $53.971m, the lowest monetary value in this specific good, whereas for Moldova fruit and vegetable juices (SITC 059) was the most profitable ($19.191m). Worth consideration here are two Belarusian goods: fertilisers, crude (SITC 272), a perfect value, and fertilisers, except 272 (SITC 562), ranked ninth (99.9917%) and second in profit ($48.212m). They are 'sensitive' commodities, with the latter considered technology-intensive.

3.1 RCA Results: EU Trade in 2001

Table 2.09 illustrates RCA percentages for Ukraine and Russia.

Table 2.09: RCAs in EU Trade for Ukraine & Russia, 2001 (1-30)

	Ukraine	RCA	Russia	RCA
1	333 PETROLEUM OILS, CRUDE	100	281 IRON ORE, CONCENTRATES	100
2	282 FERROUS WASTE & SCRAP	99.9906	333 PETROLEUM OILS, CRUDE	100
3	281 IRON ORE, CONCENTRATES	99.9881	343 NATURAL GAS	99.9999
4	041 WHEAT, MESLIN, UNMILLED	99.9266	247 WOOD ROUGH, ROUGH SQRD	99.9975
5	672 INGOTS ETC.IRON OR STEEL	99.8044	321 COAL,NOT AGGLOMERATED	99.9793
6	245 FUEL WOOD, WD CHARCOAL	99.5740	282 FERROUS WASTE & SCRAP	99.9506
7	562 FERTILISER,EXCEPT GRP272	98.9411	351 ELECTRIC CURRENT	99.8465
8	344 PETROLEUM GASES, NES	98.3689	272 FERTILISERS, CRUDE	99.8385
9	842 WMEN, GIRL CLTHNG,XKNIT	98.3040	672 INGOTS ETC.IRON OR STEEL	99.6789
10	248 WOOD, SIMPLY WORKED	97.9250	342 LIQUEFIED PRPANE, BUTANE	99.6764
11	685 LEAD	97.8941	325 COKE,SEMI-COKE, RET.CRBN	99.3240
12	272 FERTILISERS, CRUDE	97.8190	683 NICKEL	99.0270
13	689 MISC.NON-FERR.BASE METL	96.8696	248 WOOD, SIMPLY WORKED	98.1656
14	793 SHIP, BOAT, FLT.STRUCTRS	96.7988	562 FERTILISER,EXCEPT GRP272	97.9011
15	421 FIXED VEG.FAT, OILS, SOFT	96.2912	334 PETROLEUM PRODUCTS	97.4412
16	222 OILSEED(SFT.FIX VEG.OIL)	95.7317	689 MISC.NON-FERR.BASE METL	97.1249
17	045 OTHER CEREALS, UNMILLED	94.9944	344 PETROLEUM GASES, NES	96.6386
18	673 FLAT-ROLLED IRON ETC.	94.8410	245 FUEL WOOD, WD CHARCOAL	96.4258
19	288 NON-FERROUS WASTE,SCRP	94.6151	246 WOOD IN CHIPS, PARTICLES	95.9877
20	022 MILK & CREAM	94.4357	682 COPPER	95.4343
21	841 MENS,BOYS CLTHNG,XKNIT	94.3690	211 HIDES, SKINS (EX.FURS),RAW	94.7601
22	714 ENGINES, MOTORS N-ELEC.	94.1621	686 ZINC	94.5297
23	321 COAL,NOT AGGLOMERATED	93.4141	212 FURSKINS, RAW	94.1691
24	278 OTHER CRUDE MINERALS	93.2900	671 PIG IRON, SPIEGELEISN,ETC	93.2758
25	792 AIRCRAFT, ASSTD.EQUIP	87.4802	511 HYDROCARBONS,NES, DRIVS	93.2462
26	671 PIG IRON, SPIEGELEISN,ETC	87.2784	035 FISH,DRIED,SLTED,SMOKED	91.2535
27	522 INORGANIC CHEM. ELMNTS	85.6158	673 FLAT-ROLLED IRON ETC.	91.0940
28	678 WIRE OF IRON OR STEEL	85.3824	322 BRIQUETTES, LIGNITE,PEAT	90.0972
29	061 SUGARS, MOLASSES,HONEY	80.0086	714 ENGINES, MOTORS NN-ELEC.	89.4225
30	682 COPPER	79.7414	525 RADIO-ACTIVE MATERIALS	87.2619

Source: own calculations based on UN Comtrade three-digit data, 2001.

Ukraine experienced greater representation from SITC 6 (from four to seven goods) at the expense of SITC 2 (from 12 to eight), although the latter managed to remain the single largest industry with eight. Moreover, SITC 6 replaced SITC 2 as the main branch of Ukrainian exports (27.07%), with ingots etc…iron or steel (SITC 672) the highest valued ($249.872m). This demonstrated the beginning of a change in Ukraine's export structure to the EU, a fact further highlighted by the emergence of a perfect value for one new SITC 3 commodity (SITC 333). The emergence of SITC

672 as the most profitable is further proof of the revival of the iron and steel industries, both of which were undergoing significant structural changes. The irony is that EU protectionism is particularly high against these industries. Privatisation and the creation of Financial and Industrial Groups (FIGs) was either completed or in process, with the two major steel companies, Kryvorizhstal and Mariupol Illich, finished in June 2004 and November 2000. The position of this industry is interesting, given the steel sector's poor productivity and EU protectionist measures. However, another important consideration is that Ukraine's steel industry is unique in the mass production of ingots, a very basic product, and has shown a hesitancy to diversify its products, crude or otherwise. Conversely, three commodities (SITC 265: vegetable textile fibres, 286: uranium, thorium ores & 287: ore, concentrated, base metals), formerly at 100%, failed to repeat and half of the overall goods were replaced. This further illustrates trade restructuring and changes in commodity composition. Another noticeable change was the increase in export revenues for women and girls clothing, xknit, (SITC 842) from $114.520m to $189.710m, an increase of 65.66%. Previously ranked second in export revenues and eighteenth in RCA, it not only increased its profit margin, but also its RCA value from 94.9255% to 98.3040% under the Outward Processing Trade (OPT) scheme. The EU did not apply quantitative quotas on imports of Ukrainian textile and clothing products from early 2001, and the growth of this commodity can be attributed to this. A further agreement was reached when Ukraine began reducing its own tariffs on EU textile imports and its maximum tariff rates between 2001 and 2004. The commodity's competitiveness nevertheless declined, but increased in Moldova-EU trade.

Whereas Ukraine experienced noticeable changes in EU trade, the same cannot be said for Russia. Although representation from SITC 2 fell by four to nine goods, now equal with SITC 3, the majority representation by SITC 2, 3 & 6 remained intact at 25. Perfect values were retained by SITC 281 & 333. The latter remained the largest export sector at $9,747.678m, an increase of 50.22%, followed again by SITC 334 & 343, both of which experienced growing values. However, two commodities with perfect percentages previously (SITC 289: precious metals, ores and concentrates & 681: silver, platinum etc…) failed to repeat. Moreover, SITC 3 commodities remained central to exports. Russia also experienced greater stability where new goods were concerned, as only eight new commodities surfaced compared to 15 in Ukraine. They had 15 goods in common (SITC 245, 248, 272, 281, 282, 321,

333, 344, 562, 671, 672, 673, 682, 689 & 714), an increase of four. This indicates increasing competition for the expanding EU market.

Table 2.10: RCAs in EU Trade for Poland & Lithuania, 2001 (1-30)

	Poland	RCA	Lithuania	RCA
1	245 FUEL WOOD, WD CHARCOAL	100	345 COAL GAS,WATER GAS, ETC.	100
2	283 COPPER ORES, CNCNTRATES	100	289 PREC.METAL ORES, CNCTRTS	99.6777
3	289 PREC.METAL ORES, CNCTRT	100	322 BRIQUETTES, LIGNITE,PEAT	99.5351
4	321 COAL,NOT AGGLOMERATED	100	245 FUEL WOOD, WD CHRCOAL	99.4873
5	325 COKE,SEMI-COKE, RET.CRBN	99.8210	211 HIDES, SKINS (EX.FURS),RAW	99.3586
6	011 BOVINE MEAT	99.4341	247 WOOD ROUGH, ROUGH SQRD	99.1421
7	282 FERROUS WASTE & SCRAP	98.4054	714 ENGINES, MTORS NON-ELEC.	98.2036
8	681 SILVER,PLATINUM, ETC.	91.7496	282 FERROUS WASTE & SCRAP	97.1595
9	841 MENS,BOYS CLTHNG,XKNIT	91.5950	562 FERTILISER,EXCEPT GRP272	97.1289
10	246 WOOD IN CHIPS, PARTICLES	90.4327	288 NON-FERROUS WASTE, SCRP	96.8836
11	059 FRUIT, VEGETABLE JUICES	89.9800	041 WHEAT, MESLIN, UNMILLED	96.3296
12	677 RAILWAY TRCK IRON, STEEL	89.8577	246 WOOD IN CHIPS, PARTICLES	95.7008
13	842 WMEN,GIRL,CLTHNG, XKNIT	88.8049	334 PETROLEUM PRODUCTS	95.3560
14	035 FISH,DRIED, SLTED,SMOKED	88.0920	689 MISC.NON-FERR.BSE METAL	94.6631
15	023 BUTTER, OTHER FAT O/MILK	88.0308	037 FISH ETC. PREPD,PRSVD.NES	94.4262
16	666 POTTERY	85.7583	842 WMEN, GIRL CLTHNG,XKNIT	94.3768
17	222 OILSEED(SFT.FIX VEG.OIL)	80.5580	024 CHEESE & CURD	94.1073
18	635 WOOD MANUFCTRES, NES	79.8736	248 WOOD, SIMPLY WORKED	93.5332
19	288 NON-FERROUS WASTE,SCRP	79.6093	222 OILSEED(SFT.FIX VEG.OIL)	92.8139
20	761 TELEVISION RECEIVRS ETC.	78.4403	223 OILSEED (OTH.FIX.VEG.OIL)	91.1832
21	672 INGOTS ETC.IRON OR STEEL	78.2253	272 FERTILISERS, CRUDE	90.0598
22	843 MENS,BOYS CLOTHING,KNIT	77.9506	023 BUTTER, OTHER FAT O/MILK	89.2567
23	058 FRUIT, PRESRVD, PREPRD	75.7826	841 MENS,BOYS CLTHNG,XKNIT	87.7502
24	792 AIRCRAFT, ASSCTD.EQUIPNT	73.0116	612 MNUFCT. LEATHER ETC.NES	84.0469
25	821 FURNITURE, CUSHIONS,ETC.	72.7459	792 AIRCRAFT, ASSCTD.EQUIPNT	82.2758
26	844 WMEN,GIRLS CLTHNG.KNIT	72.0326	658 TEXTILE ARTICLES NES	79.3604
27	017 MEAT, OFFL.PRPD, PRVD,NES	72.0192	635 WOOD MANUFACTURES, NES	79.0109
28	613 FURSKINS, TAND, DRESSED	70.5811	678 WIRE OF IRON OR STEEL	76.9222
29	248 WOOD, SIMPLY WORKED	66.1259	022 MILK & CREAM	76.5033
30	056 VEGETABLES, PRPD,PRSVD	63.3237	811 PREFABRICATED BUILDINGS	76.0337

Source: own calculations based on UN Comtrade three-digit data, 2001.

SITC 2 commodities continued to play a dominant role in Polish and Lithuanian RCA trade, as illustrated in Table 2.10. This was a significant year for Lithuania's trade because the country acquired WTO membership on 31 May, thus many export duties and restrictions were abolished forthright. Neither Lithuania nor Poland experienced the same decline in SITC 2 commodities as Ukraine and Russia. Lithuania retained 11 here and Poland only dropped one to eight. Neither country shared Ukraine's only commodity to have a perfect score (SITC 333: petroleum oils,

crude), although Lithuania's most lucrative export commodity, petroleum products (SITC 334) valued at $427.473m and 95.3560%, was closely related. Poland, like Ukraine, witnessed a change in the industry to represent the bulk of its exports; however, this was from SITC 6, Ukraine's leading export industry in 2001, to SITC 7. Nevertheless, SITC 7 representation in RCA values was limited to only two goods, the highest percentage of which was the second most profitable commodity (SITC 761) at 78.4403%.

Despite having only three commodities with high RCA values in SITC 8, a significant amount of Lithuania's exports remained here, the greatest value of which was the second most profitable commodity, women, girls clothing, xknit (SITC 842) at 94.3768%. Given the removal of quantitative restrictions on textiles and clothing exports in January 1998, it is worth noting that this commodity alone increased its profits by 141.6%. Poland's largest good in gross revenues remained furniture, cushions etc… (SITC 821) valued at $1,950.755m, an increase of over one-third. Neither country's most profitable commodity was represented in Ukraine's top RCA percentages. In light of pending EU membership and an earlier start to transition, Poland experienced a greater degree of change in its trade composition than Lithuania, which experienced slower trade reorientation and stronger links to the Russian economy. Both further experienced a change of commodity composition, with 12 new goods in Poland's RCA values and 14 in Lithuania's. Moreover, Poland had 10 similar commodities with Ukraine (SITC 222, 245, 248, 282, 288, 321, 672, 792, 841 & 842), whereas Lithuania had 15 (SITC 022, 041, 222, 245, 248, 272, 282, 288, 562, 678, 689, 714, 792, 841 & 842).

Table 2.11: RCAs in EU Trade for Belarus & Moldova, 2001 (1-30)

	Belarus	RCA	Moldova	RCA
1	211 HIDES, SKINS (X.FURS),RAW	100	043 BARLEY, UNMILLED	100
2	245 FUEL WOOD, WD CHARCOAL	100	211 HIDES, SKINS (X.FURS),RAW	100
3	247 WOOD ROUGH, ROUGH SQRD	100	245 FUEL WOOD, WD CHARCOAL	100
4	268 WOOL, OTHER ANIMAL HAIR	100	247 WOOD ROUGH, ROUGH SQRD	100
5	282 FERROUS WASTE & SCRAP	100	282 FERROUS WASTE & SCRAP	100
6	288 NON-FERROUS WASTE,SCRP	100	288 NON-FERROUS WASTE,SCRP	100
7	322 BRIQUETTES, LIGNITE,PEAT	100	685 LEAD	100
8	248 WOOD, SIMPLY WORKED	99.4716	714 ENGINES, MOTORS NO-ELEC.	100
9	842 WMEN,GIRL CLTHNG,XKNIT	98.3802	843 MENS,BOYS CLOTHING,KNIT	99.5904
10	672 INGOTS ETC.IRON OR STEEL	97.9187	222 OILSEED(SFT.FIX VEG.OIL)	98.0413
11	266 SYNTHETIC FIBRES	97.7547	842 WMEN,GIRL CLTHNG,XKNIT	97.8468
12	841 MENS,BOYS CLTHNG,XKNIT	97.6748	844 WMEN,GIRLS CLTHNG.KNIT	97.5957
13	562 FERTILISER,EXCEPT GRP272	96.9166	811 PREFABRICATED BUILDINGS	97.0762
14	267 OTHER MAN-MADE FIBRES	95.5243	841 MENS,BOYS CLTHNG, XKNIT	97.0494
15	334 PETROLEUM PRODUCTS	94.9764	845 OTHR.TEXTILE APPAREL,NES	94.5883
16	714 ENGINES, MOTORS NO-ELEC	93.1068	831 TRUNK,SUIT-CASES,BAG,ETC	91.3207
17	693 WIRE PRODCTS EXCL.ELECT	90.9883	059 FRUIT, VEGETABLE JUICES	83.9463
18	676 IRON, STL.BAR, SHAPES ETC.	90.7957	723 CIVIL ENGINEERING EQUIPT	83.3363
19	222 OILSEED(SFT.FIX VEG.OIL)	90.7954	735 PRTS,NES,FOR MACH-TOOLS	81.7659
20	678 WIRE OF IRON OR STEEL	90.7275	057 FRUIT,NUTS EXCL.OIL NUTS	78.5448
21	635 WOOD MANUFAC, NES	89.3131	896 WORKS O/ART,ANTIQUE ETC	73.4711
22	843 MENS,BOYS CLTHG, KNIT	87.6349	058 FRUIT, PRESRVD, PREPRD	61.6235
23	658 TEXTILE ARTICLES NES	85.6994	851 FOOTWEAR	42.7477
24	634 VENEERS, PLYWOOD, ETC.	84.6831	551 ESSNTL.OIL,PERFUME, FLVR	37.1244
25	263 COTTON	84.6154	263 COTTON	25.4163
26	212 FURSKINS, RAW	84.3019	062 SUGAR CONFECTIONERY	24.1667
27	058 FRUIT, PRESRVD, PREPRD	83.0062	048 CEREAL PREPARATIONS	21.9902
28	515 ORGAN/INORGANIC CMPNDS	78.6874	716 ROTATING ELECTRIC PLANT	15.5477
29	821 FURNITURE, CUSHIONS,ETC.	77.8396	792 AIRCRFT,ASSTD. EQUIPMNT	14.4336
30	722 TRACTORS	76.2448	081 ANIMAL FEED STUFF	11.8376

Source: own calculations based on UN Comtrade three-digit data, 2001.

With no prospect of EU membership and much greater trade orientation towards the CIS market, Belarus and Moldova nevertheless experienced some changes, as illustrated by Table 2.11. Belarus retained a predominance of SITC 2 commodities with 12, half of these registering perfect values, and five more in other SITC categories (SITC 562, 672, 678, 714 & 842). The following commodities did so for a second time: SITC 245, 247 & 322. Belarus also shared five of these SITC 2 commodities with Ukraine (SITC 222, 245, 248, 282 & 288), and six in other categories (SITC 562, 672, 678, 714, 841 & 842). However, the largest amount of its trade changed from SITC 8 to SITC 3 goods, and Belarus' single most profitable commodity changed from women, girls clothing, xknit (SITC 842), now third

($43.988m), to petroleum products (SITC 334) valued at $278.021m. This commodity was helped in part by two major oil refineries in Navapolatsk and Mazyr that connect the Volga-Ural and Western Siberian pipelines to Europe. The two companies operating there, Naftan and Mazyr, are joint-stock under the state controlled Belneftekhim. Lithuania also established a more profitable RCA with the same product, valued 0.3796% higher and $427.473m greater, or 53.76% more than the Belarusian value. Given the absence of natural petroleum products, the rise of such products in Belarus and Lithuania can be attributed to Russian imports intended for the EU and CIS markets.

Having had a slight majority of SITC 2 commodities, the bulk of Moldova's RCAs originated from SITC 8 instead (8 of 30). However, five of the eight perfect values were from SITC 2, three of which (SITC 245, 282 & 288) were shared with Ukraine at lower percentages for the latter. Two of Moldova's perfect percentages were formerly present in Ukraine's values, but failed to register in 2001: SITC 211: hides, skins, excluding furs, raw & 247: wood rough, rough squared with 98.8940% and 93.7331% respectively. Furthermore, Moldova's main export industry changed from SITC 0 to SITC 8, which increased significantly, and provided the country's three most profitable export goods: women, girls clothing, xknit, (SITC 842), other textile apparel, nes (SITC 845) and mens, boys clothing, xknit, (SITC 841). The former was valued the highest ($23.141m), previously Belarus' most profitable good. To illustrate the lower export earnings experienced in Moldovan-EU trade, women, girls clothing, xknit (SITC 842) was second in profit for Ukraine at a total of $189.710m, and both had similar percentages at 98.3040% in Ukraine and 97.8468% in Moldova. Nevertheless the monetary difference was $166.569m, or 719.8% greater in Ukraine's favour. They had nine goods in common (SITC 222, 245, 282, 288, 685, 714, 792, 841 & 842). The change in focus in Moldova's trade from SITC 0 to SITC 8 can be explained by EU policy towards non-EU members' agricultural produce, and the relaxing of trade barriers involving textile products. Moldova would subsequently increase its RCAs in these labour-intensive products. They also witnessed significant changes in commodity composition, with 11 new products for Belarus and 15 for Moldova.

3.2 RCA Results: EU Trade in 2006

Table 2.12 outlines developments in RCAs for Ukraine and Russia.

Table 2.12: RCAs in EU Trade for Ukraine & Russia, 2006 (1-30)

	Ukraine	RCA	Russia	RCA
1	333 PETROLEUM OILS, CRUDE	100	284 NICKEL ORES, CNCTR,MATTE	100
2	343 NATURAL GAS	100	333 PETROLEUM OILS, CRUDE	100
3	351 ELECTRIC CURRENT	100	343 NATURAL GAS	100
4	289 PREC.METAL ORES,CONTRTS	99.9976	281 IRON ORE, CONCENTRATES	99.9893
5	281 IRON ORE, CONCENTRATES	99.9970	321 COAL,NOT AGGLOMERATED	99.9659
6	344 PETROLEUM GASES, NES	99.9841	282 FERROUS WASTE & SCRAP	99.9546
7	672 INGOTS ETC.IRON OR STEEL	99.9463	342 LIQUEFIED PROPNE,BUTANE	99.9052
8	041 WHEAT, MESLIN, UNMILLED	99.6351	272 FERTILISERS, CRUDE	99.8453
9	342 LIQUFIED PROPANE,BUTANE	99.3498	344 PETROLEUM GASES, NES	99.6422
10	247 WOOD ROUGH, RGH SQRD	99.2046	247 WOOD ROUGH, ROUGH SQRD	99.5946
11	421 FIXED VEG.FAT, OILS, SOFT	99.1797	683 NICKEL	99.4352
12	282 FERROUS WASTE & SCRAP	99.0444	274 SULPHUR,UNRSTD.IRN PYRS	99.3189
13	045 OTHER CEREALS, UNMILLED	98.9897	667 PEARLS, PRECIOUS STONES	99.1293
14	245 FUEL WOOD, WD CHARCOAL	98.8260	672 INGOTS ETC.IRON OR STEEL	98.9816
15	264 JUTE, OTH. TXTL. BAST FIBR	98.4733	931 SPEC.TRANSACT.NT CLASSD	98.9134
16	673 FLAT-ROLLED IRON ETC.	97.4665	248 WOOD, SIMPLY WORKED	98.5124
17	265 VEGETABLE TEXTILE FIBRES	97.3293	212 FURSKINS, RAW	97.9973
18	248 WOOD, SIMPLY WORKED	97.0103	334 PETROLEUM PRODUCTS	97.8948
19	841 MENS,BOYS CLTHNG,XKNIT	96.7523	671 PIG IRON, SPIEGELEISN,ETC	97.6210
20	525 RADIO-ACTIVE MATERIALS	96.5144	351 ELECTRIC CURRENT	96.9544
21	689 MISC.NON-FERR. BSE METAL	95.6086	246 WOOD IN CHIPS, PARTICLES	96.4601
22	671 PIG IRON, SPIEGELEISN,ETC	94.6558	041 WHEAT, MESLIN, UNMILLED	96.4518
23	043 BARLEY, UNMILLED	94.3875	562 FERTILISER,EXCEPT GRP272	96.3139
24	288 NON-FERROUS WSTE,SCRAP	93.9698	245 FUEL WOOD, WD CHARCOAL	93.0361
25	842 WOMEN, GIRL CLTHNG,XK	93.6516	682 COPPER	92.8246
26	793 SHIP, BOAT, FLT.STRUCTRS	93.4311	322 BRIQUETTES, LIGNITE,PEAT	92.1172
27	047 OTHER CEREAL MEAL,FLRS	93.4243	511 HYDROCRBNS,NES,DERIVTS	91.0413
28	844 WMEN,GIRLS CLTHNG.KNIT	88.4362	288 NON-FERROUS WASTE,SCRP	87.9525
29	287 ORE, CONCENTR. BSE METLS	86.8729	689 MISC.NON-FERR.BASE METL	86.6374
30	613 FURSKINS, TAND,DRESSD	81.2334	035 FISH,DRIED, SLTED, SMOKED	86.5728

Source: own calculations based on UN Comtrade three-digit data, 2006.

Ukraine's SITC 2 commodities accounted for one-third of the total, an increase of two, with two new commodities from that group (SITC 264 & 289) appearing for the first time. Despite constituting a small portion of overall trade, this industry consistently maintained its RCA, although for the first time no SITC 2 commodity had a perfect score, the highest was 99.9976% (SITC 289, previously absent). Important commodities, like SITC 282, 288 & 672, further maintained high percentages, despite EU enlargement and continuing protectionism. However, the

growing importance of SITC 3 goods also became evident, with half of the top 10 percentages and three perfect ones (SITC 333, 343 & 351). Many of the companies behind these Ukrainian commodities are Russian-owned, and the growth of such export industries can be attributed to increased investment and importance. SITC 3 commodities also accounted for a greater percentage of overall exports, although the overwhelming majority originated in SITC 6 again. In general, when divided into SITC categories, the values reflected no greater stability than in 2001 with 13 new commodities. Ingots etc…, iron or steel (SITC 672) remained the top export earner at $1,178.474m, an increase of 371.63% and in RCA by 0.1419%. This following the privatisation two years earlier of Kryvorizhstal by Investment Metallurgical Alliance, a consortium of Interpipe Group (Kyiv) and System Capital Management (Donetsk), in the country's largest privatisation deal. Moreover, this increase was helped by a rise in EU quantitative quotas for such products to consider traditional trade flows between the new EU member states and existing CIS ones, although this only became applicable in 2005 when Ukraine removed limits on its ferrous scrap exports.

The performance of SITC 041 was interesting because it was a key export excluded from preferences, unlike SITC 058, 222 & 421. Additional goods subjected to EU preferences included clothing (SITC 841, 842, 844 & 845), but not steel (SITC 672, 676, 677 & 678) and oil (SITC 333 & 342). Quantitative restrictions on Ukrainian steel imports would remain in force until WTO membership. However, quota levels have been reduced in response to Ukraine's levy of an export tax on scrap metal from January 2003 that the EU claimed contravened the PCA. The cost of steel manufacturing is reduced by lower prices on scrap metal, itself contracted by export restrictions on it. The increase of annually-negotiated steel quotas was important, accounting for the volume of iron and steel exports to the ACs. The impact of EU protectionism and high tariffs could have suppressed trade for products that Ukraine enjoys high RCA, such as meat and dairy products.

Russia's trade continued as characteristic. For example, SITC 2 commodities remained the most dominant and even increased by two, with the addition of SITC 274 & 284. Moreover, 25 commodities remained in SITC 2, 3 & 6. SITC 3 continued its dominance of overall trade and petroleum oils, crude (SITC 333) remained the largest RCA export earner at $74,881.732m, a substantial increase of 668.2%.

Interestingly, this was after the May 2004 EU bilateral market access[6] agreement, exclusive of contentious energy-related issues. Russia's RCAs were even more consistent than previous, with only six new commodities. They shared perfect values in SITC 333 & 343, and high values in 13 others (SITC 041, 245, 247, 248, 281, 282, 288, 342, 344, 351, 671, 672 & 689). Russia-EU trade did not experience the same degree of commodity changes and reorientation to different industries. Despite the CES, signed in May 2003, diversified EU trade had yet to become evident in RCA percentages in 2006, although attempts at regulatory convergence and trade and investment have. Considering the importance of raw material exports from CIS states, the importance of world prices is paramount.

Table 2.13: RCAs in EU Trade for Poland & Lithuania, 2006 (1-30)

	Poland	RCA	Lithuania	RCA
1	283 COPPER ORES, CNCNTRATES	98.9833	333 PETROLEUM OILS, CRUDE	100
2	034 FISH,FRESH,CHILLED, FRZEN	98.3431	322 BRIQUETTES, LIGNITE,PEAT	98.8507
3	325 COKE,SEMI-COKE,RET.CRBN	96.3980	344 PETROLEUM GASES, NES	97.4005
4	245 FUEL WOOD, WD CHARCOAL	96.1225	562 FERTILISER,EXCEPT GRP272	94.3706
5	011 BOVINE MEAT	95.1141	247 WOOD ROUGH, ROUGH SQRD	91.6554
6	681 SILVER,PLATINUM, ETC.	90.5524	334 PETROLEUM PRODUCTS	87.5277
7	793 SHIP, BOAT, FLT.STRUCTRS	86.1570	671 PIG IRON, SPIEGELEISN,ETC	86.7628
8	841 MENS,BOYS CLTHNG,XKNIT	83.1899	023 BUTTER, OTHER FAT O/MILK	82.5134
9	059 FRUIT, VEGETABLE JUICES	83.1845	043 BARLEY, UNMILLED	81.7570
10	761 TELEVISION RECEIVRS ETC.	81.1410	351 ELECTRIC CURRENT	81.5334
11	321 COAL,NOT AGGLOMERATED	80.6709	288 NON-FERROUS WASTE,SCRP	80.6803
12	842 WMEN, GIRL CLTHNG,XKNIT	79.5786	024 CHEESE & CURD	80.5870
13	635 WOOD MNUFACTURES, NES	79.1389	289 PREC.METAL ORES, CNCTRTS	77.6393
14	017 MEAT, OFL.PRPD, PRSVD,NES	76.2000	714 ENGINES, MOTORS NO-ELEC.	77.3220
15	821 FURNITURE, CUSHIONS,ETC.	75.5828	282 FERROUS WASTE & SCRP	77.1691
16	351 ELECTRIC CURRENT	75.4953	246 WOOD IN CHIPS, PARTICLES	75.8039
17	022 MILK & CREAM	75.0597	248 WOOD, SIMPLY WORKED	74.2084
18	246 WOOD IN CHIPS, PARTICLES	74.1625	211 HIDES, SKINS (EX.FURS),RAW	70.2429
19	666 POTTERY	72.3015	793 SHIP, BOAT, FLT.STRUCTRS	68.3612
20	696 CUTLERY	69.9807	844 WMEN,GIRLS CLTHNG.KNIT	68.2969
21	289 PREC.METAL ORES,CNCTRTS	69.4792	245 FUEL WOOD, WD CHARCOAL	67.9275
22	282 FERROUS WASTE & SCRAP	69.4125	678 WIRE OF IRON OR STEEL	67.7098
23	058 FRUIT, PRESRVD, PREPRD	68.3756	037 FISH ETC. PREPD,PRSVD.NES	66.4892
24	024 CHEESE & CURD	64.3653	811 PREFABRICATED BUILDINGS	64.8232
25	037 FISH ETC. PREPD,PRSVD.NES	62.8667	011 BOVINE MEAT	63.4084
26	672 INGOTS ETC.IRON OR STEEL	61.8174	842 WMEN, GIRL CLTHNG,XKNIT	62.0267
27	844 WMEN,GIRLS CLTHNG.KNIT	61.1962	821 FURNITURE, CUSHIONS,ETC.	61.7848
28	045 OTHER CEREALS, UNMILLED	59.2552	841 MENS,BOYS CLTHNG,XKNIT	60.6430

[6] Several analyses suggest that the larger SEM will benefit the CIS. See Baldwin *et al*. (1997) and Sulamaa and Widgrén (2002)

29	579 PLASTIC WASTE, SCRAP ETC	57.7177	635 WOOD MANUFACTURES, NES	59.8218
30	658 TEXTILE ARTICLES NES	57.1815	658 TEXTILE ARTICLES NES	58.8103

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 2.13 provides RCA values for Poland and Lithuania in 2006, the first year of this analysis to show the impact of EU accession two years earlier. With a loss of three commodities in SITC 2 (SITC 222, 248 & 288) to signify only five of the top percentages, SITC 0 became Poland's largest RCA industry with nine goods. This growing trend towards such commodities was already evident in 2001, when three new goods achieved high values (SITC 011, 017 & 035). In 2006 this was followed by SITC 022, 024 & 034, which replaced SITC 035. Poland and Ukraine did not share any SITC 0 goods. The increase in these products can be attributed to EU membership that opened Poland's trade here yet remains a barrier to Moldova's. Despite the strength of agriculture and its domestic political influence, Lithuania did not experience a similar development. This was the first year that Poland did not achieve any perfect values. This is indicative of Poland's adjustment to trade reorientation and the greater competition faced by its producers, during the adjustment period. The country's main industry of exported goods remained SITC 7, led by a new commodity (SITC 793) with 86.1570%. Its most lucrative export again remained SITC 821: furniture, cushions, etc… at $5,324.629m (+172.95%). Furthermore, commodity composition continued to change, with one-third of the previous goods absent in 2006. Nine commodities were common to Ukraine's RCAs (SITC 045, 245, 282, 289, 351, 672, 841, 842 & 844).

Lithuania also experienced a decline in representation from SITC 2, with SITC 222, 223 & 272, yet it remained the dominant industry with eight goods. Lithuania shared its only perfect score with Ukraine in SITC 333, a new entry. This commodity is closely related to the country's most profitable export commodity in 2001 and 2006: petroleum products (SITC 334) at $1,797.128m and 87.5277%. Monetary values of this good increased by $1,369.655m, however, its RCA score declined by 7.8283%. The majority of Lithuania's exports changed for the first time from SITC 8 to SITC 3. The reason for much of this was the increased investment in the oil terminal at Būtingė to support existing refining facilities in Mažeikiai. This is partly reflective of its top three values, including SITC 322, 333 & 344. Half of the commodities were held in common with Ukraine (SITC 043, 245, 247, 248, 282, 288,

289, 333, 344, 351, 671, 793, 841, 842 & 844). Lithuania also experienced a change in commodity composition, with almost one-third registered new. This is indicative of Lithuania's growing trade and commodity reorientation. Therefore, the impact of EU accession was clear.

Table 2.14: RCAs in EU Trade for Belarus & Moldova, 2006 (1-30)

	Belarus	RCA	Moldova	RCA
1	282 FERROUS WASTE & SCRAP	100	041 WHEAT, MESLIN, UNMILLED	100
2	333 PETROLEUM OILS, CRUDE	100	247 WOOD ROUGH, ROUGH SQRD	100
3	247 WOOD ROUGH, ROUGH SQRD	99.9779	791 RAILWAY VEHICLES.EQPNT	100
4	344 PETROLEUM GASES, NES	99.9778	896 WORKS OF ART,ANTIQ ETC	100
5	672 INGOTS ETC.IRON OR STEEL	99.8998	288 NON-FERROUS WASTE, SCRP	99.9947
6	288 NON-FERROUS WASTE,SCRP	99.7851	282 FERROUS WASTE & SCRAP	99.9371
7	248 WOOD, SIMPLY WORKED	99.2570	843 MENS,BOYS CLOTHING,KNIT	98.3094
8	334 PETROLEUM PRODUCTS	99.0386	844 WMEN,GIRLS CLTHNG.KNIT	98.2369
9	245 FUEL WOOD, WD CHARCOAL	98.9735	841 MENS,BOYS CLTHNG,XKNIT	96.2674
10	342 LIQUEFIED PROPANE, BUTNE	98.9021	211 HIDES, SKINS (EX.FURS),RAW	95.3355
11	322 BRIQUETTES, LIGNITE,PEAT	98.7368	842 WMEN, GIRL CLTHNG,XKNIT	95.1818
12	562 FERTILISER,EXCEPT GRP272	97.9866	845 OTHR.TEXTILE APPAREL,NES	94.7808
13	265 VEGETABLE TEXTILE FIBRES	97.8486	421 FIXED VEG.FAT, OILS, SOFT	93.6925
14	246 WOOD IN CHIPS, PARTICLES	97.3517	043 BARLEY, UNMILLED	93.0009
15	266 SYNTHETIC FIBRES	95.8665	831 TRUNK,SUIT-CASES,BAG,ETC	90.4180
16	335 RESIDUAL PETROL.PRDUCTS	95.3053	676 IRON, STL.BAR, SHAPES ETC.	88.6419
17	842 WMEN, GIRL CLTHNG,XKNIT	93.9910	044 MAIZE UNMILLED	88.3564
18	268 WOOL, OTHER ANIMAL HAIR	92.8078	059 FRUIT, VEGETABLE JUICES	87.2580
19	693 WIRE PRODUCTS EXCL.ELCT	90.7618	714 ENGINES, MOTORS NO-ELEC.	81.6085
20	579 PLASTIC WASTE, SCRAP ETC	90.5689	058 FRUIT, PRESRVD, PREPRD	78.1365
21	676 IRON, STL.BAR, SHAPES ETC.	90.5544	851 FOOTWEAR	62.5709
22	896 WORKS OF ART,ANTIQ ETC	90.5303	057 FRUIT,NUTS EXCL.OIL NUTS	55.6535
23	678 WIRE OF IRON OR STEEL	90.4757	248 WOOD, SIMPLY WORKED	47.8512
24	841 MENS,BOYS CLTHNG,XKNIT	88.8923	811 PREFABRICATED BUILDINGS	46.9290
25	211 HIDES, SKINS (X.FURS),RAW	84.4324	222 OILSEED(SFT.FIX VEG.OIL)	45.4620
26	635 WOOD MANUFACT, NES	83.3840	112 ALCOHOLIC BEVERAGES	40.8080
27	871 OPTICAL INSTRUMENTS,NES	81.9135	512 ALCHOL,PHENOL, ETC.DERIV	17.9563
28	212 FURSKINS, RAW	81.2401	551 ESSTL.OIL, PERFUME,FLAVR	12.3038
29	058 FRUIT, PRESRVD, PREPRD	79.1952	659 FLOOR COVERINGS, ETC.	10.5588
30	611 LEATHER	71.4130		

Source: own calculations based on UN Comtrade three-digit data, 2006.

Contrary to developments in Poland and Lithuania, Belarus and Moldova did not experience major changes in their trade compositions, as evident in Table 2.14. As was the case with Ukraine, Belarus maintained slightly over one-third of its leading RCA values in SITC 2 commodities, although only one good from this industry achieved 100% (SITC 282). Belarus shared six such commodities with Ukraine (SITC

245, 247, 248, 265, 282 & 288), and six more in various categories (SITC 333, 342, 344, 672, 841 & 842). The majority of trade remained in SITC 3 products, including petroleum products (SITC 333) which were the most profitable at $6,058.725m, a substantial increase of 2,079.23%. One-third of the 2006 commodities were new.

The largest amount of Moldova's RCAs remained in SITC 8 at nine, with works of art, antiques etc… (SITC 896) becoming the highest valued commodity of this group. Only one SITC 2 commodity achieved a perfect values, compared to five in 2001, and 10 goods were shared with Ukraine (SITC 041, 043, 247, 248, 282, 288, 421, 841, 842 & 844). Moldova's main export industry remained SITC 8, amounting to over half of all exports, and it again provided the three most profitable export goods: women, girls clothing, xknit (SITC 842), other textile apparel, nes (SITC 845) and mens, boys clothing, xknit (SITC 841), the former having increased by 129.91% to $533.204m. Moldova's profits in RCA goods were significantly lower by comparison, as were average values. For the second time, commodity change and poor RCA values were significant, with 11 new products present and eight registering less than 50%. For the first time, fewer than 30 commodities were greater than 0%.

4. An Assessment of EU Trade Developments

Table 2.15 illustrates EU trade developments, and shall serve as the basis for the following discussion. Column one provides each SITC one-digit industry with a brief description. The last three rows state the main RCA and export categories and the most valued export commodity by profit. Columns two to seven shall provide the numerical changes (+/-) related to commodity representation for each of the respective countries, with the bottom three rows indicating shifts from one SITC industry or commodity (i.e. 2→8, a change from SITC 2 to 8).

Table 2.15: Changes in SITC Commodity Composition in EU Trade, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	+1	+2	+5	+1	-1	+1
1 Beverages & tobacco	n/a	n/a	n/a	0	0	0
2 Crude materials	-2	-2	-4	-3	-2	-1
3 Mineral fuels	+3	0	-1	+2	+5	-1
4 Animal & vegetable oil	0	n/a	n/a	0	0	0
5 Chemicals & related	-3	0	+1	-1	-1	+1
6 Manufactured goods	+1	-1	0	-1	-2	-4
7 Machinery/Transport	-1	n/a	+1	0	-1	+1
8 Misc. manufactured prd	+1	n/a	-1	+2	+2	+3
9 Not classified	n/a	+1	-1	0	0	-1
Main RCA Industry	2→2	2→2	2→0	2→2	2→2	2→8
Main Export Industry	2→6	3→3	6→7	8→3	8→3	0→8
Valued Export Comm.	265→672	333→333	821→821	562→334	842→334	059→842

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

The majority of high RCA values were initially in SITC 2 for each country. However, the industry's representation declined throughout, and the most in Polish and Lithuanian trade at four and three commodities correspondingly. By 2006, the majority of high RCA percentages in Poland-EU trade had shifted to SITC 0, whereas for Moldova-EU trade this change was to SITC 8, mostly clothing products. The other four countries finished with SITC 2 as their main RCA industry. The significant increase of five SITC 0 exports from Poland can be attributed to its new EU membership that facilitated the removal of numerous trade restrictions, encouraging greater conformity to EU standards and quality controls. This would support the argument that CEE-EU trade changed partially on account of diverse factor endowments (see H-O theorem), created by income-level disparities (Freudenberg & Lemoine, 1999). In overall exports, only Russia's export sector remained constant, with SITC 3 products at the forefront. The same was true for its leading export commodity by profit: petroleum oils, crude (SITC 333). In fact, Russia experienced very little change in the broader structure of its trade, supporting similar findings by Hoekman and Djankov (1996). Poland was the only other country to finish with the same most profitable commodity: SITC 821: furniture, cushions etc… Russian oil and gas exports to the EU could even have been greater, if not for EU restrictions incurred by the Russian parliament's refusal to ratify the EEnC. Lithuania and Belarus experienced greater representation in RCAs in SITC 3, with two and five additional goods each, largely because of Russian imports to upgraded their refining facilities.

They also had petroleum products (SITC 334) as their most profitable commodity, with high RCA percentages in 2006, and SITC 3 goods comprising the majority of their exports. In other words, all three countries are more specialised in primary goods in EU trade. They are also competing against one another in fewer commodities, something noted by Kaitila and Widgrén (1999) in Baltic-EU trade. Hence, the export of primary resources is merely a continuation of Soviet trade patterns because these products face little competition from the EU. Russia's EU trade conforms to the 'availability' theory proposed by Kravis (1956). Greater liberalisation has clearly reflected an important adjustment process in Poland and Lithuania, where companies have had to increase their competitiveness by adjusting to new capacities and production techniques. This process is more obvious in Poland, the leading reformer in this study.

As was the case with Belarus and Lithuania, Ukraine also witnessed growth in SITC 3 commodities with significant RCA values; however, this industry produced neither a good which was the country's most profitable export, nor did it constitute the majority of exports. Despite restrictive EU import quotas and anti-dumping measures on CIS steel exports, this distinction belonged to SITC 6. In terms of the same commodities sharing high RCA values between the various countries, Ukraine initially shared the most with Lithuania (13), and in 2006 with Lithuania and Russia (15). Thus, Ukraine-EU trade faces the greatest competition from these two states. Ukraine and Poland shared the least number of commodities, with less than one-third on both occasions. The high amount of shared goods between Ukraine and the other countries, on average between one-third and one-half, illustrates competition for EU trade is significant, with many of these countries competing to various degrees in the same products.

Some countries also replaced others in leading export sectors. For example, Moldova's leading one became SITC 8, formerly dominant in Lithuanian and Belarusian exports, and Ukraine's leading export industry changed to SITC 6, formerly Poland's main export industry before EU accession. It is not surprising though that Moldova lost advantages in SITC 0 commodities, given the prevalent EU protectionism through variable levies and technical standards, and gained in SITC 8, because of its cost advantages. This development also supports the Ricardian theorem. Moreover, the effects of the ENP and EUMAP have not had sufficient time to take root. Advantages in this industry subsequently passed to Poland after 2004. This

further concludes with Landesman (2000) and Inotai (2004) that the ACs attempted to integrate into diverse product specialisation, and this becomes much clearer in Polish and Lithuanian trade with the CIS.

Ukraine lost more commodities belonging to SITC 5 than any other country (-5). Although chemicals and related products are classified as a 'sensitive' sector and EU protectionism can explain much of the decline here, Ukraine's most profitable export (SITC 672: ingots etc…iron or steel), can be classified likewise. Only Ukraine managed to increase its SITC 6 representation (+1), whereas Moldova experienced the largest decline (-4). Trade levels of SITC 6 & 0 commodities from the CIS were low; however, only Ukraine had managed to make SITC 6 its leading export industry by 2006. Moreover, Moldova experienced changes in its main export industry and RCA industry to SITC 8, the only country to have these two categories in the same SITC classification. These developments reflect the H-O theorem. However, the greater advantages in Moldova's labour-intensive exports are ironic, because of its declining workforce. Cost factors must be a clear consideration here.

Table 2.16 : Changes in RCA Percentages in EU Trade, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	+24.832*	+7.702*	+38.990¹	+37.567*	-21.579*	-39.986
1 Beverages & tobacco	+2.709*	-4.700*	+71.991¹	+86.362*	+13.374*	-14.657
2 Crude materials	-4.532	+3.050	+9.644¹	-32.253	-22.238	-28.609
3 Mineral fuels	+9.741	+0.904	+14.204	+132.98¹	+150.32¹	+3.212*
4 Animal & vegetable oil	+73.491	+67.491*	+48.278*	+64.834*	+83.283	-4.311
5 Chemicals & related	-21.286*	-30.497*	+15.839*	-23.704*	-11.080*	-11.077*
6 Manufactured goods	+48.941¹	-0.914	+11.138*	+0.431*	+26.395¹	+11.248*
7 Machinery/Transport	-1.192*	-8.482*	+46.333¹	+13.683*	-8.153*	+9.996*
8 Misc. manufactured prd	-6.692*	-11.818*	+1.287	-0.729	-8.023*º	+18.809
9 Not classified	-80.385*º	+198.913¹	-53.817*º	+86.184*	+89.344*	-143.19*º

*Industry has a negative RCA percentage. º Denotes a loss of RCA. ¹ Denotes a gain of RCA.

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Table 2.16 illustrates RCA percentage changes for one-digit SITC industries in EU trade. In 1996, the main RCA industry for each country was SITC 2. This remained so throughout, except for Poland and Moldova which experienced a change to SITC 0 & 8 respectively. Ukraine saw its greatest growth in SITC 4 (+73.491%), and its greatest reduction in SITC 9 (-80.385%). The only industry to gain RCA was SITC 6 (+48.941%), and the only ones to retain this throughout were SITC 2, 3 & 4. Russia's most improved industry was SITC 9 (+198.913%), which was not only the

highest recorded growth, but also Russia's only industry to achieve RCA. Conversely, SITC 5 experienced the greatest decline (-30.497%). Three industries maintained RCA (SITC 2, 3 & 6), only the latter was not applicable to Ukraine. Poland experienced increasing RCA in nine industries, with SITC 1 showing the greatest improvement (+71.991%). It gained RCA along with SITC 0, 2 & 7, meaning Poland had the most new RCA industries. Having experienced growth of 38.99%, SITC 0 also became Poland's main RCA industry in 2006. SITC 9 not only experienced the highest contraction (-53.817%), but it was the only one to lose RCA. SITC 3 & 8 were the only industries to enjoy RCA throughout. For Lithuania, SITC 3 experienced the greatest increase (+132.98%), and was the only one to gain RCA. SITC 2 experienced the greatest decline (-32.253%), but retained RCA. The only other one to do so was SITC 8, whilst no industry lost RCA. Belarus' most improved industry, like Lithuania's, was SITC 3 (+150.32%), which achieved RCA along with SITC 6, and the one experiencing the greatest decline was SITC 2 (-22.238%), which managed to retain RCA along with SITC 4. The only industry to lose RCA was SITC 8. Moldova's greatest growth occurred in SITC 8 (+18.809%), which became its leading RCA industry, but this value was the lowest recorded leading increase. It shared its most significant decline with Ukraine and Russia in SITC 9 (-143.19%), the greatest contraction of any country calculated and the only Moldovan one to lose RCA. Ironically, Moldova had the greatest amount of industries retaining RCA with five (SITC 0, 1, 2, 4 & 8), although only the latter increased its percentage. SITC 3 was the only industry to experience increased percentages across all six countries, whilst SITC 2 was the only one to maintain RCA in each. No industry witnessed universal declining values.

The main RCA industry remained SITC 2 in each country, except in Poland and Moldova, and exports from this industry rose without exceptions (see Table 2.01). Exports also increased from the new main RCA industry in Poland (SITC 0) and Moldova (SITC 8). However, representation of SITC 2 in terms of overall exports actually fell throughout the six countries (see Table 2.02) and in the number of leading commodities (see Table 2.15), the most pronounced being in Lithuania (-12.05%) and Belarus (-10.62%). The new main RCA industry in Poland (SITC 0) increased its contribution to total exports by only 1.16%; however, Moldova's new main RCA industry witnessed exceptional growth of 21.68%, constituting the country's greatest growth in what became its leading export industry. Imports of SITC

0, 2 & 8 rose in each country (see Table 2.03). However, as a percentage of total imports, SITC 2 increased only in Belarus (0.61%). SITC 8 imports grew by 1.09% in Moldova, yet SITC 0 fell by 1.10% in Poland.

A comparison of the percentage changes in exports by SITC industries (Table 2.01) and changes in SITC industries as a percentage of overall exports (Table 2.02) with the greatest increase in RCA percentages (Table 2.16) revealed the following information. The industry with the leading growth in its RCA percentage experienced the greatest percentage change in its exports only in Ukraine (SITC 4) and Belarus (SITC 3). A positive relationship between growth in an industry as a percentage of overall exports and the leading growth in RCA percentage was more obvious in Russia (SITC 9), Lithuania and Belarus (SITC 3) and Moldova (SITC 8). Regarding the industry which experienced the greatest increase in its RCA percentage, SITC 9 (Russia) and SITC 3 (Belarus) had leading percentage changes in their country's respective imports, whereas SITC 3 (Lithuania) experienced the smallest increase in imports (see Table 2.03). There was no example of an industry with the greatest increase in RCA percentage also experiencing either the largest increase or decrease as a percentage of overall imports (Table 2.04).

A comparison of the percentage changes in imports by SITC industries (Table 2.03) and changes in SITC industries as a percentage of overall imports (Table 2.04) with the greatest decrease in RCA percentages (Table 2.16) also produced some notable observations. The industry with the greatest decrease in its RCA percentage experienced the poorest change in its imports only in Ukraine (SITC 9). There was one example of a relationship between the greatest decrease in an industry as a percentage of overall imports and the greatest decline in RCA percentage. This was observed in SITC 9 in Poland. There was no relationship involving the greatest decrease in an industry as a percentage of total imports. In terms of the industry which experienced the greatest decrease in its RCA percentage, SITC 9 (Ukraine and Moldova) and SITC 2 (Lithuania) had the poorest percentage changes in exports, whereas SITC 9 (Poland) experienced the greatest growth in exports (see Table 2.01). In fact, SITC 9 in Ukraine and Moldova contracted. There were two examples of an industry with the greatest decrease in its RCA percentage also recording the greatest decrease as a percentage of overall exports (Table 2.02). They were SITC 9 in Ukraine and SITC 2 in Lithuania.

Regarding RCA developments in Ukraine-EU trade, SITC 2 & 3 constituted 15 of the RCA percentages in 2006, only one more than in 1996. Thus, it can be said that these two industries have remained more or less constant. Concerning particular commodities, five showed an improvement in RCA percentages (SITC 247: wood, rough, rough squared, 248: wood, simply worked, 421: fixed vegetable fat, oils, soft, 525: radio-active materials & 841: men, boys clothing, xknit), whereas 10 experienced a decrease (SITC 045: other cereals, unmilled, 265: vegetable textile fibres, 281: iron ore, concentrates, 282: ferrous waste and scrap, 287: ore, concentrated, base metals, 288: non-ferrous waste, scrap, 672: ingots etc…, iron or steel; 689: miscellaneous non-ferrous base metals, 793: ship, boat, floating structures & 842: women, girl clothing, xknit). Fifteen new commodities had a strong RCA score (SITC 041: wheat, meslin, unmilled, 043: barley umilled, 047: other cereal meal, flours, 245: fuel wood, wood charcoal, 264: jute, other textile based fibres, 289: precious metal ores, concentrated, 333: petroleum oils, crude, 342: liquefied propane and butane, 343: natural gas, 344: petroleum gasses, nes, 351: electric current, 613: fur skins, tanned and dressed, 671: pig iron, spiegeleisn, etc…, 673: flat-rolled iron etc.. & 844: women, girls clothing, knit). Likewise, 15 commodities formerly with a strong RCA value were no longer present (SITC 037: fish etc…prepared preserved, nes, 043: barley, unmilled, 211: hides, skins, excluding furs, raw, 222: oilseed, fixed vegetable oil, 223: oilseed, other fixed vegetable oil, 277: natural abrasives, nes, 286: uranium, thorium ores, etc…, 322: briquettes, lignite, peat, 335: residual petrol products, 522: inorganic chemical elements, 562: fertiliser, except GRP 272, 579: plastic waste, scrap etc…, 677: railway track, iron or steel, 678: wire of iron or steel & 792 aircraft, associated equipment).

Such developments, however, were similar for each. Table 2.17 illustrates commodity changes for each country in its EU trade.

Table 2.17: Changes in RCA Commodities in EU Trade, 1996-2006

Country	No Change	Increase	Decrease	New
Ukraine	0	5	10	15
Russia	1	10	10	9
Poland	0	3	15	12
Lithuania	1	2	15	12
Belarus	0	5	10	15
Moldova	1	7	9	13

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

This reinforces Ukraine's commodity changes, and shows that no product remained with a constant RCA value (no change). Russia experienced the single greatest increase, with 10 attaining higher percentages. Half of these were from SITC 3, and Russia also had the least amount of new goods with only nine. It experienced declining values for three commodities (SITC 281, 288 & 689), and increases in only one (SITC 248). Belarus had an identical record with Ukraine; however, they did not share the same increasing or decreasing commodities. Where Ukraine witnessed declines in some RCAs (SITC 282, 288 & 842), Belarus experienced the opposite. The reverse also proved true: Ukraine increased its advantage in two goods for which Belarus lost some RCA (SITC 247 & 248). Moldova and Ukraine became more competitive in SITC 421 & 841, and Moldova experienced growing competitiveness in SITC 8 commodities, with five of the seven increases. It experienced declining advantages in SITC 282 & 288. Poland and Lithuania experienced the greatest amount of change, and the largest decreases and lowest increases. They lost some RCA in four commodities common with Ukraine (SITC 282, 288, 793 & 842); Ukraine experienced an increase in competitiveness in a 'sensitive' good in which Poland and Lithuania witnessed a decrease (SITC 841). According to the F-P-E theorem, differences must still exist in technology for Poland and Lithuania to maintain unequal factor prices in relative factors, notwithstanding free trade and greater competition.

Concerning Ukraine's most profitable exports to the EU (see Table 4.20), it is possible to identify eight for which significantly high RCA percentages (RCA>90%) were attained. This indicates that these production areas have become more competitive. They were as follows:

SITC 248	Wood, simply worked	(primary product)	97.01%
SITC 281	Iron ore, concentrates	(primary product)	100%
SITC 421	Fixed vegetable fat, oils	(primary product)	99.18%
SITC 671	Pig iron, spiegeleisn, etc…	(resource-intensive)	94.66%
SITC 672	Ingots etc…iron or steel	(human capital-int.)	99.95%
SITC 673	Flat-rolled iron etc…	(human capital-int.)	97.47%
SITC 841	Men's/boy's clothing	(labour-intensive)	96.75%
SITC 842	Women's/girl's clothing	(labour-intensive)	93.65%

Clothing constitutes one of Ukraine's main export branches under favourable EU conditions, and one of the largest branches of OPT. According to the International Iron and Steel Institute and the US Geological Survey, Ukraine was the seventh highest producer of steel in the world in 2006 and the sixth highest producer of iron ore in 2004, which undoubtedly influenced such commodities and their export earning potential, despite EU quantitative restrictions on steel imports.[7] What is important here is the re-emergence of key human capital-intensive products, deemed 'sensitive', which are fundamental to Ukraine's economic growth and trade diversification.

The CIS members experienced greater competitiveness in their top commodity exports to the EU, mostly in products applicable to Kravis' 'availability' theory. Russia (see Table 4.21) had the greatest number of competitive exports of all countries in either EU or CIS trade with 13, most of which were either primary or resource-intensive:

SITC 247	Wood rough, rough squared	(primary product)	99.59%
SITC 248	Wood, simply worked	(primary product)	98.51%
SITC 282	Ferrous waste & scrap	(primary product)	99.95%
SITC 321	Coal, not agglomerated	(primary product)	99.97%
SITC 333	Petroleum oils, crude	(primary product)	100%
SITC 334	Natural gas	(primary product)	97.89%
SITC 562	Fertiliser, except GRP272	(technology-int.)	96.31%
SITC 667	Pearls, precious stones	(resource-intensive)	99.13%
SITC 671	Pig iron, spiegeleisn	(resource-intensive)	97.62%
SITC 672	Ingots etc…iron or steel	(human capital-int.)	98.98%
SITC 682	Copper	(resource-intensive)	92.82%
SITC 683	Nickel	(resource-intensive)	99.44%
SITC 931	Special transaction, non-classified		98.91%

Belarus (see Table 4.24) was tied for second with a total of nine commodities:

SITC 248	Wood, simply worked	(primary product)	99.26%

[7] For further information, see the International Iron and Steel Institute's webpage at http://www.worldsteel.org, and the US Geological Survey at http://www.nrcan.gc.ca/mms/cmy/content/2004/32.pdf.

SITC 333	Petroleum oils, crude	(primary product)	99.99%
SITC 334	Natural gas	(primary product)	99.04%
SITC 342	Liquefied propane, butane	(primary product)	98.90%
SITC 562	Fertiliser, except GRP272	(technology-int.)	97.99%
SITC 672	Ingots etc…iron or steel	(human capital int.)	99.90%
SITC 676	Iron, steel bars, shapes, etc.	(human capital int.)	90.55%
SITC 678	Wire of iron or steel	(human capital-int.)	90.48%
SITC 842	Women, girls clothing	(labour-intensive)	93.99%

Unlike some of the human capital- and technology-intensive goods more competitive in Russian and Belarusian EU trade. Moldova (see Table 4.25) had nine goods that were labour-intensive or primary-intensive. The S-S theorem concerning the increase of the relative price of labour-intensive goods through tariff imposition seems somewhat unclear, as does the growth in labour-intensive goods amidst a declining workforce through migration. The shift in greater RCAs to labour-intensive commodities is likely to cause real wages to decline, given the lack of growth in capital-intensive sectors. The nine commodities showing greater competitiveness were:

SITC 041	Wheat, meslin, unmilled	(primary product)	100%
SITC 288	Non-ferrous waste & scrap	(primary product)	99.99%
SITC 421	Fixed vegetable fat, oils, soft	(primary product)	93.69%
SITC 831	Trunk, suitcases, bags, etc…	(labour-intensive)	90.42%
SITC 841	Mens, boys clothing, xknit	(labour-intensive)	96.27%
SITC 842	Women, girls clothing	(labour-intensive)	95.18%
SITC 843	Mens, boys clothing, knit	(labour-intensive)	98.31%
SITC 844	Women, girls clothing, knit	(labour-intensive)	98.24%
SITC 845	Other textile apparel, nes	(labour-intensive)	94.78%

Poland (see Table 4.22) had no single commodity showing greater competitiveness, but Lithuania (see Table 3.23) had one:

SITC 562	Fertiliser, except GRP272	(technology-int.)	94.37%

The CIS member states thus had more traded commodities showing a greater competitiveness in EU trade. Most of these were primary-intensive (SITC 2 & 3), human capital-intensive (SITC 6), resource-intensive (SITC 6) or labour-intensive ones involving clothing (SITC 8), a commodity given preferential treatment under the OPT scheme. Ukraine competes in such RCA goods with Russia (SITC 248, 671 & 672), Belarus (SITC 248, 672 & 842) and Moldova (SITC 841 & 842). There is little doubt that competition is more acute in EU trade. The CIS countries are now showing some aspects of greater competitiveness in labour and primary-intensive goods that Landesman and Wörz (2006) note were more dominant in CEE RCAs.

5. Conclusion

Belarus not only experienced the greatest export increase, despite not having a bilateral trade agreement or working relationship, but its growth was more than double that of second-placed Lithuania. Exports of SITC 3 commodities were important to both. Russia and Ukraine had similar growth to rank third and fourth respectively, followed by Poland and Moldova. Concerning import growth, the percentage figures were less for all, except Moldova. The rankings were also different: Lithuania experienced the highest growth, followed by Ukraine, Moldova, Belarus, Russia and Poland. The greatest discrepancy between export and import growth belonged to Belarus. Lower import growth in Russia facilitated the highest percentage change in a balance, which remained positive. Belarus experienced the second highest change, experiencing a positive balance in the process. Moldova and Ukraine saw similar increases and both maintained a negative balance. Lithuania experienced the second lowest growth and could not reverse a negative balance, followed by Poland which joined Belarus as the only other country to reverse a negative balance.

A closer examination of where export growth occurred revealed that it was mostly in SITC 4 (Ukraine, Russia and Lithuania) and SITC 3 (Belarus and Moldova). In Poland, SITC 9 witnessed the greatest increase in exports. Export growth was so comprehensive that only two industries recorded a decrease (SITC 9 in Ukraine and Moldova). However, this method of assessing export growth revealed that, with the exception of SITC 3 in Belarus, these were minor export industries. Therefore, the calculation of the leading percentage changes in exports by SITC industries did not

fully correspond to the leading changes in SITC industries as a percentage of overall exports. The sole exception was SITC 3 in Belarus. This suggests a weak relationship between the two. However, industry with the leading percentage growth in overall exports could constitute the main RCA industry. This proved true, with one exception (Russia). In fact, Russia's main RCA industry remained SITC 3, which contracted in total exports and imports. Regarding the most profitable industry, there was a strong relationship involving industry growth as a percentage of overall exports in Ukraine, Lithuania, Belarus and Moldova. In Poland and Russia, this relationship did not hold true: their most profitable industries did not experience export growth. A further examination of the leading percentage changes in exports by SITC industries and changes in SITC industries as a percentage of overall exports with the leading increase in RCA percentages did not illustrate a strong relationship with the former (two countries), but proved more relevant with the latter (four countries).

An analysis of import growth revealed that only one industry (SITC 9) had the leading value in more than one country (Russia and Poland). Belarus and Poland had the same industries record the leading percentage change in both exports and imports with SITC 3 & 9 respectively. No industry recording a leading value in export growth witnessed a decrease in its corresponding imports. Decreases in imports were observed only in two industries (SITC 1 & 9 in Belarus). Three countries recorded leading import growth figures as a percentage of overall imports in SITC 7 (Ukraine, Russia and Belarus). The calculation of percentage changes in imports revealed better where the most significant growth in overall imports was, compared to the same relationship with exports: leading figures for both were calculated in Ukraine (SITC 7), Poland (SITC 9) and Lithuania (SITC 5). However, a weak relationship exists between percentage changes in imports by SITC industries and the changes in SITC industries as a percentage of overall imports: the former tends to identify smaller, insignificant import industries. Examples persisted where leading growth in monetary figures did not translate into greater percentages in overall exports or imports. Furthermore, the relationship between SITC industry growth as a percentage of overall imports and the main import industry was not as apparent as it was concerning the main export industry: the highest growth was mirrored by the main import industry only in Ukraine, Russia and Belarus. This was evident in exports for each country, except Russia. Regarding the least profitable industry, the relationship between industry growth as a percentage of overall imports was evident only in the

three aforementioned countries (SITC 7). A further examination of leading percentage changes in imports by SITC industries and changes in SITC industries as a percentage of overall imports with the leading decrease in RCA percentages did not illustrate any strong relationships.

The main RCA industry in each country experienced growth in terms of overall exports. Ukraine's main RCA industry in EU trade remained SITC 2. This was also applicable to Russia, Lithuania and Belarus. However, Poland and Moldova experienced a change from SITC 2 to SITC 0 & 8 respectively. This can be partly explained by EU expansion which facilitated such changes, making trade in Poland's agricultural sector easier through the inclusion of SEM. However, exports from this industry only rose by a small margin. Moldova's agricultural products mostly remain excluded; however, the growing strength of its clothing industries, included in SITC 8, to become the leading RCA industry and export industry may also be attributed to EU policies, especially the OPT scheme. In contrast to the small growth experienced by Poland's new leading RCA industry, Moldova's experienced extraordinary export growth. Concerning each country's main export industry, only Russia's remained constant (SITC 3). Lithuania and Belarus also finished with SITC 3 as their main export industry, largely because of Russian oil imports to improved oil refinery sites. Hence, all three countries were focused on the same primary resources. Ukraine's main export industry became SITC 6, formerly Poland's where SITC 7 replaced it. In Moldova SITC 8 replaced SITC 0. In the most valued export with a significant RCA percentage, Ukraine was the only country to have a human capital-intensive one (SITC 672: ingots etc…iron or steel). For Poland and Moldova, theirs were labour-intensive (SITC 821: furniture and parts thereof & 842: outer garments, mens, of textile fibres), whereas primary products featured in Russia (SITC 333: petroleum oils) and Lithuania and Belarus (SITC 334: petroleum products). This was an interesting development for Ukraine: the country's iron and steel industries experienced significant restructuring and privatisation, and these products endured EU protectionism. Competition in EU trade is much more pronounced, with Ukrainian products facing greater competition from Lithuania and Russia. Ukraine witnessed increasing levels of competition and slight changes in its trade composition and diversification.

Changes in RCA percentages illustrated that SITC 9 had the worst performance for Ukraine, Poland and Moldova, yet the best for Russia. Ironically,

Lithuania and Belarus experienced the greatest growth in SITC 3 and the largest contraction in SITC 2. Poland saw growth in all one-digit industries, except SITC 9, and acquired the most new RCA industries. The leading RCA industry in Ukraine, SITC 6, experienced the greatest growth, and in Poland it was in SITC 4. Notwithstanding the lowest growth of any leading industry, SITC 8 was not only Moldova's most improved, but it also became its leading RCA industry. Moldova further managed to maintain the highest amount of RCA industries with five. The only industry for which increasing percentages were universally recorded was SITC 3. Only SITC 2 maintained RCA in all, and no industry experienced decline throughout. In industrial competitiveness (i.e. RCA>90%) in 2006, Russia had the greatest number (13), followed by Belarus and Moldova (9), Ukraine (8) and Lithuania (1). Most were primary or labour-intensive goods. Human capital-intensive industries were limited to 'sensitive' products in the iron and steel sectors between Belarus, Russia and Ukraine. The only technology-intensive industries were traditional fertilisers (Belarus, Lithuania and Russia). These industries of higher competition within the CIS states and Lithuania, however, were present in CMEA trade, thus the amount of trade restructuring has been limited, as few newer industries emerged. Competition nevertheless is higher between CIS states in the EU market. The next chapter addresses the empirical analyses of RCA in CIS trade.

CHAPTER 3

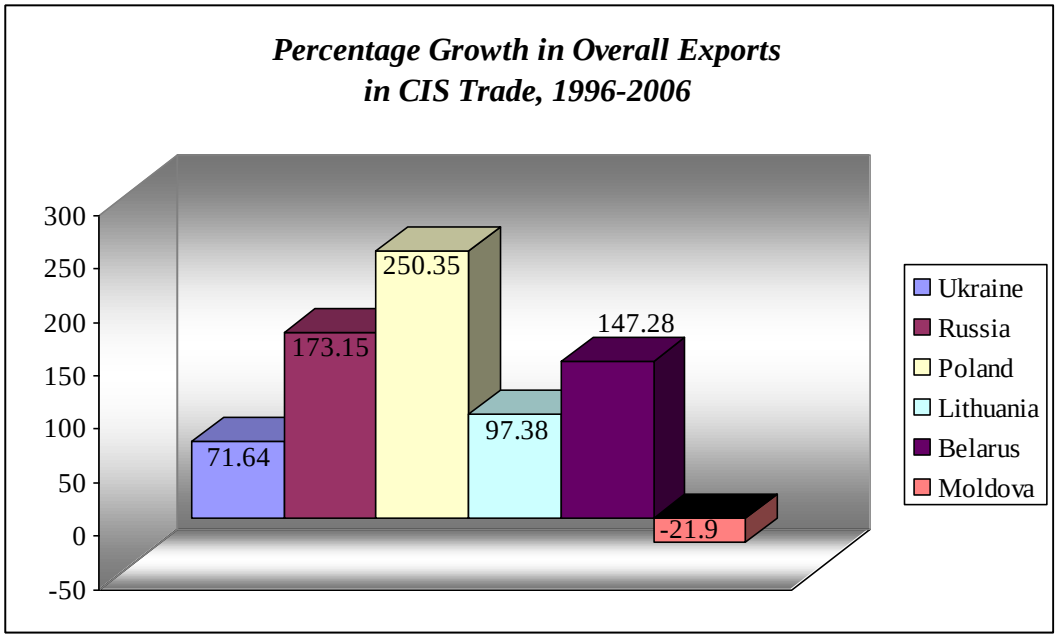
EMPIRICAL ANALYSES OF REVEALED COMPARATIVE ADVANTAGE WITH THE COMMONWEALTH OF INDEPENDENT STATES

This chapter analyses RCA in CIS trade between 1996 and 2006 in much the same way as the previous chapter concerning EU trade. The initial section provides an overview of structural changes in each country's foreign trade with the CIS through an examination of exports, imports and trade balances. Section 2 identifies the specific industries that illustrate RCA in CIS trade. As in Chapter 2, the top 30 RCA export commodities of each country are presented in tables to facilitate an assessment of such developments which are presented in the third section. The difference between this chapter and the previous one, other than the focus on CIS trade, is this chapter offers an additional comparative analysis on EU trade in the final section.

1. Changes in CIS Trade (1996-2006)

This section assesses changes in CIS trade regarding export and import growth, trade balances, the percentage of changes in exports and imports by SITC industries and the changes in SITC industries as a percentage of overall exports and imports. The lesser importance of the CIS markets is empirically illustrated by the smaller amounts of trade revenue. It should also be kept in mind that a number of factors, e.g. the lack of cohesion concerning trade agreements and protocols signed by its members and the proliferation of regional trading agreements by various CIS members, adversely affected exchanges involving CIS members.

Figure 3.01

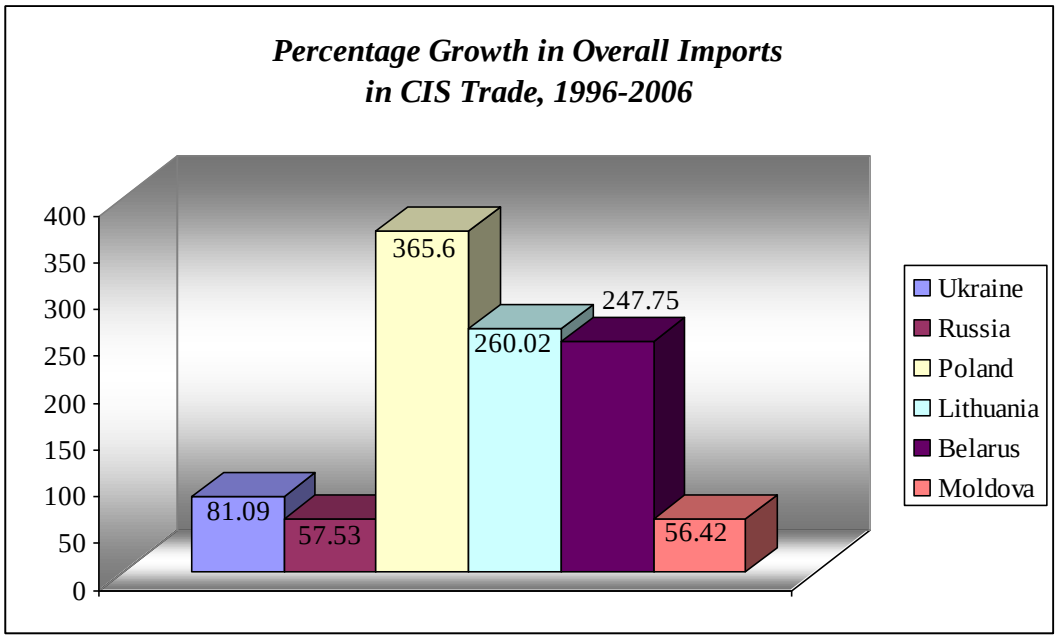


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 3.01 illustrates the percentage of change in exports. Poland experienced the greatest increase at 250.35% ($7,404.163m), but was not similar to its EU export growth (425.95%) which was ranked fifth. However, this single greatest growth in exports to the CIS (250.35%) was less than the lowest export growth percentage to the EU achieved by Moldova (371.1%). This further illustrates the lesser importance of the CIS markets. Despite lower export growth at 173.15%, compared with 571.92% in EU trade, Russia's monetary values grew by $26,823.820m. Belarus, the most highly integrated CIS member, witnessed an increase of 147.28% ($5,131.075m), but this was considerably less than the leading percentage of export growth it achieved in EU trade (1,637.38%). Lithuania and Ukraine had similar export growth at 97.38% and 71.64% correspondingly, but a more significant difference was observed in the growth of monetary values: Ukraine's increase in export values was $5,286.362m, compared with $1,485.278m for Lithuania. Nonetheless, Lithuania experienced greater export growth than Ukraine with the EU and CIS. Ukraine's export growth was ranked fourth with the EU and fifth with the CIS. Indicative of Moldova's deteriorating economic position within the CIS, it was the only country to experience a decline in exports (21.9%). This

value in 2006 was $118.930m less than in 1996. Moreover, it was in stark contrast to its EU export growth (371.1%). The monetary figures for overall export growth were universally greater with the EU.

Figure 3.02

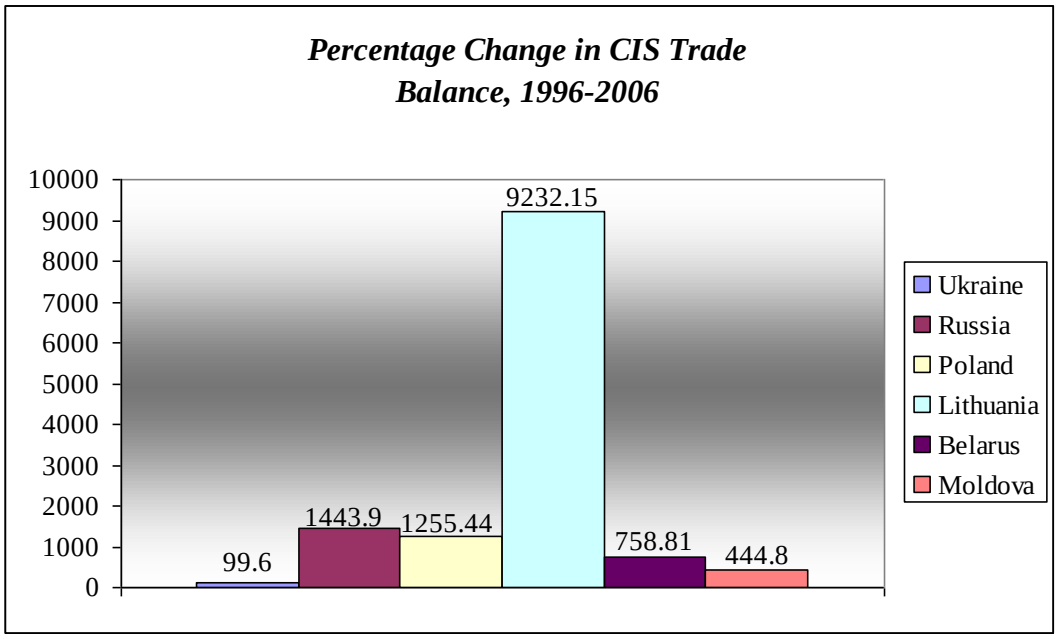


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 3.02 illustrates import growth percentages. Not only did Poland have the highest export growth, but it also had the highest import growth at 365.6% ($12,213.037m), compared with the lowest import growth with the EU (237.74%). It is interesting to note that Lithuania came second at 260.02% ($3,898.100m) because it meant that the two new EU states saw the greatest increases in import growth. Lithuania experienced the greatest import growth with the EU (527.88%). At 247.75% import growth in Belarus was similar to that in Lithuania, yet Belarus' monetary figure was substantially higher at $10,328.101m. This figure was greater than its import growth from the EU (+353.43%). Ukraine's import growth was similar to Belarus' monetary figure ($9,038.510m), but its percentage was considerably less (81.09%), compared with 447.46% in imports from the EU. Russia and Moldova had similar low growth figures of 57.53% and 56.42%, but in monetary terms there was a vast difference at $8,168.442m

and $368.205m respectively. The growth of imports from the EU was greater in Moldova. In addition, only Moldova-EU trade had higher import growth (373.08%) than export growth (371.10%), whereas in CIS trade Russia was the only country to experience higher export growth than import growth. As export growth percentages were lower in CIS trade, the same can be said for import growth percentages, the exception being Poland. The monetary figures for import growth were again greater in EU trade, with Belarus the sole exception.

Figure 3.03



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 3.03 shows the percentage change in CIS trade balances. Lithuania experienced the greatest (9,232.15%). However, this was not a positive development: its balance became negative at $2,386.687m, whereas it was positive at $26.135m in 1996. This can partly be explained by the significant import growth (260.02%) experienced at the expense of low export growth (97.38%). In comparison, Lithuania's EU balanced changed by 286.19%, the second lowest amount, despite the monetary amount being similar ($2,380.617m). Russia's balance witnessed a change of 1,443.9%, but in contrast to Lithuania's experience this constituted continuing positive growth ($18,655.377m).

Only Russia experienced growth in its CIS balance. It had the greatest change in its EU balance (1,038.34%), which also remained positive. As was the case with Lithuania, Poland's negative balance also rose by 1,255.44% ($4,808.874m), a substantial increase when compared with its EU figure (173.58%). For Belarus and Moldova, the respective growth in their negative balance was 758.81% ($5,197.026m) and 444.8% ($487.135m). Belarus experienced greater change with the EU (786.74%), whereas the opposite was true for Moldova (374.64%). Ukraine had the lowest balance change at 99.6% ($3,752.148m), compared with 312.54% with the EU. Ukraine and Lithuania experienced similar figures in changes to their EU and CIS trade balances in monetary terms. Unlike the examples in EU trade, no country was able to reverse a negative balance with the CIS. Furthermore, only Poland and Russia witnessed greater monetary increases in the EU trade balances.

Import growth in CIS trade was calculated in each country; however, Moldova was the only country not to experience an increase in its overall exports. As was the case with EU trade, there is a need to examine further the changes in exports and imports in CIS trade. Table 3.01 indicates the percentage changes in exports by SITC industries, followed by Table 3.02 which illustrates the changes in SITC industries as a percentage of overall exports. These tables are the same as Table 2.01 and Table 2.02 in Chapter 2; however, they illustrate exports in CIS trade instead.

Table 3.01: Percentage Changes in Exports by SITC Industries, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-37.92	276.40	12.30	54.42	5,103	-55.79
1 Beverages & tobacco	148.16	1,149	-56.41	144.05	356.00	-34.91
2 Crude materials	58.35	46.44	368.23	0.55	343.57	320.73
3 Mineral fuels	191.43	46.31	-16.74	-34.69	534.70	-35.23
4 Animal & vegetable oil	68.63	120.44	20.57	-56.60	1,867	192.90
5 Chemicals & related	4.97	171.15	272.16	74.41	951.24	48.19
6 Manufactured goods	102.99	203.47	612.61	80.79	1,306	66.67
7 Machinery/Transport	145.64	165.88	861.08	259.99	1,361	-5.52
8 Misc. manufactured prd	142.55	188.59	115.45	87.99	2,390	26.22
9 Not classified	231,533	393.79	213.65	22.06	-91.22	N/A[1]

[1] Industry had no exports between 1996 and 2006.

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As illustrated in Figure 3.01, the greatest increase in exports was recorded in Poland. Table 3.01 indicates that Poland's highest growth was in SITC 7 (861.08%), followed by SITC 6 (612.61%). The second highest growth in overall exports was calculated in Russia, with SITC 1 having the country's greatest value (1,149%). As shown earlier, Moldova was the only country to experience a contraction in its total exports and four industries experienced a decline (SITC 0, 1, 3 & 7), the greatest of which was in SITC 0 (-55.79%). Moldova also had the lowest growth in overall exports to the EU. Its largest increase in exports to the CIS was in SITC 2 (320.73%), a value which was greater than only the highest value in Lithuania (SITC 7 at 259.99%). SITC 9 in Ukraine had the most significant growth (231,533%), followed by SITC 0 in Belarus (5,103%). The only industry to have the leading growth in more than one country was SITC 7 (Poland and Lithuania), whereas in EU trade SITC 4 had the highest percentage change in three (Ukraine, Russia and Lithuania). There were more negative values in exports to the CIS: ten industries saw decline, whereas only two contracted in EU trade. In Ukraine, SITC 9 experienced a decrease in EU trade, yet it recorded the highest percentage change in CIS trade. The industry which declined the most in exports was SITC 3 (Poland, Lithuania and Moldova). No country had the same industry with the leading percentage in exports to both the EU and CIS. As was the case in EU trade, the leading figures calculated in these industries did not represent major export industries, except for SITC 7 in Poland and Lithuania.

Table 3.02: Changes in SITC Industries as a Percentage of Overall Exports, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-14.69%	+0.98%	-20.29%	-4.69%	+14.42%	-14.46%
1 Beverages & tobacco	+1.02%	+0.77%	-1.98%	+0.18%	+0.01%	-7.11%
2 Crude materials	-0.39%	-1.80%	+0.18%	-1.36%	+0.82%	+4.69%
3 Mineral fuels	+1.31%	-18.44%	-5.18%	-12.20%	+3.85%	0.00%
4 Animal & vegetable oil	-0.02%	-0.04%	-0.33%	-0.35%	+0.07%	+1.45%
5 Chemicals & related	-4.00%	-0.03%	+0.90%	-1.15%	+4.33%	+1.86%
6 Manufactured goods	+5.99%	+1.31%	+14.18%	-1.07%	+17.60%	+9.45%
7 Machinery/Transport	+8.97%	-0.37%	+20.29%	+21.04%	+30.51%	+1.69%
8 Misc. manufactured prd	+1.04%	+0.11%	-7.77%	-0.38%	+8.89%	+2.43%
9 Not classified	+0.77%	+17.51%	0.00%	-0.02%	-80.50%	N/A
Main Export Industry	6→6	3→9	0→7	7→7	9→7	1→1
Main Import Industry	3→3	9→9	3→3	3→3	9→3	3→3
Most Profitable Industry	0→6	3→9	0→7	7→7	3→7	1→1
Least Profitable Industry	3→3	0→2	3→3	3→3	9→3	3→3

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Table 3.02 illustrates that the significant increase experienced by SITC 9 in Ukraine did not, however, translate into a greater share of overall exports, as a minute increase of 0.77% was observed. Furthermore, the average representation of this industry in overall exports was only 0.26%. This was in direct contrast to exports of SITC 3 commodities by Belarus in EU trade: this industry experienced the greatest increases on both counts and constituted the country's main export industry. The Ukrainian industry which increased its representation the most was SITC 7 (8.97%), the lowest value of the leading percentages. On average, this industry accounted for just over one-quarter of total exports. Poland and Lithuania saw their greatest monetary increases in SITC 7, and this was mirrored in the fact that the same industry saw the highest increase in its percentage of overall exports by 20.29% and 21.04% respectively. In fact, SITC 7 also recorded the most significant growth in any country (30.51% in Belarus). Therefore, it was the industry experiencing the greatest increase in four countries (Ukraine, Poland, Lithuania and Belarus), and only in Ukraine was it not the leading export industry in 2006. By comparison, no industry managed such dominance in exports to the EU, as SITC 3 had the highest value only in Lithuania and Belarus. The importance of SITC 7 exports was further emphasised by the fact that, on average, it accounted for between 26.25% of total exports in Belarus and 38.37% in Lithuania. Its average percentage of overall exports was

not as significant in either Russia (13.38%) or Moldova (8.60%), with representation falling by 0.37% in the former. The industry which increased its representation the most in overall trade in Russia was SITC 9 (17.51%), whereas in Moldova it was SITC 6 (9.45%). Belarus had the distinction of having both the lowest increase and the greatest decrease for a given industry: SITC 1 at 0.01% and SITC 9 at -80.50%. The former, however, saw an increase in its monetary values, although it was insignificant in terms of its representation in overall exports. Poland and Russia had the same two industries with the leading percentages in overall exports to the EU and CIS. They were SITC 7 and SITC 9 respectively. The leading figures recorded in these industries again represented major export industries.

In terms of each country's main export industry, there was less change than in EU trade: Ukraine (SITC 6), Lithuania (SITC 7) and Moldova (SITC 1) maintained the same one-digit industry throughout. Poland and Belarus experienced changes to SITC 7 from SITC 0 & 9 respectively. This meant that SITC 7 was the main export industry for Poland, Lithuania and Belarus. Russia's changed from SITC 3 to SITC 9. In comparison with the EU, only Ukraine and Poland had the exact same leading export industries (SITC 6 & 7) in 2006. For the exception of Belarus, the main import industry illustrated no change, with SITC 3 remaining constant in Ukraine, Poland, Lithuania and Moldova and SITC 9 in Russia. The main import industry held constant in EU trade; however, it was SITC 7 in contrast. The most profitable industry remained identical to the main export industry in Russia, Poland, Lithuania and Moldova. In Ukraine and Belarus it was the same as the leading export industry by 2006. Ukraine was the only country to have its most profitable industry identical in its EU and CIS trade (SITC 6). What was initially Belarus' most profitable industry in CIS trade became its most profitable in EU trade (SITC 3). The least profitable industry again mirrored the results of the leading import industry. The sole exception was Russia where SITC 0 was replaced by SITC 2. Neither industry was ever the main import one.

A comparison of the percentage changes in exports by SITC industries (Table 3.01) and the changes in SITC industries as a percentage of overall exports (Table 3.02) illustrated a weak relationship between the leading values in each. This also proved true in EU trade, where only SITC 3 in Belarus had the highest values in both. In CIS trade,

however, SITC 7 managed to do so in Poland and Lithuania. The relationship between SITC industry growth as a percentage of overall exports and the main export industry was strong, as was the case with EU trade. Only in Ukraine and Moldova was there no connection, with the leading export industry in Moldova (SITC 1) declining by 7.11%. The main export industry only contracted in Moldova. SITC 7 became the main export industry in Poland and Belarus, whilst maintaining this position in Lithuania. SITC 9 did likewise in Russia. In all four countries, the industry which increased its representation in overall exports the most was the main export industry by 2006. The same relationship in EU trade, involving four different industries in five countries, was also evident. The relationship between the most profitable industry and the industry experiencing the greatest growth in terms of overall exports was also strong: only Ukraine and Moldova did not illustrate this in CIS trade, whereas Russia and Poland did likewise in EU trade. The next two tables will address where import growth in CIS trade occurred.

Table 3.03: Percentage Changes in Imports by SITC Industries, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	826.76	-33.49	3.69	-4.52	174.07	103.57
1 Beverages & tobacco	649.93	-20.92	693.12	117.84	865.68	1,521
2 Crude materials	-11.87	93.99	37.59	64.26	2,555	42.34
3 Mineral fuels	52.63	-6.65	372.54	488.03	101,519	21.98
4 Animal & vegetable oil	-90.53	-3.13	611.33	812.98	207.60	217.87
5 Chemicals & related	214.65	28.12	221.52	78.91	963.69	56.01
6 Manufactured goods	177.77	63.95	641.20	92.70	857.21	86.57
7 Machinery/Transport	119.44	93.09	30.14	61.07	956.49	64.81
8 Misc. manufactured prd	268.22	48.88	123.07	286.51	1,922	318.87
9 Not classified	17,714	146.22	N/A	-70.07	-86.10	798.08

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As shown in Figure 3.02, overall imports rose the most in Poland, followed by Lithuania. Table 3.03 illustrates that in the former growth was most pronounced in three industries: SITC 1 (693.12%), SITC 6 (641.20%) and SITC 4 (611.33%). In the latter, the greatest increase was in SITC 4 (812.98%). The highest import growth was calculated in Belarus for SITC 3 (101,519%), followed by SITC 9 (17,714%) in Ukraine. The leading values here for Lithuania (SITC 4) and Belarus (SITC 3) were in the same two industries that recorded leading percentage changes in exports to the EU. This strongly suggests less

diversity in both countries' exports. Moldova, which had the lowest overall import growth, saw SITC 1 rise by 1,521%. Russia had the lowest leading growth figure (SITC 9 at 146.22%), and the second lowest overall growth of the selected countries. The only industry to record the greatest percentage change in more than one country was SITC 9 (Ukraine and Russia). The same industry had two of the leading values regarding imports from the EU (Russia and Poland). Nine industries saw their values decline, compared with only two in EU trade (SITC 1 & 9 in Belarus). One industry to contract was SITC 1 in Russia, where it was the industry to record the greatest growth. There was no such example in EU trade. Ukraine was the only country to experience a leading percentage change in exports and imports in the same industry in CIS trade (SITC 9). This development occurred in two countries in EU trade (Poland and Belarus). In imports from the CIS, two countries had the same industry with the leading percentage changes as imports from the EU: Russia (SITC 9) and Belarus (SITC 3). However, the increase was greater for the former in EU trade, whereas it was greater for the latter in CIS trade.

Table 3.04: Changes in SITC Industries as a Percentage of Overall Imports, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	+1.90%	-10.34%	-3.30%	-5.31%	-1.14%	+1.78%
1 Beverages & tobacco	+0.70%	-2.23%	+0.01%	-0.14%	+0.76%	+4.82%
2 Crude materials	-2.24%	+1.97%	-10.92%	-5.58%	+3.61%	-0.31%
3 Mineral fuels	-11.04%	-3.48%	+0.94%	+29.59%	+49.96%	-12.61%
4 Animal & vegetable oil	-0.03%	-0.25%	+0.10%	+0.27%	-0.09%	+0.02%
5 Chemicals & related	+2.14%	-0.83%	-1.96%	-5.01%	+4.46%	-0.02%
6 Manufactured goods	+4.73%	+0.82%	+3.28%	-5.70%	+10.84%	+2.99%
7 Machinery/Transport	+2.57%	+2.92%	-3.15%	-4.31%	+7.05%	+0.51%
8 Misc. manufactured prd	+0.78%	-0.11%	-0.34%	+0.07%	+1.86%	+2.76%
9 Not classified	+0.49%	+11.53%	+15.34%	-3.88%	-77.31%	+0.06%
Main Export Industry	6→6	3→9	0→7	7→7	9→7	1→1
Main Import Industry	3→3	9→9	3→3	3→3	9→3	3→3
Most Profitable Industry	0→6	3→9	0→7	7→7	3→7	1→1
Least Profitable Industry	3→3	0→2	3→3	3→3	9→3	3→3

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

An overview of percentage changes by SITC industries regarding total imports is presented in Table 3.04. With the exception of Lithuania and Belarus, the leading figures for import growth were lower than those for export growth. Figure 3.02 and Figure 3.04

show that only Russia experienced greater growth in overall exports to the CIS; however, each country had higher figures for export growth over import growth in EU trade. The greatest percentage changes were calculated in Belarus (SITC 3) and Ukraine (SITC 9). SITC 3 substantially increased its share of overall imports in Belarus, yet SITC 9 in Ukraine did not and remained a marginal import industry. The relationship between the leading industry in percentage changes and changes as a percentage of overall imports was shown by SITC 3 in Belarus to be more significant in CIS trade than in EU trade. Belarus' SITC 3 illustrated a more significant relationship between these two considerations in overall exports to the EU. In CIS trade, this relationship was positive in Russia (SITC 9) and Belarus (SITC 3), whereas in EU trade it was positive in Ukraine (SITC 7), Poland (SITC 9) and Lithuania (SITC 5). Belarus and Lithuania experienced the greatest increases in a given industry as a percentage of overall imports. This occurred is SITC 3, with a value of 49.96% in Belarus which made it the country's leading import industry and 29.59% in Lithuania, where it remained the leading import industry. This industry averaged 63.64% of Lithuania's overall imports, whereas in Belarus it averaged 29.29%. Belarus also had the greatest increase in imports for a given industry in EU trade (SITC 7). Growth in the leading industries was more moderate in Russia and Poland, where SITC 9 rose by 11.53% and 15.34% respectively. This industry averaged almost 30% of overall imports in Russia, but it was a marginal import industry in Poland (5.30%). A moderate increase was calculated at 4.82% for SITC 1 in Moldova, and Ukraine had the lowest increase of the leading industries with 4.73% in SITC 6. Both industries averaged less than 11% of total imports. The highest growth was observed in the main import industry in Russia (SITC 9) and Lithuania and Belarus (SITC 3). However, the leading import industry in Poland (SITC 3) only increased its share of overall imports by 0.94%, whereas this industry contracted by 11.04% in Ukraine and 12.61% in Moldova. The lowest increase in any industry was 0.01% for SITC 1 in Poland, and the largest decrease was -77.31% for SITC 9 in Belarus. Poland was the only country to have the same industry witness the greatest increase as a percentage of overall imports in EU and CIS trade (SITC 9). SITC 9 (Russia) and SITC 7 (Poland) did likewise concerning exports. SITC 9 in Poland and SITC 1 in Moldova each accounted for less than 10% of the total imports on average.

The relationship between the leading figures in percentage changes in imports by SITC industry (Table 3.03) and changes in SITC industries as a percentage of overall imports (Table 3.04) was greater than that calculated for exports. Leading figures for imports were recorded in Russia (SITC 9), Belarus (SITC 3) and Moldova (SITC 1), whereas for exports this was noted in Poland and Lithuania (SITC 7). Compared with EU trade, this was one greater for exports and equal to the number calculated for imports. Likewise, there were examples where the leading growth in monetary figures did not produce higher percentages in overall exports. This was demonstrated in Ukraine (SITC 9 increased by 0.49%), Poland (SITC 1 increased by 0.01%) and Lithuania (SITC 4 increased by 0.27%). A strong relationship between SITC industry growth as a percentage of overall imports and the main import industry was evident in Russia (SITC 9) and in Lithuania and Belarus (SITC 3). The same number of countries was also observed in imports to the EU (Ukraine, Russia and Belarus), and more countries experienced a stronger relationship with exports, as in EU trade. The main import industry (SITC 3) experienced decline in Ukraine (11.04%) and Moldova (12.61%), whereas a minute increase (0.94%) was calculated for SITC 3 in Poland. Regarding the least profitable industry, the relationship with industry growth as a percentage of overall imports was weak. In fact, only Lithuania and Belarus exhibited a positive relationship. Three countries achieved this in EU trade (Ukraine, Russia and Belarus).

2. RCA Results: CIS Trade in 1996

The terms of CIS trade differ: the CIS does not function as a single market, and does not require its members to adhere to uniform trade policies. Commodity differences are thus reflected in RCA percentages with the CIS, as shown in Table 3.05 which illustrates such results for Ukraine and Russia.

Table 3.05: RCAs in CIS Trade for Ukraine & Russia, 1996 (1-30)				
	Ukraine	**RCA**	**Russia**	**RCA**
1	016 MEAT, ED.OFFL, DRY	100	231 NATURAL RUBBER, ETC.	100
2	261 SILK	100	244 CORK, NATURAL, RAW WSTE	100
3	265 VEGETABLE TEXTILE FIBRES	100	351 ELECTRIC CURRENT	100
4	883 CINE. FILM EXPS. DEVLPD	100	687 TIN	100
5	023 BUTTER,OTHER FAT O/ MILK	99.9986	961 COIN NONGOLD NONCURNT	100
6	024 CHEESE & CURD	99.9853	342 LIQUEFIED PROPANE, BUTNE	99.6837
7	011 BOVINE MEAT	99.8936	247 WOOD ROUGH, ROUGH SQRD	99.6682
8	046 MEAL,FLR OF WHEAT,MSLN	99.7059	571 POLYMERS OF ETHYLENE	97.9867
9	017 MEAT, OFFL.PRPD, PRSD,NES	99.4803	245 FUEL WOOD, WD CHARCOAL	97.8907
10	012 OTHER MEAT, MEAT OFFAL	99.2387	683 NICKEL	95.3142
11	223 OILSEED (OTH.FIX.VEG.OIL)	98.9910	593 EXPLOSIVES, PYROTECHNCS	95.1653
12	285 ALUMI. ORE,CONCTR.ETC	98.9544	634 VENEERS, PLYWOOD, ETC.	94.6808
13	421 FIXED VEG.FAT, OILS, SOFT	98.9413	232 SYNTHETIC RUBBER, ETC.	94.4176
14	022 MILK & CREAM	98.7345	343 NATURAL GAS	94.3500
15	061 SUGARS, MOLASSES,HONEY	98.6577	763 SOUND REC., PHONOGRPH	94.1803
16	666 POTTERY	98.6106	897 GOLD,SLVRWARE, JEWL NES	94.1338
17	071 COFFEE, COFFEE SUB.	98.6054	248 WOOD, SIMPLY WORKED	94.1087
18	062 SUGAR CONFECTIONERY	98.1627	246 WOOD IN CHIPS, PARTICLES	92.9424
19	081 ANIMAL FEED STUFF	97.9491	272 FERTILISERS, CRUDE	91.5314
20	793 SHIP, BOAT, FLT.STRUCTRS	97.9205	071 COFFEE, COFFEE SUBSTTUTE	90.9108
21	058 FRUIT, PRESRVD. PREPRD	97.7339	752 AUTOMATC.DATA PROC. EQP	90.4212
22	613 FURSKINS, TAND,DRESSD	97.2537	532 DYEING,TANNING MATRIALS	89.3845
23	041 WHEAT, MESLIN, UNMILLED	96.9639	267 OTHER MAN-MADE FIBRES	86.6381
24	048 CEREAL PREPARATIONS	96.5127	759 PARTS FOR OFFICE MACHINS	86.4179
25	037 FISH ETC. PREPD,PRSVD.NES	96.3652	072 COCOA	85.2330
26	059 FRUIT, VEGETABLE JUICES	96.2554	251 PULP & WASTE PAPER	84.1888
27	045 OTHER CEREALS, UNMILLED	95.5286	711 STEAM GENER.BOILERS,ETC.	83.9636
28	091 MARGARINE & SHORTENING	95.5245	751 OFFICE MACHINES	82.8766
29	122 TOBACCO, MANUFACTURED	95.2142	898 MUSICAL INSTRMENTS,ETC.	82.6727
30	047 OTR CEREAL MEAL,FLOURS	94.5138	724 TEXTILE,LEATHER MACHNS	82.5244

Source: own calculations based on UN Comtrade three-digit data, 1996.

Unlike the dominance of SITC 2 commodities in Ukraine's RCA values with the EU, two-thirds of the top 30 RCA percentages with the CIS in 1996 were from SITC 0, accounting for 23.01% of overall exports. Moreover, foodstuffs were on the 'obligatory' list in CIS trade, thus facing measures like export licences and quantitative quotas. The next largest representation was from SITC 2, including two (SITC 261 & 265) that achieved 100% and two (SITC 223 & 285) with values from 98.9910% to 98.9544%. SITC 2 commodities were not as numerous in CIS trade and only constituted 5.14% of overall CIS exports, compared with 20.86% in exports to the EU. The majority of

Ukraine's CIS exports were from SITC 6, although only two goods displayed high RCA values (SITC 666 & 613 at 98.6106% and 97.2537%). The highest export revenue, however, was calculated in sugar, molasses and honey (SITC 061) at $618.827m and 98.6577%. Despite widespread criticism from WTO members about Ukraine's sugar industry, its CIS bound exports proved to be quite profitable, albeit non-sustainable. Moreover, the large amount of meat and dairy products exported to the CIS was not subjected to equivalent high EU barriers without preferences. This explains their export and RCA, therefore, to CIS members. Moreover, this reflects across the six countries.

Russia's trade with the CIS shared few similarities with Ukraine's. SITC 2 commodities were the most dominant, accounting for one-third of the values, followed by SITC 7 with six. So dissimilar were their RCAs that they shared merely one commodity (SITC 071), with Ukraine's score here 7.6946% higher. In contrast to EU trade, this was 10 commodities fewer, indicating lesser competition. Previously evident with EU trade in 1996, Russia's strength in CIS trade was also in SITC 3 commodities, and had three goods ranked from 94.3500% to 100%. Energy products were also on the CIS 'obligatory' list, like foodstuffs. Trade in SITC 3 commodities, however, was not as dominant in CIS trade: the top two commodities with the highest gross export revenues were SITC 3 goods (SITC 343 & 351), with trade in the former alone valued the highest ($4,339.097m). Russian energy exports in CIS markets were sold at below world market prices, often involving bilateral barter transactions. Moreover, trade constituted a major source of Russian tax revenue, a part of which was collected by the aforementioned origin-based VAT in CIS trade, excluding so-called 'domestic' Belarusian trade. Russia's RCAs were not as concentrated as Ukraine's amongst SITC 0 & 2 (24 of 30), but more dispersed throughout the various categories, with SITC 2 & 7 accounting for just over half. The opposite was true for Russia-EU trade.

Table 3.06: RCAs in CIS Trade for Poland & Lithuania, 1996 (1-30)				
	Poland	**RCA**	**Lithuania**	**RCA**
1	017 MEAT, OFL.PRPD, PRSVD,NES	100	016 MEAT, ED.OFL, DY, SLT,SMK	100
2	553 PRFUMERY, COSMETICS,ETC.	100	023 BUTTER, OTHER FAT O/MILK	100
3	073 CHOCOLATE, O.COCOA PREP	100	024 CHEESE & CURD	100
4	893 ARTICLES,NES,OF PLASTICS	100	025 EGGS,BIRDS,YOLKS, ALBMIN	100
5	062 SUGAR CONFECTIONERY	100	072 COCOA	100
6	098 EDIBLE PRD. PREPRTNS,NES	100	289 PREC.METAL ORES, CNCNTR	100
7	012 OTHER MEAT, MEAT OFFAL	100	351 ELECTRIC CURRENT	100
8	686 ZINC	100	881 PHTOGRAPH APPAR.ETC.NES	99.6012
9	898 MUSICL INSTRUMENTS,ETC.	100	686 ZINC	99.3171
10	071 COFFEE, CFFEE SUBSTITUTE	100	844 WMEN,GIRLS CLOTHNG.KNIT	99.3099
11	665 GLASSWARE	100	017 MEAT,OFL.PRPD, PRSVD,NES	99.2281
12	023 BUTTER, OTHER FAT O/MILK	100	037 FISH ETC. PREPD,PRSVD.NES	99.0990
13	892 PRINTED MATTER	100	762 RADIO-BRDCAST RECEIVER	98.5906
14	111 NON-ALCOHOLIC BEVRGES	100	846 CLTHING ACCESSRS,FABRIC	98.3879
15	024 CHEESE & CURD	100	035 FISH,DRD,SALTED, SMOKED	98.0488
16	761 TELEVSION RECEIVERS ETC.	100	821 FURNITURE, CUSHIONS,ETC.	97.8405
17	581 PLASTIC TUBE,PIPE,HOSE	100	831 TRUNK,SUIT-CASES,BAG,ETC	97.8130
18	727 FOOD-PROCES. MCH.NO DOM	100	036 CRUSTACNS, MOLLUSCS ETC	97.7809
19	037 FISH ETC. PREPD,PRSVD.NES	100	761 TELEVISION RECEIVERS ETC	97.6033
20	662 CLAY,RFRCT. CNSTR.MATRL	100	121 TBACCO, UNMNUFACTURED	97.2576
21	059 FRUIT, VEGETABLE JUICES	100	269 WRN CLTHING, TEXTL.ARTL	97.2385
22	846 CLTHING ACCESSRS,FABRIC	100	583 MONOFILAMENT O/PLASTICS	97.2102
23	046 MEAL,FLR O/WHEAT, MSLN	100	091 MARGARINE & SHORTENING	97.1851
24	844 WMEN,GIRLS CLTHNG.KNIT	100	752 AUTOMATC.DATA PROC.EQP	96.9817
25	697 HSEHOLD EQUIPMENT,NES	100	898 MUSICAL INSTRUMNTS,ETC.	96.9311
26	091 MARGARINE & SHORTENING	100	653 FABRICS,MAN-MADE FIBRES	96.7069
27	074 TEA & MATE	100	612 MNUFCT. LEATHER ETC.NES	96.3379
28	122 TOBACCO, MANUFACTURED	100	696 CUTLERY	96.2598
29	659 FLOOR COVERINGS, ETC.	100	763 SND RECORDER, PHNOGRPH	96.1328
30	042 RICE	100	845 OTHR.TEXTILE APPAREL,NES	96.1141

Source: own calculations based on UN Comtrade three-digit data, 1996.

RCA values for Poland and Lithuania are presented in Table 3.06. One of the most obvious characteristics for Poland-CIS trade was the overwhelming number of perfect values (100%) attained in 1996 and 2001. In fact, Poland had 58 such values alone in 1996. This predominance regarding CIS trade was unique to Poland and, as a consequence, Poland-CIS trade is the strongest in RCAs. To simplify matters somewhat, only the top 30 commodities in profitability will be listed for 1996 and 2001. Poland-CIS trade displayed a dominance of SITC 0 commodities with 14 and Poland and Ukraine shared 11 commodities (SITC 012, 017, 023, 024, 037, 046, 059, 062, 071, 091 & 122).

Unlike Ukraine and Russia, the majority of Poland's exports to the CIS were also the same as the majority of its RCA values: SITC 0 accounted for nearly 30% of exports, with the most profitable export (SITC 017: meat, offal, prepared, preserved, nes) valued at $181.820m.

Lithuania experienced a high number of SITC 0 commodities, one-third of the total, also an area of their advantage in Soviet trade. It had seven perfect percentage, yet only one in common with Ukraine (SITC 016: meat, edible, offal, dry, salted, smoked) and five non-perfect percentages from SITC 0 in common (SITC 017, 023, 024, 037 & 091). As was the case with Ukraine, however, Lithuania did not have the largest share of its exports originating from where it had most of its RCA values; rather, this distinction belonged to SITC 7, the strongest commodity of which was SITC 762 (98.5906%), again an area of advantage in Soviet trade. However, the most profitable export was electric current (SITC 351) at $53.595m, the only good from SITC 3 to achieve a high score.

Table 3.07: RCAs in CIS Trade Belarus & Moldova, 1996 (1-30)				
	Belarus	**RCA**	**Moldova**	**RCA**
1	231 NATURAL RUBBER, ETC.	100	011 BOVINE MEAT	100
2	245 FUEL WOOD, WD CHARCOAL	100	016 MEAT, ED.OFL, DR, SLT, SMK	100
3	246 WOOD IN CHIPS, PARTICLES	100	613 FURSKINS, TAND,DRESSED	100
4	265 VEGETABLE TEXTILE FIBRES	100	883 CINE. FILM EXPSD. DEVLPD	100
5	266 SYNTHETIC FIBRES	100	122 TOBACCO, MANUFACTURED	99.7556
6	267 OTHER MAN-MADE FIBRES	100	044 MAIZE UNMILLED	99.7538
7	269 WRN CLTHING, TEXTL.ARTL	100	057 FRUIT,NUTS EXCL.OIL NUTS	99.5435
8	344 PETROLEUM GASES, NES	100	058 FRUIT, PRESRVD, PREPRD	99.5104
9	422 FIXED VEG.FAT, OILS,OTHER	100	059 FRUIT, VEGETABLE JUICES	99.3114
10	612 MNUFACT. LEATHR ETC.NES	100	056 VEGETABLES, PRPD,PRSVD	99.0986
11	762 RADIO-BRDCAST RECEIVER	100	046 MEAL,FLOUR O/WHEAT, MSL	99.0837
12	763 SOUND RECRDR, PHONGRPH	100	112 ALCOHOLIC BEVERAGES	99.0516
13	793 SHIP, BOAT, FLT.STRUCTRS	100	012 OTHER MEAT, MEAT OFFAL	98.8589
14	881 PHOTOGRPH APPAR.ETC.NES	100	017 MEAT, OFFL.PRPD, RSVD,NES	97.7191
15	885 WATCHES & CLOCKS	99.7912	633 CORK MANUFACTURES	96.7807
16	571 POLYMERS OF ETHYLENE	99.3325	071 COFFEE, COF. SUBSTITUTE	96.2156
17	334 PETROLEUM PRODUCTS	98.9535	821 FURNITURE, CUSHIONS,ETC.	94.0206
18	247 WOOD ROUGH, ROUGH SQRD	98.7017	659 FLOOR COVERINGS, ETC.	89.2107
19	288 NON-FERROUS WASTE,SCRP	98.4922	025 EGGS,BIRDS,YOLKS, ALBMIN	87.8252
20	634 VENEERS, PLYWOOD, ETC.	96.9330	072 COCOA	87.3580
21	248 WOOD, SIMPLY WORKED	96.3651	421 FIXED VEG.FAT, OILS, SOFT	87.3214
22	581 PLASTIC TUBE, PIPE,HOSE	95.8108	222 OILSEED(SFT.FIX VEG.OIL)	85.4735
23	251 PULP & WASTE PAPER	95.7874	422 FIXED VEG.FAT, OILS,OTHER	85.3956
24	821 FURNITURE, CUSHIONS,ETC.	93.9291	062 SUGAR CONFECTIONERY	84.9411
25	811 PREFABRICATED BUILDINGS	93.8826	411 ANIMAL OILS AND FATS	83.6197
26	635 WOOD MNUFACTURES, NES	92.8376	041 WHEAT, MESLIN, UNMILLED	82.8797
27	722 TRACTORS	92.1123	098 EDIBLE PROD.PREPRTNS,NES	82.2312
28	761 TELEVSN RECEIVERS ETC.	91.8361	722 TRACTORS	81.0098
29	025 EGGS, BRDS, YOLKS, ALBMN	90.1614	742 PUMPS FOR LIQUIDS,PARTS	79.7294
30	899 MISC MNFCTRD GOODS NES	89.2555	813 TRUNK,SUIT-CASES,BAG,ETC	79.0755

Source: own calculations based on UN Comtrade three-digit data, 1996.

Table 3.07 provides RCA percentages for Belarus and Moldova. Belarus, like Russia, had greater representation from SITC 2 commodities with 11, and a total of 14 perfect values altogether. One SITC 2 good at 100% was shared with Ukraine (SITC 265: vegetable textile fibres) and one other non-perfect score (SITC 793: ship, boat, float, structures), indicating little similarity with Ukrainian exports to CIS markets. As was the case with Russia, this development contrasted Belarus-EU trade, which shared 10 additional goods with Ukraine.

Moldovan-CIS trade did, however, show greater similarity. With 16 commodities from SITC 0, Moldova shared a total of 13 goods with Ukraine (SITC 011, 012, 016, 017, 041, 046, 058, 059, 071, 122, 421, 613 & 883), two of which had perfect percentages (SITC 011 & 016). Moreover, Moldova's RCA dispersion through the various SITC categories was also more limited like Ukraine's. Concerning overall exports, Moldova's strength was in SITC 1, which produced the country's most profitable commodity, alcoholic beverages (SITC 112), at $191.475m. For Belarus, SITC 9 was overwhelmingly the largest export industry (83.46%), despite having no commodities with a high RCA. Petroleum products (SITC 334) were the highest valued Belarusian export ($76.244m). In 1996, Ukrainian trade had more goods in common with Moldova, in EU and CIS trade, and Poland and Lithuania than it did with Russia and Belarus, both of which had greater similarities with each other. This is somewhat ironic, because of their vast differences in attitude towards the CIS.

2.1 RCA Results: CIS Trade in 2001

In 2001, the emergence of SITC 7 commodities, an increase of six, and the decline in numbers of those in SITC 0 by 50% is one of the most striking changes in Ukraine's trade. This was the largest decline of commodities in a single given SITC industry for any country in EU and CIS trade. Commodities are shown in Table 3.08 of RCA values for Ukraine and Russia.

Table 3.08: RCAs in CIS Trade for Ukraine & Russia, 2001 (1-30)				
	Ukraine	**RCA**	**Russia**	**RCA**
1	023 BUTTER, OTHER FAT O/MILK	100	072 COCOA	100
2	072 COCOA	100	231 NATURAL RUBBER, ETC.	100
3	246 WOOD IN CHIPS, PARTICLES	100	267 OTHER MAN-MADE FIBRES	100
4	421 FIXED VEG.FAT, OILS, SOFT	99.9596	343 NATURAL GAS	100
5	285 ALUMNUM ORE, CNCTR. ETC	99.6894	897 GOLD,SLVERWRE, JEWL NES	100
6	043 BARLEY, UNMILLED	99.5654	961 COIN NOGOLD NONCURRENT	100
7	666 POTTERY	98.7250	687 TIN	99.9707
8	011 BOVINE MEAT	98.2832	593 EXPLOSIVES, PYROTCHNICS	99.7911
9	044 MAIZE UNMILLED	97.5833	247 WOOD ROUGH, ROUGH SQRD	99.6481
10	282 FERROUS WASTE & SCRAP	96.6973	696 CUTLERY	98.8967
11	344 PETROLEUM GASES, NES	96.5431	251 PULP & WASTE PAPER	98.8383
12	054 VEGETABLES	95.4707	896 WORKS OF ART,ANTQ ETC	98.5779
13	265 VEGETABLE TEXTILE FIBRES	95.3844	342 LIQUEFIED PROPANE, BUTNE	98.1356
14	763 SOUND RECRDR, PHONGRPH	95.2245	885 WATCHES & CLOCKS	97.6358
15	737 METALWRKING MACHNRY	95.1746	248 WOOD, SIMPLY WORKED	97.6353
16	024 CHEESE & CURD	94.6112	551 ESNTL.OIL, PERFUME, FLAVR	97.4721
17	223 OILSEED (OTH.FIX.VEG.OIL)	94.4741	562 FERTILISER,EXCEPT GRP272	96.7998
18	411 ANIMAL OILS & FATS	92.3142	751 OFFICE MACHINES	96.2941
19	012 OTHER MEAT, MEAT OFFAL	91.8133	334 PETROLEUM PRODUCTS	95.6054
20	679 TUBES, PIPES, ETC.IRON,STL	89.5434	591 INSECTICIDES, ETC.	94.0382
21	759 PARTS FOR OFFICE MACHINS	87.9744	718 OT.PWR. GENRTNG MACHNR	90.7886
22	273 STONE, SAND & GRAVEL	87.9499	288 NON-FERROUS WASTE,SCRP	90.1612
23	062 SUGAR CONFECTIONERY	87.3671	325 COKE,SEMI-COKE, RET. CRBN	87.9099
24	793 SHIP, BOAT, FLT.STRUCTRS	86.8569	025 EGGS,BIRDS,YOLKS, ALBMIN	86.6884
25	771 ELECT PWER MACHNY.PRTS	85.4351	071 COFFEE, COF. SUBSTITUTE	85.0792
26	733 MACH-TOLS, METL-WRKING	84.7252	621 MATERIALS OF RUBBER	84.7327
27	724 TEXTL,LEATHER MACHINES	84.4762	532 DYEING,TANING MATERIALS	83.7330
28	673 FLAT-ROLLED IRON ETC.	83.5974	597 PREPRD ADDITIVES,LIQUIDS	82.4186
29	073 CHCLATE, OTH.COCOA PREP	79.4226	036 CRUSTACEANS, MOLUSC ETC	82.0739
30	592 STARCHES, INULIN,ETC.	77.0649	898 MUSICAL INSTRMENTS, ETC.	81.6742

Source: own calculations based on UN Comtrade three-digit data, 2001.

This development indicates that, as a percentage of overall exports, SITC 0 fell by 9.38%. Nevertheless, SITC 0 remained the largest RCA industry, now with one-third representation, and SITC 6 retained its position as the leading export industry, although only three commodities achieved significant percentages (SITC 666, 673 & 679). A similar development in Ukraine-EU trade also occurred in 2001, when goods in SITC 2 fell at the expense of those in SITC 6. Thus changes in EU and CIS trade composition were evident in 2001, with the growing importance of SITC 6. Perfect percentages were achieved by three commodities across three different SITC categories, but three from

1996, including meat, edible offal, dry, salted, smoked (SITC 016), silk (SITC 261) and cinematic film, exposed, developed, nes (SITC 883), failed to repeat. Sugars, molasses, honey (061), the largest export earner in 1996, also did not retain its position, and a significant two-thirds of the 2001 commodities were new. Although aluminium ore, concentrated, etc…, (SITC 285) and bovine meat (SITC 011) ranked second and third in export earnings, the reverse was true in 1996 and both had higher RCA values (99.6894% and 98.2832% respectively). In 2001, tubes, pipes, iron and steel (SITC 679) became the leader in export earnings ($409.525m). The substantial rise in profits for this commodity can be linked to Russian oil and gas companies that are the product's main consumers. The Ukrainian sector is led by Interpipe, one of the world's largest pipe making conglomerates, and an influential player in the country's largest steel company, Kryvorizhstal. Although Ukraine and Russia do not compete to the same degree in CIS trade, their economies are highly integrated. Agricultural products, often characterised as unprofitable and criticised for being over-protected, began to show serious decline in Ukraine-CIS trade in 2001, although the same trend was not sustainable.

Russia-CIS trade in 2001 was not as stable as Russia-EU trade in the same year. For example, RCA advantages in the previous two largest categories, SITC 2 & 7, declined by four commodities each, leaving SITC 2 & 5 tied with six each. The two leading products were SITC 231 & 593. Moreover, 14 commodities were replaced. The main export industry, however, remained SITC 3, with natural gas (SITC 343) as the largest single export earner ($3,393.995m). This was, however, a decline of 21.78%, and indicative of the deteriorated terms of trade within the CIS after the 1998 Russian financial crisis. The leading export commodities in 2001 for the other countries, except Belarus, also witnessed a decline in monetary values. This trend did not appear in EU trade in 2001. Ukrainian and Russian CIS trade was again so dissimilar that they shared only one good (SITC 072: cocoa). Russia continued to subject all goods to origin-based VAT until 1 July 2001, with energy exports continuing this practice until 2004.

Table 3.09: RCAs in CIS Trade for Poland & Lithuania, 2001 (1-30)				
	Poland	**RCA**	**Lithuania**	**RCA**
1	642 PAPR,PAPRBOARD, CUT ETC	100	011 BOVINE MEAT	100
2	071 COFFEE, CFE SUBSTITUTE	100	023 BUTTER, OTHER FAT O/MILK	100
3	056 VEGETABLES, PRPD,PRSVD	100	024 CHEESE & CURD	100
4	017 MEAT, OFL.PRPD, PRSVD,NES	100	041 WHEAT, MESLIN, UNMILLED	100
5	073 CHOCOLATE, O.COCOA PREP	100	091 MARGARINE & SHORTENING	100
6	761 TELEVSN RECEIVERS ETC.	100	122 TOBACCO, MNUFACTURED	100
7	697 HSEHOLD EQUIPMENT,NES	100	231 NATURAL RUBBER, ETC.	100
8	024 CHEESE & CURD	100	244 CORK, NTURAL, RAW WASTE	100
9	812 PLUMBNG, SANITRY,EQUP	100	344 PETROLEUM GASES, NES	100
10	047 O. CEREAL MEAL,FLOURS	100	411 ANIMAL OILS & FATS	100
11	122 TOBACCO, MNUFACTURED	100	593 EXPLOSIVES, PYRTECHNICS	100
12	813 LIGHTNG FIXTURES ETC.NES	100	613 FURSKINS, TAND,DRESD	100
13	091 MARGARINE & SHORTENING	100	961 COIN NNGOLD NONCURRENT	100
14	072 COCOA	100	043 BARLEY, UNMILLED	99.9642
15	655 KNIT.CROCHET. FABRIC NES	100	046 MEAL,FLR OF WHEAT,MSLN	99.9293
16	411 ANIMAL OILS & FATS	100	751 OFFICE MACHINES	99.9271
17	659 FLOOR COVERINGS, ETC.	100	881 PHTOGRAPH APPAR.ETC.NES	99.8157
18	848 CLTHNG, NOTXTL; HDGEAR	100	761 TELEVISION RECEIVERS ETC	99.5811
19	744 MECHNICAL HNDLNG EQUIP	100	752 AUTOMTC.DATA PROC.EQUIP	99.4406
20	023 BUTTER, OTHER FAT O/MILK	100	061 SUGARS, MOLASSES,HONEY	99.1526
21	872 MEDICL INSTRUMENTS NES	100	762 RADIO-BRDCAST RECEIVER	99.0899
22	591 INSECTICIDES, ETC.	100	759 PARTS FOR OFFICE MACHINS	98.9336
23	786 TRAILERS,SEMI-TRAILR,ETC	100	071 COFFEE, CFE SUBSTITUTE	98.4578
24	873 METERS, COUNTERS,NES	100	763 SND RECORDR, PHONOGRPH	98.2734
25	541 MEDICINES,ETC. EXC.GRP542	100	042 RICE	98.2634
26	621 MATERIALS OF RUBBER	100	846 CLTHING ACCESSRS,FABRIC	98.0214
27	696 CUTLERY	100	351 ELECTRIC CURRENT	97.9315
28	785 CYCLES, MOTRCYCLES ETC.	100	764 TELECOMM.EQP .PARTS NES	97.8596
29	036 CRUSTACNS, MOLLUSCS ETC	100	269 WRN CLTHING, TEXTL.ARTL	97.8242
30	831 TRUNK,SUIT-CASES,BAG,ETC	100	431 ANMAL, VEG. FATS, OILS,NES	96.4540

Source: own calculations based on UN Comtrade three-digit data, 2001.

RCAs for Polish and Lithuanian trade are illustrated in Table 3.09. Following previous developments, Poland increased its number of perfect values from 58 to 60. The largest industry remained SITC 0 with 10 goods. Poland had the same three perfect percentages as Ukraine, and shared five commodities (SITC 023, 024, 072, 073 & 411). This was half compared to EU trade in 2001. Despite losing three perfect SITC 6 commodities, this industry remained second in representation and became the leading export industry at the expense of SITC 0, with paper, paperboard, cut, etc…(SITC 642) valued at $154.032m.

SITC 0 commodities continued to be prevalent in Lithuania's values at one-third of the total for a second time, the same number of SITC 0 goods as Ukraine, although seven of these goods were new. SITC 8 lost five commodities and 19 of the goods in 2001 were absent earlier. This suggests significant reorientation and commodity composition changes, as the country was preparing for EU accession. Lithuania had 13 perfect values, an increase of eight. Again only one was in common with Ukraine (SITC 023: butter, other fat of milk), but seven additional commodities were shared (SITC 011, 024, 043, 344, 411, 759 & 763). The majority of exports remained in SITC 7, the strongest of which was office machines (SITC 751) ranked sixteenth at 99.9271%. However, the former most profitable export commodity, electrical current (SITC 351), was replaced by wheat, meslin, unmilled (SITC 041) and cheese and curd (SITC 024), at $30.229m and $26.405m respectively. This is not only a continuation of Lithuania's intra-CMEA trade characteristics, but also one of the few examples here where an SITC 0 commodity displaced one from SITC 3.

Table 3.10: RCAs in CIS Trade for Belarus & Moldova, 2001 (1-30)

	Belarus	RCA	Moldova	RCA
1	264 JUTE, OTH. TXTL. BAST FIBR	100	011 BOVINE MEAT	100
2	761 TELEVSION RECEIVERS ETC.	98.9016	012 OTHER MEAT, MEAT OFFAL	100
3	011 BOVINE MEAT	97.3043	016 MEAT, ED.OFL, DR, SLT,SMK	100
4	024 CHEESE AND CURD	97.0553	044 MAIZE UNMILLED	100
5	012 OTHER MEAT, MEAT OFFAL	96.5455	613 FURSKINS, TAND,DRESSED	100
6	722 TRACTORS	95.9158	686 ZINC	100
7	023 BUTTER,OTHER FAT O/MILK	94.7034	223 OILSEED (OTH.FIX.VEG.OIL)	99.9405
8	811 PREFABRICATED BUILDINGS	94.4124	633 CORK MANUFACTURES	99.7973
9	265 VEGETABLE TEXTILE FIBRES	92.6701	043 BARLEY, UNMILLED	99.6973
10	785 CYCLES, MOTRCYCLES ETC.	92.4334	056 VEGETABLES, PRPD,PRSVD	99.2561
11	775 DOM.ELEC,NON-ELEC.EQUIP	90.5926	059 FRUIT, VEGETABLE JUICES	99.1139
12	025 EGGS, BIRDS, YLKS, ALBMN	90.4801	421 FIXED VEG.FAT, OILS, SOFT	98.3408
13	896 WORKS O/ART,ANTIQUE ETC	89.8927	112 ALCOHOLIC BEVERAGES	98.1099
14	783 ROAD MOTR VEHICLES NES	88.5538	411 ANIMAL OILS & FATS	97.6323
15	821 FURNITURE, CUSHIONS,ETC.	88.3957	041 WHEAT, MESLIN, UNMILLED	96.9510
16	786 TRAILERS,SEMI-TRAILR,ETC	87.9516	017 MEAT, OFL.PRPD, PRSVD, N	96.6002
17	286 URANM,THORIUM ORS,ETC	86.9834	222 OILSEED(SFT.FIX VEG.OIL)	94.7999
18	844 WMEN,GIRLS CLTHNG.KNIT	86.1591	121 TOBACCO, UNMANUFACRD	92.8688
19	269 WRN CLTHING, TXTL.ARTL	85.0982	742 PUMPS FOR LIQUIDS,PARTS	91.9829
20	846 CLTHING ACCESSRS,FABRIC	84.8569	058 FRUIT, PRESRVD, PREPRD	91.7921
21	782 GOODS,SPCL TRNSPORT VEH	82.9376	054 VEGETABLES	89.3159
22	762 RADIO-BRDCAST RECEIVER	81.5895	842 WMEN, GIRL CLTHNG,XKNIT	89.0910
23	246 WOOD IN CHIPS, PARTICLES	81.4815	874 MEASRE,CNTROL INSTRMNT	88.9756
24	635 WOOD MANUFACT, NES	80.7899	659 FLOOR COVERINGS, ETC.	88.0365
25	845 OTHR.TXTILE APPAREL,NES	79.3903	023 BUTTER, OTHER FAT O/MILK	86.6150
26	697 HSEHOLD EQUIPMENT,NES	76.4592	851 FOOTWEAR	85.3439
27	812 PLUMBNG, SANITRY,EQUP	76.2603	665 GLASSWARE	79.0427
28	871 OPTICAL INSTRUMENTS,NES	74.5053	268 WOOL, OTHER ANIMAL HAIR	75.9405
29	843 MENS,BOYS CLOTHING,KNIT	74.2544	211 HIDES, SKINS (EX.FURS),RAW	73.4067
30	662 CLAY,RFRCT. CNSTR.MATRL	70.2703	291 CRUDE ANML MATERLS.NES	71.2329

Source: own calculations based on UN Comtrade three-digit data, 2001.

As evident from Table 3.10, Belarus-CIS trade witnessed a significant decline of SITC 2 commodities. With seven less goods and 13 less perfect values, the leading industry for RCAs changed to SITC 7 & 8 at nine apiece. Given that they increased by four, the strongest commodities with high RCA values in these categories were SITC 761 (98.9016%) and SITC 811 (94.4124%). There were also significant changes in the leading export industry, from SITC 9 to SITC 7, and in the leading export commodity of goods, from petroleum products (SITC 334) to special transport vehicles (SITC 782) at $354.663m. Much of this is attributed to the strength of Minsk Tractor Works and

BelAZ, the third-ranked producer of specialised mining lorries and heavy lorries after Caterpillar and Komatsu. Interestingly, only Belarus experienced growth in the monetary value of its leading export commodity to the CIS in 2001. Despite the absence of SITC 8 goods in Ukraine-CIS trade, greater similarity with Ukrainian exports was clearer in Belarusian exports, as the countries shared six commodities (SITC 011, 012, 023, 024, 246 & 265). However, the degree of volatility of trade commodities was obvious with two-thirds of the 1996 goods unable to repeat.

Moldovan-CIS trade illustrated greater conformity to earlier developments. For instance, SITC 0 remained the most dominant RCA industry with 12, or four less than previous. Similarities with Ukrainian exports were down, as they were for EU trade in 2001, with Moldova sharing a total of nine goods (SITC 011, 012, 023, 043, 044, 054, 223, 411 & 421), four less than previous. Moldova's strength in overall exports remained in SITC 1, with the most profitable commodity again alcoholic beverages (SITC 112) valued at $169.248m with an RCA of 98.1100%. However, 13 goods were new, indicating less stability once again.

2.2 RCA Results: CIS Trade in 2006

Table 3.11 shows RCA values for Ukraine and Russia.

Table 3.11: RCAs in CIS Trade for Ukraine & Russia, 2006 (1-30)

	Ukraine	RCA	Russia	RCA
1	012 OTHER MEAT, MEAT OFFAL	100	016 MEAT, ED.OFFL, DY, SLT,SMK	100
2	016 MEAT, ED.OFFL, DRY	100	231 NATURAL RUBBER, ETC.	100
3	231 NATURAL RUBBER, ETC.	100	245 FUEL WOOD, WD CHARCOAL	100
4	264 WOOD IN CHIPS, PARTICLES	100	247 WOOD ROUGH, ROUGH SQRD	100
5	283 COPPER ORES, CONCNTRTES	100	264 JUTE, O. TEXTL. BAST FIBR	100
6	289 PREC.METAL ORES,CNCTRTS	100	411 ANIMAL OILS AND FATS	100
7	277 NATURAL ABRASIVES, NES	99.9913	667 PEARLS, PRECIOUS STONES	100
8	351 ELECTRIC CURRENT	99.9905	687 TIN	100
9	762 RADIO-BRDCAST RECEIVER	99.9748	762 RADIO-BRDCAST RECEIVER	100
10	421 FIXED VEG.FAT, OILS, SOFT	99.9333	891 ARMS AND AMMUNITION	100
11	072 COCOA	99.9316	248 WOOD, SIMPLY WORKED	99.6399
12	023 BUTTER, OTHER FAT O/MILK	99.8131	751 OFFICE MACHINES	99.6025
13	285 ALUM. ORE,CNCTR.ETC	99.7988	562 FERTILISER,EXCEPT GRP272	99.3048
14	044 MAIZE UNMILLED	99.5516	696 CUTLERY	99.1418
15	613 FURSKINS, TANED,DRESSD	98.5419	267 OTHER MAN-MADE FIBRES	99.0045
16	041 WHEAT, MESLIN, UNMILLED	97.1328	593 EXPLOSIVES, PYROTCHNICS	98.6025
17	322 BRIQUETTES, LIGNITE,PEAT	96.6494	017 MEAT,OFL.PRPD, PRSVD,NES	98.5754
18	265 VEGETABLE TEXTILE FIBRES	96.4760	334 PETROLEUM PRODUCTS	98.4028
19	431 ANIMAL, VEG. FTS,OILS,NES	95.8277	325 COKE,SEMI-COKE, RET.CRBN	95.8629
20	666 POTTERY	95.4248	232 SYNTHETIC RUBBER, ETC.	95.1363
21	047 OTHR CEREAL MEAL,FLRS	93.6691	882 PHOTO. CINEMATOGRPH. SPL	94.5156
22	282 FERROUS WASTE & SCRAP	92.9429	277 NATURAL ABRASIVES, NES	93.9103
23	677 RAILWAY TRCK IRON,STEEL	92.5846	897 GLD,SLVER-WARE, JEWL NES	93.8667
24	045 OTHER CEREALS, UNMILLED	91.6473	873 METERS, COUNTERS,NES	91.9836
25	679 TUBES, PIPES, ETC.IRON,STL	90.5161	763 SOUND REC., PHONOGRPH	91.9545
26	011 BOVINE MEAT	90.3048	724 TEXTLE,LEATHR MACHINES	91.5842
27	422 FIXED VEG.FAT, OILS,OTHER	90.1446	898 MUSCAL INSTRUMENTS,ETC.	91.5818
28	062 SUGAR CONFECTIONERY	89.2509	251 PULP AND WASTE PAPER	91.4137
29	737 METALWORKING MCHNRY	89.0189	597 PREPRD ADDITIVES,LIQUIDS	90.2400
30	273 STONE, SAND AND GRAVEL	86.9271	291 CRUDE ANIMAL MTERLS.NES	89.7454

Source: own calculations based on UN Comtrade three-digit data, 2006.

Despite only accounting for 8.32% of overall trade, SITC 0 commodities in Ukraine's RCA trade constituted one-third of the percentages for a second time, with two different meat products achieving perfect values (SITC 012 & 016). SITC 0 remained the leading RCA industry, despite a decline of one-third in 2001. A noticeable development was the

increase of SITC 2 commodities, from six to nine, with three new ones having perfect percentages (SITC 231, 283 & 289), and three failing to register (SITC 211: hides, skins, excluding furs, raw, 212: fur skins, raw & 244: cork, natural, raw and waste). Furthermore, SITC 7 experienced a significant decline of five goods. Such developments remain indicative of the high degree of Ukraine-CIS trade restructuring, a fact further reinforced by a turnover of half the commodities in 2006. It is also suggestive of the effects of EU expansion. Unlike the former Soviet republics and ACs that joined the EU in May 2004[1], many of Ukraine's main trading partners continue to be CIS states. Stability did exist in other areas, however. SITC 6 commodities again accounted for the greatest percentage of overall exports, with tubes, pipes etc…,iron or steel (SITC 679) valued the highest exported commodity at $1,324.541m, an increase of 223.43%.

Russia's trade in RCA goods continued to show less stability. With four additional commodities to make a total of one-third overall, SITC 2 regained its position as the sole leading industry in RCA trade, having four commodities with perfect values (SITC 231, 245, 247 & 264). SITC 3 lost its position as the leading industry for overall trade, replaced by SITC 9 with 17.91% more trade. Moreover, petroleum products (SITC 334) replaced petroleum oils, crude (SITC 333), as the largest RCA export earner ($2,226.356m) and had a value of 98.4028%. This is the first year of the study where the destination principle for VAT was applicable to all Russian commodities, including energy exports, although levies and export taxes continued to be functional. Russia's RCAs were as changeable again, with 15 new commodities. They shared two perfect percentages (SITC 016 & 231), and two similar values (SITC 277 & 762). This was the greatest amount of shared goods between the two in CIS trade. In contrast to EU trade, Russia-CIS trade experienced significant commodity changes and reorientation to different sectors.

[1] This included the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia.

Table 3.12: RCAs in CIS Trade for Poland & Lithuania, 2006 (1-30)

	Poland	RCA	Lithuania	RCA
1	011 BOVINE MEAT	100	011 BOVINE MEAT	100
2	012 OTHER MEAT, MEAT OFFAL	100	016 MEAT, ED.OFL, DR, SLT,SMK	100
3	016 MEAT, ED.OFL, DR, SLT,SMK	100	017 MEAT,OFL.PRPD, PRSVD,NES	100
4	017 MEAT, OFL.PRPD, PRSVD,NES	100	023 BUTTER, OTHER FAT O/MILK	100
5	023 BUTTER, OTHER FAT O/MILK	100	025 EGGS,BIRDS,YOLKS, ALBMIN	100
6	024 CHEESE & CURD	100	035 FISH,DRIED,SALTD, SMOKD	100
7	025 EGGS,BIRDS,YOLKS, ALBMIN	100	036 CRUSTACNS, MOLUSCS ETC	100
8	035 FISH,DRIED, SALTD,SMOKD	100	042 RICE	100
9	042 RICE	100	044 MAIZE UNMILLED	100
10	046 MEAL,FLR O/WHEAT,MSLN	100	047 OTHER CEREAL MEAL,FLRS	100
11	231 NATURAL RUBBER, ETC.	100	281 IRON ORE, CONCENTRATES	100
12	244 CORK, NATRL, RAW WASTE	100	597 PREPRD ADDITIVES,LIQUIDS	100
13	264 JUTE, O. TEXTL. BAST FIBR	100	681 SILVER,PLATINUM,ETC.	100
14	345 COAL GAS,WATER GAS, ETC.	100	686 ZINC	100
15	411 ANIMAL OILS & FATS	100	961 COIN NOGOLD NONCURRENT	100
16	532 DYEING,TANNING MATERLS	100	024 CHEESE & CURD	99.9835
17	681 SILVER,PLATINUM, ETC.	100	633 CORK MANUFACTURES	99.9589
18	961 COIN NOGOLD NOCURRENT	100	532 DYEING,TANNING MATERLS	99.9566
19	971 GOLD,NOMONTRY EX.ORES	100	763 SOUND RECRDR, PHONGRPH	99.9198
20	072 COCOA	99.9985	022 MILK & CREAM	99.8776
21	633 CORK MANUFACTURES	99.9933	046 MEAL,FLR O/WHEAT,MSLN	99.8331
22	881 PHOTOGRPH APPAR.ETC.NES	99.9356	881 PHOTOGRPH APPAR.ETC.NES	99.7911
23	846 CLTHING ACCESSRS,FABRIC	99.8404	573 POLYMERS,VINYL CHLORIDE	99.6522
24	781 PASS.MOTR VEHCLS.EX.BUS	99.7950	285 ALUMINIUM ORE,CNCTR.ETC	99.2305
25	036 CRUSTACNS, MOLLUSCS ETC	99.7799	761 TELEVISION RECEIVERS ETC	99.1938
26	726 PRINT, BOKBINDNG MACHS	99.7396	781 PASS.MOTR VEHCLS.EX.BUS	99.1853
27	583 MONFILAMENT O/PLASTICS	99.7393	751 OFFICE MACHINES	98.7094
28	122 TOBACCO, MANUFACTURED	99.6128	591 INSECTICIDES, ETC.	98.5005
29	613 FURSKINS, TANND,DRESSD	99.5440	752 AUTOMATC.DATA PROC.EQP	98.3691
30	752 AUTOMATC.DATA PROC.EQP	99.5040	583 MONOFILAMENT O/PLASTICS	98.1484

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 3.12 illustrates RCA values for Polish and Lithuanian CIS trade, after the latter became one of three former Soviet republics to join the EU. The actual number of perfect values Poland had in CIS trade fell from 60 to 19 after EU accession. As was the case with Poland-EU trade in 2006, SITC 0 became the largest industry with 12 goods, ten of which had 100%. Poland and Ukraine shared one SITC 2 good (SITC 231) and six others (SITC 011, 012, 016, 023, 072 & 613). The country's main export industry remained SITC 7, with the new highest value export good, passenger motor vehicles, excluding buses (SITC 781), worth $406.714m. CIS trade and commodity composition

underwent continual changes, with EU membership impacting Poland-CIS trade and making it more competitive in value-added goods.

Lithuania also had SITC 0 as the dominant RCA industry, increasing by three commodities to 13. Half of the values had perfect values, an indication of growing RCA strength. This further illustrates Lithuania's CIS connections, albeit less than previous. Lithuania shared six high percentages with Ukraine (SITC 011, 016, 023, 044, 047 & 285). However, the bulk of their exports, like Poland's, originated from SITC 7 commodities, with SITC 781: passenger motor vehicles, excluding buses, the most profitable export good at $516.652m, 27.03% higher than Poland's profit in the same good but 0.6097% less in RCA. This commodity appeared for the first time in both, and is likely indicative of greater consumer purchasing power in CIS states. Significant change was experienced again, with almost two-thirds of the commodities registered as new. Much of the changes in their exports to the CIS, and Russia in particular, can be attributed to a more favourable economic situation, including a rise in incomes and currency appreciation, which fuelled consumer demand for imported goods, in addition to improvements in customs codes and clearance.

Table 3.13: RCAs in CIS Trade for Belarus & Moldova, 2006 (1-30)

	Belarus	RCA	Moldova	RCA
1	012 OTHER MEAT, MEAT OFFAL	98.8889	012 OTHER MEAT, MEAT OFFAL	100
2	265 VEGETABLE TEXTILE FIBRES	97.7772	121 TOBACCO, UNMANUFACRD	100
3	025 EGGS, BIRDS, YOLKS,ALBMN	97.1753	268 WOOL, OTHER ANIMAL HAIR	100
4	023 BUTTER,OTHER FAT O/MILK	96.4149	525 RADIO-ACTIVE MATERIALS	100
5	722 TRACTORS	96.0944	579 PLASTIC WASTE, SCRAP ETC	100
6	212 FURSKINS, RAW	94.8928	613 FURSKINS, TANND,DRESSD	100
7	844 WMEN,GIRLS CLTHNG.KNIT	92.5699	044 MAIZE UNMILLED	99.9268
8	024 CHEESE & CURD	91.8861	011 BOVINE MEAT	99.8346
9	761 TELEVSN RECEIVERS ETC.	91.4765	731 METL REMOVL WORK TOOLS	94.7687
10	845 OT.TEXTILE APPAREL,NES	90.8885	633 CORK MANUFACTURES	94.6032
11	785 CYCLES, MOTRCYCLES ETC.	90.2003	659 FLOOR COVERINGS, ETC.	93.1520
12	061 SUGARS, MOLASSES, HONEY	90.1224	222 OILSEED(SFT.FIX VEG.OIL)	92.7740
13	871 OPTICAL INSTRUMENTS,NES	87.6080	421 FIXED VEG.FAT, OILS, SOFT	92.0720
14	022 MILK & CREAM	87.0081	112 ALCOHOLIC BEVERAGES	87.3472
15	625 RUBBER TYRES, TUBES, ETC.	86.6294	043 BARLEY, UNMILLED	86.1579
16	783 ROAD MOTR VEHICLES NES	85.9572	054 VEGETABLES	85.2767
17	842 WMEN, GIRL CLTHNG,XKNIT	85.6115	551 ESSNTL.OIL, PERFME,FLAVR	83.7571
18	821 FURNITURE, CUSHIONS,ETC.	85.1635	057 FRUIT,NUTS EXCL.OIL NUTS	79.3138
19	786 TRAILERS,SEMI-TRAILR,ETC	85.1430	056 VEGETABLES, PRPD,PRSVD	78.7605
20	266 SYNTHETIC FIBRES	84.9068	025 EGGS,BIRDS, YOLKS, ALBMN	78.6048
21	782 GOODS,SPCL TRNSPORT VEH	80.9014	061 SUGARS, MOLASSES,HONEY	74.5506
22	846 CLTHING ACCESSRS,FABRIC	80.7503	742 PUMPS FOR LIQUIDS,PARTS	73.9936
23	635 WOOD MANUFACT, NES	80.7071	231 NATURAL RUBBER, ETC.	73.9214
24	269 WRN CLTHING, TEXTL.ARTL	78.3510	724 TEXTL,LEATHER MACHINES	72.7065
25	841 MENS,BOYS CLTHNG,XKNIT	77.8074	712 STEAM TURBINES	72.4138
26	017 MEAT, OFL.PRPD, PRSVD,NES	74.5353	273 STONE, SAND AND GRAVEL	71.8261
27	011 BOVINE MEAT	74.4288	269 WRN CLTHING, TEXTL.ARTL	68.5079
28	843 MENS,BOYS CLTHING,KNIT	73.0273	041 WHEAT, MESLIN, UNMILLED	67.2237
29	775 DOM.ELEC,NON-ELEC.EQUIP	71.8248	058 FRUIT, PRESRVD, PREPRD	66.6193
30	896 WORKS O/ART,ANTIQUE ETC	71.2557	651 TEXTILE YARN	66.2255

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 3.13 provides RCA percentages for Belarus and Moldova. Similar to EU trade developments in 2006, neither Belarus nor Moldova experienced major changes in their CIS trade compositions. Belarus maintained nine commodities of its leading values in SITC 8 to make it the single largest industry. This was the first year Belarus did not have any perfect values, compared with a total of 14 in 1996. Given Belarus' orientation towards the CIS, this is an interesting development: Lithuania increased the number of perfect values for a third time, including in human capital-intensive and technology-intensive goods. Belarus' leading export industry remained SITC 7, with the leading

export commodity of goods, special transport vehicles (SITC 782) at $689.370m (+94.37%). BelAZ, a major producer of such goods, began expanding its operations to Latin America, based on the strength of such exports. The degree of volatility of trade commodities was less, as nine previous ones were unable to repeat. Only four goods were shared with Ukraine (SITC 011, 012, 023 & 265), eight less than in EU trade in 2006.

Moldovan-CIS trade exhibited little change. SITC 0 continued to be the largest industry for RCA goods with 11. There were also a total of seven shared commodities with Ukraine (SITC 011, 012, 041, 044, 273, 421 & 613). This marked a decline for the third time in a row. Moldova's strength in overall exports continued to remain SITC 1; however, its main good, alcoholic beverages (SITC 112), was only valued at $146.013, a decrease of 13.73% from its previous value with an RCA percentage 10.7628% less. This was largely the result of Russian trade restrictions on Moldovan products. Once again 13 commodities were new in 2001.

3. An Assessment of CIS Trade Developments

Table 3.14 provides an overview of CIS trade developments.

Table 3.14: Changes in SITC Commodity Composition in CIS Trade, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-10	0	-2	+3	+7	-5
1 Beverages & tobacco	-1	n/a	-1	-1	n/a	0
2 Crude materials	+5	0	+3	0	-7	+4
3 Mineral fuels	+2	-1	+1	-1	-2	n/a
4 Animal & vegetable oil	+2	+1	+1	n/a	-1	-2
5 Chemicals & related	n/a	0	0	+4	-2	+3
6 Manufactured goods	+2	0	-2	-1	-1	+1
7 Machinery/Transport	+1	-2	+1	+1	+2	+2
8 Misc. Manufactured	-1	+3	-3	-6	+4	-3
9 Not classified	n/a	-1	+2	+1	n/a	n/a
Main RCA Industry	0→0	2→2	0→0	0→0	2→8	0→0
Main Export Industry	6→6	3→9	0→7	7→7	9→7	1→1
Main Export Commodity	061→679	343→334	017→781	351→781	334→782	112→112

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

CIS trade produced some interesting results. The majority of high RCA percentages remained in SITC 0 for Ukraine, Poland, Moldova and Lithuania. However, such

commodities witnessed significant declines in Ukraine and Moldova, by 10 and five goods respectively. A similar development was observed by Fertő and Hubbard (2003) in Hungary. The difference, however, is that Ukraine and Moldova have high labour migration, frequent trade disputes with Russia, a pressing need for greater trade diversification, despite the fact such goods are more competitive in CIS markets, and both are vulnerable to fluctuations in energy prices and supplies. For Lithuania and Belarus, there was an increase of three and seven SITC 0 commodities correspondingly. Russia and Belarus had SITC 2 as the main RCA industry, but by 2006 this had changed to SITC 8 for Belarus, despite substantial increases in commodities from SITC 0. Only Poland and Russia had the same main RCA industry in EU and CIS trade in 2006, SITC 0 & 2 respectively. In overall exports by SITC industry, the export sectors in Ukraine (SITC 6), Lithuania (SITC 7) and Moldova (SITC 1) remained constant. Poland and Belarus experienced a change from SITC 0 and SITC 9 respectively to SITC 7, whereas Russia's main export industry changed from SITC 3 to SITC 9, initially Belarus' leading export industry. Five of the countries ended 2006 with their leading export commodity by profit from the leading export industry: Ukraine (SITC 679: tubes, pipes, etc…iron or steel), Poland and Lithuania (SITC 781: passenger motor vehicles, excluding buses), Belarus (SITC 782: special transport vehicles) and Moldova (SITC 112: alcoholic beverages). The exception to this was Russia where SITC 334 (petroleum products) replaced SITC 343 (natural gas) as the leading export commodity. Significant changes in export structures and RCAs for Belarus would seem to contradict the findings of Tochitskaya and Aksen (2001), although focus here was not primarily on the CIS Customs Unions.

In CIS and EU trade, oil and gas products continually increased in Russia's trade, because of increased world prices, realigned administered prices and a lack of competitiveness in other products. Unlike Poland and Lithuania, Russian exports did not increase RCA percentages in value-added industries, such as machines, automotive parts and automobiles, and far less trade diversification was observed. Oil exports continued to constitute a major source of Russia's GDP growth. Known as 'Dutch disease', the concentration on large returns from natural resources does not stimulate investment into other economic sectors, therefore, reducing competitiveness in other goods over time.

The prospect of 'Dutch disease' continues to pose a threat to Russia's economic development. Consideration that improper export specialisation may permanently reduce economic growth is also a concern (Lucas, 1988; Young, 1991; Grossman & Helpman, 1991).

Ukraine finished with the same main export industry (SITC 6) in EU and CIS trade. Poland was the only other country to have the same main export industry in both (SITC 7). Moreover, Poland and Russia finished with the same main RCA industry in EU and CIS trade (SITC 0 & 7 respectively). As regards goods with significant percentages in common with Ukraine, the numbers were much less than in EU trade: no country shared greater than one-third between 2001 and 2006. This is indicative of less competition in CIS trade. Similarities with Poland and Moldova had decreased by 2006; however, the opposite was true regarding those with Russia and Belarus, albeit marginally. Thus, in EU and CIS trade there was an increase in Ukraine's shared commodities with Russia, and the reverse was true for Moldova, where trade remained underdeveloped and concentrated in too few commodities to be conducive to economic growth. In other words, its low export diversification also poses serious problems for investment and restructuring. CIS trade for the most part continued to advance commodities considered 'obligatory' (e.g. energy, raw materials and foodstuffs) over those deemed 'indicative' (e.g. intermediate products and consumer goods). This suggests a continuation of CMEA commodity specialisation.

Table 3.15: Changes in RCA Percentages in CIS Trade, 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	-56.329	+67.171*	+1.848	+15.741	+115.72¹	-63.864
1 Beverages & tobacco	-38.538	+81.046*	-44.290	+4.809	-6.263*	-50.149
2 Crude materials	+29.078¹	-11.831*	+12.601*	-14.311*	-80.89*º	+45.547*
3 Mineral fuels	+3.062*	+10.595	-14.093*	-48.413*	-170.7*º	-0.022*
4 Animal & vegetable oil	+7.158	+33.870*	-83.347*º	-122.23*º	+9.928*	-1.171
5 Chemicals & related	-52.413*º	+35.450	+6.298	-1.275*º	-0.527*	-1.742*
6 Manufactured goods	-13.696	+30.413¹	-1.705	-3.189*º	+18.081*	-4.704*
7 Machinery/Transport	+5.591	+15.572	+48.793	+22.490	+14.932	-25.081*
8 Misc. manufactured prd	-19.165	+32.155¹	-0.244	-18.197	+8.719	-58.127*º
9 Not classified	+84.352¹	+32.503	-199.85*º	+3.836*	-22.101*	0.000

*Denotes a negative, final RCA percentage. º Denotes a loss of RCA. ¹ Denotes a gain of RCA.

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Table 3.15 indicates RCA percentage changes in CIS trade. SITC 0 continued as the main RCA industry in Ukraine, Poland, Lithuania and Moldova, whereas for Russia this was SITC 2. Belarus experienced a change from SITC 2 to SITC 8. Ukraine saw its greatest increase in SITC 9 (+84.352%), which gained RCA along with SITC 2. Ironically, SITC 9 lost the greatest percentage and RCA in EU trade. The largest decrease was in SITC 0 (-56.329%), which retained RCA. Ukraine had the highest amount of industries having RCA in EU or CIS trade with a total of six here (SITC 0, 1, 4, 6, 7 & 8). The only one to lose RCA was SITC 5. Only Ukraine had its main RCA industry record its greatest percentage decline. Russia saw its greatest growth in SITC 1 (+81.046%), although this remained a non-RCA industry. SITC 2 witnessed the largest decline (-11.831%), yet this value was the smallest calculated. Two industries also gained RCA (SITC 6 & 8), and four maintained it (SITC 3, 5, 7 & 9). Russia had increasing percentages in nine industries, a distinction applicable to Poland-EU trade. With SITC 9 falling 199.85% and losing RCA along with SITC 4, Poland experienced the greatest decline for a specific industry. It was also the only country to have the same industry as its poorest performing one in EU and CIS trade. Unlike EU trade, where Poland had the highest number of industries achieve RCA with four, no industry gained RCA. However, Poland had the second highest amount of industries retaining RCA with five (SITC 0, 1, 5, 6 & 8). Lithuania had the highest amount of industries lose RCA with three (SITC 4, 5 & 6), with the former witnessing the greatest decrease (-122.23%). Its most improved percentage belonged to SITC 7 (+22.49%), although this value was the lowest leading growth of any country. Four industries retained RCA (SITC 0, 1, 7 & 8). Belarus experienced the highest growth, with SITC 1 increasing by 115.72% to gain RCA. However, SITC 3 lost RCA and experienced its greatest decrease (170.7%). The other one to lose RCA was SITC 2. Ironically, SITC 3 experienced the greatest increase in Belarus-EU trade. Only two industries retained RCA (SITC 7 & 8). For Moldova, SITC 2 saw a leading increase (+45.547%), whereas the largest decline was recorded in SITC 8 (-58.127%), its only industry to lose RCA. Moldova, like Belarus, saw its greatest RCA growth in EU trade become its worst in CIS trade. It was the only country to experience fewer industries maintaining RCA in CIS trade (SITC 0, 1 & 4). Unlike EU trade, no

industry experienced growth in all six countries. Moreover, no industry universally retained RCA.

The main RCA industry remained SITC 0 in each country, except in Russia (SITC 2) and Belarus where it changed from SITC 2 to SITC 8. Exports from the main RCA industries rose in each country, except in Ukraine and Moldova (see Table 3.01). In EU trade, the main RCA industry experienced export growth without exceptions. However, representation of SITC 0 in terms of overall exports declined in each of the four countries where it was the main RCA industry, with the greatest decline (20.29%) recorded in Poland (see Table 3.02). This decrease was also mirrored in a loss of the leading commodities represented (see Table 3.14). Russia's main RCA industry also failed to experience growth in overall exports. Only in Belarus did the main RCA industry (SITC 8) increase its percentage in overall exports (8.89%). EU trade saw each main RCA industry fail to increase its percentage of overall exports, except in Moldova. Imports in the main RCA industry grew in each country, except in Lithuania where SITC 0 fell by 4.52% (see Table 3.03). As a percentage of total imports, the main RCA industries grew in Ukraine, Russia, Belarus and Moldova by modest values of 1.78% to 1.97% (Table 3.04). Only in Poland and Lithuania did the main RCA industry decrease by 3.30% and 5.31% respectively. In EU trade, import growth was observed in each country's main RCA industry. Results were mixed concerning growth in the percentage of total imports, although in the majority of examples the value declined.

A comparison of the percentage changes in exports by SITC industries (Table 3.01) and changes in SITC industries as a percentage of overall exports (Table 3.02) with the greatest increase in RCA percentages (Table 3.15) illustrated some interesting findings. The industry with the leading growth in its RCA percentage experienced the greatest percentage change in its exports in every country. There were no exceptions to this. However, a less positive relationship between growth in an industry as a percentage of overall exports and the leading growth in RCA percentage existed. This proved true only in Poland and Lithuania (SITC 7). Conversely, in EU trade the relationship between the percentage changes in exports by SITC industries and the greatest increase in RCA percentages was less evident (only in Ukraine and Belarus), whereas the relationship between changes in SITC industries as a percentage of overall exports and the greatest

increase in RCA percentages was stronger, with evidence of a positive relationship in Russia, Lithuania, Belarus and Moldova. In terms of the industry which experienced the greatest increase in its RCA percentage, only SITC 9 in Ukraine managed to have the leading percentage change in imports (see Table 3.03). A similar development occurred in EU trade; however, CIS trade did not provide an example of an industry experiencing the greatest increase in its RCA percentage also recording the smallest increase or greatest decrease in imports. There was no example of an industry with the greatest increase in RCA percentage also having either the largest increase or decrease as a percentage of overall imports (Table 3.04). This development was consistent with the same observation in EU trade.

A comparison of the percentage changes in imports by SITC industries (Table 3.03) and changes in SITC industries as a percentage of overall imports (Table 3.04) with the greatest decrease in RCA percentages (Table 3.15) also produced some notable observations. No industry with the greatest decline in its RCA percentage experienced the greatest decline in its imports, as was the case with EU trade (SITC 9 in Ukraine). However, two industries with the greatest decrease in their RCA percentages did have the greatest increase in their imports. These were SITC 3 in Belarus and SITC 4 in Lithuania. This development did not occur in EU trade. There was no relationship between the greatest decrease in an industry as a percentage of overall imports and the greatest decrease in RCA percentage. However, there were two industries in which the greatest decrease in RCA percentage also had the greatest increase in representation of overall imports. The industries concerned were SITC 9 (Poland) and SITC 3 (Belarus). EU trade also illustrated the same characteristics concerning the relationship between the greatest increase/decrease in an industry as a percentage of overall imports and the greatest decrease RCA percentage. Regarding the industry which experienced the greatest decrease in its RCA percentage, SITC 4 (Lithuania) and SITC 0 (Ukraine) had the highest decline in exports, whilst no such industry witnessed the greatest increase in exports (see Table 3.01). In the former example, three industries did so in EU trade (SITC 9 in Ukraine and Moldova and SITC 2 in Lithuania), and one in the latter (SITC 9 in Poland). There were two examples of an industry with the greatest decrease in its RCA percentage also recording the greatest decline as a percentage of overall exports (Table

3.02). This applied to SITC 0 in Ukraine and Moldova. Likewise, there were two examples observed in EU trade (SITC 9 in Ukraine and SITC 2 in Lithuania).

For RCA percentages with the CIS, SITC 0 remained Ukraine's leading industry, although it declined sharply. SITC 2 conversely had a greater number of commodities from four to nine in the same period. These two industries were not as constant as SITC 2 & 3 for Ukraine-EU trade, but they remained the two dominant industries in CIS trade, despite having a percentage of overall exports normally less than one-fifth. Concerning particular Ukrainian commodities, five illustrated an improvement (SITC 012: other meat, meat offal, 041: wheat, meslin, unmilled, 285: aluminium ore, concentrated, 421: fixed vegetable fat, oils, soft & 613: fur skins, tanned and dressed), whereas seven experienced a decrease (SITC 011: bovine meat, 023: butter, other fat of milk, 045: other cereals, unmilled, 047: other cereal meal, flours, 062: sugar, confectionary, 265: vegetable textile fibres & 666: pottery), compared with a total of ten for EU trade. One commodity (SITC 016: meat, edible offal, dry, salted, smoked) remained constant throughout, retaining its perfect score. There were 17 new commodities (SITC 044: maize unmilled, 072: cocoa, 231: natural rubber, etc, 246: wood in chips, particles, 273: stone, sand and gravel, 277 natural abrasives, nes, 282: ferrous waste and scrap, 283: copper ores, concentrates, 289: precious metal ores, concentrates, 322: briquettes, lignite, peat, 351: electric current, 422: fixed vegetable fat, oils, others, 431: animal, vegetable fats, oils, nes, 677: railway track, iron and steel, 679: tubes, pipes etc…, iron or steel, 737: metalworking machinery, nes, & 762: radio-broadcast receivers). Consequently, 17 commodities were not present in 2006 (SITC 017: meat, offal, prepared, preserved, nes, 022: milk and cream, 024: cheese and curd, 037: fish etc…, prepared, preserved, nes, 046: meal, flour of wheat, miscellaneous, 048: cereal preparations, 058: fruit preserved, prepared, 059: fruit, vegetables juices, 061: sugars, molasses, honey, 071: coffee, coffee substitute, 081: animal feed stuff, 091: margarine and shortening, 223: oilseed, other fixed vegetable oil, 261: silk, 265: vegetable textile fibres, 793: ship, boat, float structures & 883 cinematic film, exposures, developed).

Table 3.16: Changes in RCA Commodities in CIS Trade, 1996-2006				
Country	**No Change**	**Increase**	**Decrease**	**New**
Ukraine	1	5	7	17
Russia	2	8	4	16
Poland	6	0	2	22
Lithuania	3	4	5	18
Belarus	0	2	5	23
Moldova	1	4	9	16

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As evident in Table 3.16, Ukraine had the second highest number of goods increasing their RCA percentages. Only Russia had more with eight, half of which were SITC 2 goods. There were no shared commodities in terms of increases or decreases. Only Poland had no good increase its RCA value, because of the predominance of perfect values until 2006. Although Lithuania also experienced declining CIS trade, it did manage to see increases in four goods and retain three with perfect percentages. Moldova-CIS trade shared one commodity with Ukraine which experienced a growing advantage (SITC 421) and only one with a decreasing advantage (SITC 011). Likewise, Ukraine and Belarus shared one decreasing commodity (SITC 265). CIS trade was characterised by greater changes in commodities, more than one-half turnover for each country, whereas EU trade had greater commodity stability mirrored by greater changes in product increases and/or decreases.

Regarding Ukraine's upper commodity exports (see Table 5.20), it is possible to identify two which attained high RCA values (RCA>90%), indicating these production areas have become more competitive. They were:

SITC 285	Aluminium ore, concentrated	(primary-intensive)	99.80%
SITC 679	Iron/steel tubes/pipes etc…	(human capital-int.)	90.52%

Therefore, the export earnings of such high production commodities are of particular importance to the Ukrainian economy, although vulnerable to market fluctuations.

Whereas Poland and Lithuania did not have a significant number of highly competitive commodities with the EU in 2006, the reverse was true for CIS trade. The majority of these commodities are classified as human capital-intensive or technology-

intensive. Most of the value-added goods exhibit lower production costs than comparable Western European products, thus this constitutes as aspect of Smith's 'productivity' theorem, whereas most CIS trade reflects Ricardo's theorem and Kravis' 'availability' theory. Some can also qualify as examples of new learning processes and the introduction of new technology to create greater competitiveness and new specialisations (Hanusch & Pyka, 2005). Such commodity exchanges reflected a new specialisation and division of labour towards human capital-intensive and technology-intensive goods away from primary and labour-intensive ones. This is particularly true here and confers with Kaitila (2002). Improvements in machinery and inputs may be attributed to the modernising effects of FDI, as shown by Djankov and Hoekman (1997). Correspondingly, the CIS states had less export advantages in CIS trade. Poland (see Table 5.22) had the largest number of commodities showing greater RCA values with 12. They were:

SITC 533	Pigments, paints etc…	(human capital-int.)	90.36%
SITC 542	Medicaments	(technology int.)	96.33%
SITC 553	Perfumery, cosmetics etc..	(human capital-int.)	97.39%
SITC 641	Paper & paperboard	(human capital-int.)	90.85%
SITC 642	Paper & paperboard, cut, etc.	(human capital-int.)	97.13%
SITC 699	Manufactured base metal, nes	(human capital int.)	95.09%
SITC 728	Other industrial machine parts	(technology int.)	98.64%
SITC 741	Heating/cooling equip. parts	(technology-int.)	97.45%
SITC 775	Domestic (non)/electric equip.	(technology-int.)	98.93%
SITC 781	Passenger motor vehicles	(human capital int.)	99.79%
SITC 784	Parts, tractors, motor vehicles	(human capital int.)	95.73%
SITC 893	Articles, nes, of plastics	(technology-int.)	96.69%

Lithuania (see Table 5.23) was second with a total of six, five of which were SITC 7 goods:

SITC 024	Cheese & curd	(primary product)	99.98%
SITC 764	Telecom equip/parts	(human capital int.)	95.14%

SITC 775	Domestic (non)/electric equip.	(technology-int.)	93.72%
SITC 781	Passenger motor vehicles	(human capital-int.)	99.19%
SITC 782	Goods, spec. transport veh.	(human capital-int.)	96.90%
SITC 786	Trailers, semi-trailers etc…	(human capital-int.)	96.64%

Moldova (see Table 5.25) had three commodities experiencing greater RCA:

SITC 222	Oilseed, fixed vegetable oil	(primary product)	92.77%
SITC 421	Fixed vegetable fat, oils, soft	(primary product)	92.07%
SITC 659	Floor coverings, etc...	(labour-intensive)	93.15%

As was the case with Ukraine, Belarus and Russia had different two goods. For Belarus (see Table 5.24), they were:

SITC 024	Cheese & curd	(labour-intensive)	91.89%
SITC 722	Tractors	(technology-int.)	96.09%

Russia (see Table 5.21) also had two commodities, which were present in EU trade competitiveness as well, but with lower RCA percentages concerning CIS trade. They were:

SITC 248	Wood, simply worked	(primary-intensive)	99.64%
SITC 334	Natural gas	(primary-intensive)	98.40%

Ironically, Ukraine did not share any of their most competitive commodities with the other states. This further proves that the level of competition in trade concerning the same commodities is not pronounced in CIS trade. So much less is competition in CIS markets amongst the higher RCA goods that even Poland and Lithuania compete in only two goods (SITC 775 & 781) and Belarus and Lithuania in one (SITC 024).

It is not possible to term all these industries as competitive, simply because of operational restrictions and subsidies in Ukraine, the EU and CIS. In general, Ukraine

enjoys more RCA in its trade with the CIS; however, it is also losing RCA in SITC 0, 1, 4 & 5. The analysis has also revealed the persistence of traditional pre-Soviet industry, and the types of factor endowments characterising such operations. Nevertheless, it is important to bear in mind some key questions about the model's applicability in such instances. If, for instance, Ukraine is mainly importing technical goods from the EU and the majority of its exports are primary-intensive products, then the trade model will unquestionably reveal Ukraine's primary products as being competitive, compared with those of the EU. Therefore, the model is unable to measure the levels of efficiency or the working conditions under which such commodities are produced. This may, of course, lead to premature estimates on levels of convergence, and it could be consequently argued that the model would better perform under IIT conditions in instances where greater information is known about product type and quality. There is also the question of the significant numbers of new commodities in RCA developments, especially in CIS trade. Nonetheless, it has been possible to produce a partial picture of Ukraine's industrial focus and its path of development, given that the broad nature of Ukraine's EU and CIS trade has already been ascertained and the more competitive branches of industry have been identified. This also applies to the other countries, with a much greater illustration of commodity changes in EU member states' trade with the CIS.

The dominance of primary and, to a lesser extent, labour-intensive industries indicates little structural change and largely concurs with the conclusions of Hoekman and Djankov (1996). There is also conclusive proof that various factor endowments exist in different proportions across these specified countries, and that the 'availability' theorem exists in conjunction with this aspect of the H-O theorem. The hypothesis that primary and labour-intensive commodities have become more competitive over time must be considered, alongside the conditions and restrictions involving trade. Moreover, one needs to consider that industries involved in coal, aluminium, iron and steel production have largely been SOEs, or are becoming increasingly owned by private sector companies, particularly the last three industries, and that the removal of subsidies on energy producers in transition economies has been slow.[2] Earlier trade of certain

[2] A. Smith. *The Return to Europe: The Reintegration of Eastern Europe into the World Economy*. (New York, 2000), pp. 106-111.

Ukrainian commodities was, therefore, state financed or artificially restricted by the EU through quantitative import quotas on steel exports. Consequently, a number of observed RCA values cannot be a true illustration of industrial competitiveness. However, at the same time export restrictions on ferrous scrap metal and certain agricultural products have been decreased.

4. Conclusion

Poland experienced the greatest increase in exports to the CIS, although the percentage here was significantly lower than what was recorded for its export growth in EU trade, or that of sixth-placed Moldova's EU trade. This was a clear indication of the lesser importance of the CIS markets. Russia and Belarus had similar increases to rank second and third, as did Lithuania and Ukraine to finish fourth and fifth. Russia had substantial growth in monetary figures; however, such figures were lower in CIS trade for all countries. Moldova was the only one to record a negative value. In import growth Poland was again the leader, which contrasted with having the lowest import growth in EU trade. Having experienced the greatest import growth in EU trade, Lithuania ranked second in CIS trade. Belarus' percentage was similar to Lithuania's, but greater in monetary terms and higher than its import growth in EU trade. Ukraine was a distant fourth, followed by Russia and Moldova. Monetary figures between the latter two were significant in Russia's favour. Only Russia witnessed greater export growth than import growth. As was the case with export growth percentages, import growth ones were lower in CIS trade, except for Poland. Monetary figures for import growth were also greater in EU trade, except for Belarus. Lithuania's balance experienced the greatest change and became negative, following significant import growth. Russia's witnessed the second largest percentage change, but it was the only country to have a positive balance, as it did in CIS trade. Poland's negative balance rose considerably, whereas the negative balances in Belarus and Moldova did so at a lower rate. Moldova experienced a greater change in its CIS balance, but the reverse was the case for Belarus. Ukraine's change in its trade balance was the lowest. No country reversed a negative balance in CIS trade, like in EU trade.

Export growth was not largely based in two specific industries, as was the case with EU trade. Only SITC 7 saw the leading growth percentage in more than one country (Poland and Lithuania). It varied elsewhere: Ukraine (SITC 9), Russia (SITC 1), Belarus (SITC 0) and Moldova (SITC 2). Ten industries experienced decreases in exports; hence, export contractions were more significant in CIS trade. The leading percentage changes in exports by SITC industries once again did not fully correspond to the leading changes in SITC industries as a percentage of overall exports. This can be explained by the fact this method tends to identify smaller export industries. The exceptions were SITC 7 in Poland and Lithuania, whereas only one industry managed to do likewise in EU trade (SITC 3 in Belarus). This confirmed the existence of a weak relationship between the two, as initially suggested in EU trade. The industry with the leading percentage growth in overall exports again constituted the main RCA industry in each country; however, there were exceptions (Ukraine and Moldova). In fact, exports from Moldova's main RCA industry (SITC 1) contracted significantly. Regarding the most profitable industry, there was a strong relationship involving industry growth as a percentage of overall exports in Russia, Poland, Lithuania and Belarus. The same trend was observed in EU trade. This relationship did, however, not hold true in Ukraine and Moldova: only the most profitable industry in the former experienced export growth. A further examination of the leading percentage changes in exports by SITC industries and changes in SITC industries as a percentage of overall exports with the leading increase in RCA percentages illustrated a very strong relationship with the former. In fact, there were no exceptions to this, unlike the four examples observed in EU trade. However, the relationship between changes in SITC industries as a percentage of overall exports and the greatest increase in RCA percentages was stronger in EU trade.

Import growth revealed that only one industry (SITC 9) had the leading value in more than one country (Ukraine and Russia). This was true of the same industry in EU trade in Russia and Poland. Ukraine had the same one record the leading percentage change in both exports and imports. One industry which recorded a leading value in export growth also experienced a decrease in its corresponding imports (SITC 1 in Russia). This development did not occur in EU trade. Decreases in imports were observed in nine industries, compared with only two in EU trade. The calculation of

percentage changes in imports revealed better where the most significant growth in overall imports was, compared to the same relationship with exports. Regarding the former, this held true in Russia (SITC 9), Belarus (SITC 3) and Moldova (SITC 1). Nevertheless, a weak relationship exists between percentage changes in imports by SITC industries and the changes in SITC industries as a percentage of overall imports, as the former had a tendency to identify smaller industries. The same weakness also applied to EU trade. Concerning exports, the relationship was evident in Poland and Lithuania (SITC 7). As was the case with EU trade, examples persisted where leading growth in monetary figures did not translate into greater percentages in overall exports or imports. Moreover, the relationship between SITC industry growth as a percentage of overall imports and the main import industry was not as apparent as it was concerning the main export industry, because the highest growth was mirrored by the main import industry only in Russia, Lithuania and Belarus. This was evident in exports for each country, with the addition of Poland. However, this relationship was not as significant as it was in EU trade. Regarding the least profitable industry, the relationship between industry growth as a percentage of overall imports was evident only in Lithuania and Belarus (SITC 3). A further examination of percentage changes in imports by SITC industries and changes in SITC industries as a percentage of overall imports with the leading decrease in RCA percentages did not illustrate strong relationships. This weak relationship was likewise observed in EU trade.

The main RCA industry in each country did not experience growth concerning total exports, as was the case in EU trade. In fact, only in Belarus did the main RCA industry increase its overall export representation. RCA developments in the CIS were rather different than in the EU: SITC 2 commodities did not constitute the main RCA industry. This belonged to SITC 0, except for Belarus and Russia where SITC 2 retained predominance. Likewise, there was little change, with a shift only evident in Belarus to SITC 8. Thus, Ukraine, Poland, Lithuania and Moldova experienced greater RCAs in SITC 0, identified in CIS trade as 'obligatory'. Ukraine and Moldova, however, witnessed substantial declines in representation and Belarus and Lithuania experienced increases. As a percentage of overall exports, SITC 0 declined in each country. Greater differences were observed in the main export industry: only Ukraine's remained in SITC

6, the same as with EU trade, Lithuania's in SITC 7 and Moldova's in SITC 1. Poland and Belarus saw the majority of their exports originate from SITC 7, from SITC 0 & 9 respectively, whereas for Russia the change was from SITC 3 to SITC 9. Ukraine's leading export commodity with significant RCA was SITC 679: iron and steel castings, forgings and stampings, rough. There was a noticeable shift to other human-capital intensive products in Belarus (SITC 782: goods, special transport vehicles) and Poland and Lithuania (SITC 781: passenger motor vehicles, excluding buses). Primary products remained at the fore in Russia (SITC 334: petroleum products, refined) and Moldova (SITC 112: alcoholic beverages). Competition in CIS trade was not as intense, illustrated by the fact that fewer commodities with significant RCA percentages were common. In fact, Ukraine shared a total of seven commodities with Poland and Moldova in 2006, eight less than with Lithuania and Russia in EU trade. In EU and CIS trade, Ukraine's shared commodities increased with Russia and decreased with Moldova. Bilateral barter transactions were a feature of CIS trade, as were early complications of origin-based VAT principles involving Russian commodities in intra-CIS trade.

Changes in RCA percentages revealed that only Poland and Lithuania shared the same most improved industry (SITC 7). Ukraine had the highest amount of industries which retained RCA with six. Russia saw increases in all but SITC 2, whereas Ukraine and Belarus experienced growth in five. Poland was the only country to have the same worst performing RCA industry in EU and CIS trade (SITC 9). Belarus and Moldova experienced their greatest growth in EU trade become their worst in CIS trade (SITC 3 & 8 respectively). No industry experienced growth in all countries, nor did any see decline across all. In greater competitiveness (RCA>90%), the reverse was true from EU trade; in other words, Poland and Lithuania showed substantial increases in competitiveness over the CIS states. Moreover, the industries that illustrated this were mostly human capital-intensive or technology-intensive ones able to exploit weaker CIS production. Consequently, Poland had the greatest number of such commodities (12), followed by Lithuania (6), Moldova (3) and Belarus, Russia and Ukraine (2). Belarus was the only CIS state to have a technology-intensive commodity (SITC 722: tractors), instead of mostly primary products or labour-intensive ones. The emergence of more value-added commodities in Polish and Lithuanian trade indicates key restructuring and commodity

changes. Although many such products would not fare as well in EU trade, they often provide a cheaper alternative and still exemplify the introduction of new technology and production methods. Another indication of lesser competition in CIS trade is the fact that Ukraine did not have its two most competitive commodities shared elsewhere, and that Poland and Lithuania only competed in two goods and Belarus and Lithuania in one. The next chapter addresses the theory and empirical analyses of IIT in the EU.

CHAPTER 4

THEORY & EMPIRICAL ANALYSES OF INTRA-INDUSTRY TRADE WITH THE EUROPEAN UNION

This chapter further examines EU trade developments (Chapter 2) on a comparative basis over the same period. However, this will be conducted through an assessment of IIT, using the GLI. IIT examines the trade of *similar* goods within the *same* industry, and any high levels of IIT would indicate change in a country's commodity composition, and that broad industrial convergence could be occurring. The chapter will be presented as such. Section 1 provides a literature review of IIT as an economic reconsideration of the dominant Ricardian and H-O theorems which seemed unable to explain fully the developments in post-war trade, to the subsequent theoretical considerations and the resulting controversies surrounding it. Section 2 examines the growth of IIT, or lack thereof, in EU trade and compares this with RCA developments in EU trade. Section 3 provides detailed analyses on export and import growth, in addition to assessing changes in each country's trade balance, before investigating key developments in IIT across each country's 10 one-digit SITC industries and the cumulative change in overall IIT percentage. Of particular interest is the role of export growth, shown from international experience to be a key factor in economic resurgence and growth acceleration. The final section addresses each country's top 15 exports and imports on the basis of their high monetary values, and determines the nature of their factor intensity. Finally, an examination of the relationship between RCA, which identifies industries illustrating a comparative advantage in production with specific regard to the same industries in the EU, and IIT is presented, in addition to that of each country's leading industries as determined by RCA and IIT.

1 Intra-Industry Trade (IIT)

The origins and early developments of IIT were observed by Verdoorn (1960), Drèze (1961), Balassa (1963, 1966), Grubel (1967) and Adler (1970) in analyses on the

implications of mutual tariff reductions on specialisation patters in Benelux and the EEC where increasing trade in products belonging to the *same* industry was first apparent. This coincided with considerable trade liberalisation in Western Europe between 1959 and 1967 and a marked increase in regional trade agreements. The resulting hypothesis was that liberalisation would facilitate increasing IIT, as a percentage of a country's overall trade. A similar hitherto unknown post-war development was that growth rates for world manufactured trade were higher than those for world output, with no universally accepted model able to provide an explanation (see Schmitt & Yu, 2002). These extraordinary aspects of international trade, therefore, initiated reconsideration in economics on the dominant, classical Ricardian and H-O theorems. Contrary to the assumption of the estimates of gains, growth in the trade of commodities designated within a specific industry results from similar material input requirements of products inside that industry and analogous resource endowments. In addition, Vanek (1968) identifies a key relationship between trade and factor endowments: countries with higher IIT levels enjoy higher production scales, or employ better commission processing, to address import pressure and increase export opportunities. Significant IIT values would also be observed in countries of closer proximity, because of a penchant for comparable economic structures. Furthermore, the seminal empirical analysis of Grubel and Lloyd (1975) confirms that IIT not only exists in trade between developed countries, but that it actually increases much quicker between them, particularly when customs unions or regional trading agreements exist.

Grubel and Lloyd, prominent pioneers of IIT theory and the GLI (Grubel & Lloyd, 1975), describe IIT as 'a product of aggregation because a country will not import and export simultaneously *identical* commodities'.[1] Greenaway and Milner (1986) define it as the simultaneous import and export of identical, similar or differentiated products between similar countries. Here similar is designated as a variable of multi-dimensional proportions, the most important determinants of which are economic size, productivity and per-capita income. Kaitila (2001) further explains it as the same simultaneous trade between two countries or regions where comparative cost advantage does not exist.

[1] H. Grubel and P. Lloyd. 'The empirical measurement of intra-industry trade', *The Economic Record*. Vol. 47, No. 120, (1971), p. 494.

Definitional differences notwithstanding, IIT supposes the opposite of comparative advantage theory, i.e. inter-industry trade (IT) in homogeneous products, and it affirms that differences between countries are not the only rationale for trade, given the presence of increasing returns in economies of scale, i.e. cost advantages resulting from firm expansion. Furthermore, IIT promotes commodity exchanges, regardless of similarities in taste, technologies and factor endowments, some of the key principles of the H-O theorem. Therefore, IIT is not a product of different factor endowments and the resulting specialisation advanced by the H-O theorem, which better explains trade between developed and developing states.

The obvious rise in IIT may further be attributed to the interaction between product differentiation and economies of scale or price discrimination, based on segmented markets, which drives two-way trade in homogenous products (Brander, 1981; Brander & Krugman, 1983). The importance here is market power: IIT is produced by firms' incentives to penetrate the other's market. Hence, IIT theory and analysis are considered fundamental in explaining trade relations between developed countries, and promoting the growth of higher value-added commodities with greater product variety (Funke & Ruhwedel, 2005). As IIT is greater for countries with more similar factor endowments, it can be said to minimise trade impacts on the gains or loses of some production factors. Because of the existence of simultaneous imports and exports, IIT thus not only reduces protectionist demands, but also makes unanimous consensus for protectionism amongst advocates more difficult to achieve. Moreover, IIT is closely related to the Smooth Adjustment Hypothesis (SAH), first mentioned by Balassa (1966), that states employment is easier to find in companies inside the same industry when international competition is within industries and not between them (see also Brülhart, 2002). Various IIT models are compatible with this suggestion. For instance, Krugman (1981) posits IIT has fewer adjustment concerns than IT; hence, IIT enhances trade gains through a better exploitation of scale economies, causing fewer structural changes and incurring lesser adjustment costs in the transition to international competition (Kandogan, 2003b). By increasing returns to scale and creating faster economic growth and income conversion, IIT is thought to offer greater benefits (Helpman & Krugman, 1985). The majority of empirical studies devoted to investigating its determinants, however, tend to

find greater evidence for country-specific variables (e.g. endowments and income), especially for vertically-differentiated products (Hummels & Levinsohn, 1995), than various industry-specific ones (e.g. markets, products and FDI).

However, no country's trade solely consists of IIT goods; those commodities that cannot be classified as such are known as IT. An example is when unskilled, labour-intensive commodities, natural resources and agricultural products are exchanged for human capital-intensive ones. The consequence of relative factor endowments taking precedence normally results in greater trade volumes. IT essentially results from comparative advantage; however, it is not exclusively based on it because additional factors include agglomeration and spillover (externality) effects, external economies and country size. Perfect competition and constant returns to scale are further not associated with IT. Building on earlier explanations of IT characteristics between developed and developing countries, Helpman and Krugman (1985) postulate it is also a form of exchange more characteristic of countries with fewer similarities.

Emerging in response to the inadequacies of the Ricardian and H-O theorems and from further related advancements in the theory of industrial organisation applied to international trade (see Lancaster, 1966; Balassa, 1967; Grubel, 1970; Kravis & Lipsey, 1971; Grubel & Lloyd, 1971, 1975), the subsequent 'new trade theory' (NTT), of which IIT is a vital component, makes the assumption that the following exists: product differentiation, imperfect competition, increasing returns to scale, the importance of R&D, technological spillovers, various cumulative processes and diverse mobility factors with firms and labour (Krugman 1979, 1980, 1981; Dixit & Norman, 1980; Eaton & Kierzkowski, 1984; Helpman & Krugman, 1985). In particular, there is an emphasis on *horizontal* product differentiation, and that the number of varieties of any given product is dependent upon market size (Lancaster, 1979, 1980; Krugman, 1979, 1980, 1981; Helpman, 1981; Eaton & Kierzkowski, 1984; Freudenberg & Lemoine, 1999). Greater trade and trade liberalisation also affect market size, creating growth through increased product variety, greater market share for producers and an increased number of suppliers (Krugman & Venables, 1990). Furthermore, scale economies are paramount, given that market size may be influenced by trade, with larger trade volumes implying a greater market capable of increasing suppliers or reducing costs to produce cost and competition

gains (Dixit & Norman, 1980; Krugman, 1980; Ethier, 1982). Scale economies need not be solely at the national level, providing intermediate goods can be traded cheaper, where so-called 'external' economies are the product of scale economies in intermediate products (Ethier, 1979). However, the very existence of scale economies implies imperfect competition, when increasing returns to scale are achieved and monopolistic competition becomes a characteristic of the marketplace, in the forms of duopoly and monopoly which can further influence trade (Venables, 1984; Krugman, 1980). Such competition is further intensified by the dynamic process in which technologies are improved in firms and industries. There is also a clear focus on technology and the sources of technological change, given the increasing importance of technological innovation as a key determinant of economic growth and international competitiveness. Krugman (1980) finds similar countries or differentiated products allow the S-S theorem's effect (i.e. real returns to labour are greater when the price of labour-intensive goods increases) to be compensated for in the scale factor by gains in variety. Finally, Helpman and Krugman (1985) in their seminal work draw attention to further specialisation on the basis of a core-periphery prototype also differentiated as either IIT (i.e. similarities between countries and the complete specialisation of firms) or IT (i.e. comparative advantage and the incomplete specialisation of nations). The result of this work (see also Helpman, 1981) was the creation of the general equilibrium Chamberlin-Heckscher-Ohlin (C-H-O) model which assumes a hierarchical commodity classification and considers decreasing costs, horizontal product differentiation and factor endowments to generate IT, based on H-O factors, and horizontal IIT, based on scale economies. Moreover, any variety of a particular commodity is produced by identical factor intensity and increasing returns to scale technology: firms distinguish their outputs from those of other firms within the same industry.

Largely criticised for its perceived empirical failure to explain the nature and development of post-war trade volumes and compositions, the amount and function of FDI, the effects of trade liberalisation and the growth of IIT trade, the H-O theorem has been rigorously challenged, with the notion of classical comparative advantage

sometimes ignored altogether.[2] This is partly because of Wassily Leontief's discovery that post-war US trade was exporting labour-intensive commodities rather than capital-intensive ones, contrary to the H-O theorem. His empirical findings resulted in the Leontief paradox (1953), explained by the recognition of the value of further investment in training, education and know-how to affect positively the skills and productivity of workers in various industries (e.g. the concepts of human capital and scale economies). Krugman and Venables (1990) further postulate that traded commodities are more often differentiated products, resulting from increased returns to scale in imperfect market structures, like oligopoly or monopolistic competition, rather than the H-O model's assumed perfect competition sustained by constant returns to scale. Given the absence of comparative advantage and increasing returns, Brander (1981) argues in favour of trade involving oligopolistic firms in each other's markets; in other words, firms may decide a market's situation through arrangements concerning the prices of homogenous and differentiated commodities. Prime examples of oligopolistic trade, when unit costs decline in certain industries because output increases, originate in the automobile, computer, aerospace and biochemical sectors which are fundamentally important, given the invaluable role assigned to them regarding technological innovation and economic growth. NTT rejects the attribution of world trade to labour, machinery, technology, climate and natural resource determinants, as advanced by the classical and neoclassical economists, and explains it through historical concepts, like which country first initiated the production of a commodity and exploited related scale economies. Interestingly, Ohlin himself foresaw the role of chance and history in the establishment of a country's trade patterns, advocating a marriage of increasing returns and comparative advantage (Ohlin, 1933). Furthermore, he highlighted that industries subjected to economies of scale

[2] It is worth noting that Helpman and Krugman neither ignore nor reject comparative advantage theory, claiming it 'is alive and well – but it has lost some of its monopoly position'. E. Helpman and P. Krugman. *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition and the International Economy*. (Cambridge, MA: 1985), p. 261. In addition, Cieślik asserts that 'it soon became apparent that these two approaches [IIT and RCA] complemented one another'. A. Cieślik. 'Intraindustry trade and relative factor endowments', *Review of International Economics*. Vol. 13, No. 5, (2005), p. 904. This opinion is shared by Palazuelos-Martinez who states: 'This complementarity challenges the view that new theories are more relevant, and thus a substitute, for the older trade theories'. M. Palazuelos-Martinez. 'The structure and evolution of trade in Central and Eastern Europe in the 1990s'. *Europe-Asia Studies*. Vol. 59, No. 1, (2007), p. 128. Gullstrand further notes that 'a part of IIT consists of trade that could be explained by traditional trade theory and comparative advantages'. J. Gullstrand. 'Does the measure of intra-industry trade matter?' *Weltwirtschaftliches Archiv*. Vol. 138, No. 2, (2002), p. 321.

could be either capital- or labour-intensive, thus making the further division of labour profitable on the basis that variances in industrial growth in different regions change the demand for production factors and cause their relative scarcity to become unequal. Accordingly, trade results from differences in endowments, i.e. relative price factors, and economies of scale. Ohlin's ideas herein are supported by Helpman (1981) and Grossman and Helpman (1991).

Another theoretical consideration is the 'new growth theory', whereby the assumption that technical change is exogenously given is replaced by an attempt to endogenise it (see Romer, 1986; Lucas, 1988). The emphasis is that technological innovation and advances in knowledge are key determinants of economic growth, unlike the classical prominence given to labour and capital. Grossman and Helpman (1990) formulate an endogenous growth model, illustrating that a country with a product innovation comparative advantage will be a net exporter in industries defined by IIT. In addition, such models relate the findings of IIT static models and can be generalised to a dynamic setting (see Brülhart, 2002). The creation of endogenous growth models is because dynamic comparative advantage, based on the importance of scale economies, product differentiation and technical change, was interpreted to exist from empirical results, thus suggesting that total factor productivity within open economies grew at a faster rate. This agrees with Smith's own belief that economic productivity is concentrated on a country's division of labour and the extent of its domestic and export markets. This again suggests a possibility exists to create comparative advantage: technical progress, technology transfer and population growth, as argued by the classical economists, are important aspects for transition countries that desire the benefits of the international division of labour, the gains of greater trade and the benefits of economies of scale which increase competitiveness. Because of such connections, it is possible to consider aspects of IIT as rather a compliment to comparative advantage and its various theorems, notwithstanding the aforementioned differences (see Davis, 1995, Gullstrand, 2002; Cieślik, 2005; Palazuelos-Martinez, 2007).

The 'new economic geography' (NEG) considers globalisation and regionalisation by assuming the following: imperfect competition, increasing economies of scale, trade costs, labour and firm mobility and how pecuniary or technological

externalities between firms can influence trade and the location of industries (Krugman, 1991a, 1991b; Krugman & Venables, 1990, 1995). Much of this represents a continuation of the imperfect competitive models of Krugman (1980) and Helpman and Krugman (1985). There is particular emphasis on how the centrifugal forces (e.g. increasing geographic distances, high trade costs, congestion costs, market entry and exit restrictions) and centripetal forces (e.g. geographic proximity, developed transport and telecommunication networks, higher per-capita income, similar level of development, similar consumer tastes, language, culture, institutional and political links) of the backward linkages (between the firms and suppliers of intermediate commodities) and forward linkages (between the firms and consumers of final commodities) may lead to industrial agglomeration and concentration, because of the entry or exit of firms in industries with increasing returns (Hirschman, 1958; Krugman, 1991a; Krugman & Venables; 1993; Midlefart-Knarvik *et al.*, 2000a, 2000b; Ricci, 1999). Nevertheless, more centripetal forces generally lead to greater IIT, and agglomeration can be driven by international or interregional labour mobility or intermediate inputs. What clearly differs NEG from earlier monopolistic competitive models is the inclusion of trade costs, albeit difficult to define and measure, and the belief that scale economies will also affect the net trade pattern, possibly influencing equilibrium factor prices. Following from Loertscher and Wolter (1980), Balassa (1986a) and Balassa and Bauwens (1987) that IIT declines with distance, NEG also emphasises the location of industries, as determined by market proximity, based on the core-periphery prototype (Hummels & Levinsohn, 1995; Amiti & Venables, 2002; Venables & Limao, 2002). In supplementing the division between IIT and IT, it sees the foundation in differentiation chiefly as a product of the agglomeration of economic activities and of increasing causation (Fujita *et al.*, 1999; Krugman & Venables, 1995). Furthermore, decreasing levels of IIT can also result from an increasing concentration of production, a possible effect of reduced trade costs (Krugman & Venables, 1990).

NEG has made other contributions to IIT, such as theories of transnational corporations (TNCs) and IIT (Greenaway & Milner, 1987; Markusen & Venables, 1996), with the latter concluding that similarities in country size may not necessarily lead to greater IIT because multinational activities can replace such trade. Markusen and

Venables (1998) further posit that economic integration produces convergence and equalisation of production costs and relative factor endowments in advanced EU states. The impact on the nature and progression of international specialisation by TNCs in developed and developing countries is also a subject earmarked for greater attention (Markusen, 1984, 1998; Markusen and Venables, 1998; Markusen and Maskus, 1999; Brainard, 1993; Burgenmeier and Mucchielli, 1991; Brenton *et al.*, 1999). Brülhart and Torstensson (1996) and Davis and Weinstein (1996) also conduct empirical analysis on location and trade liberalisation, whilst Puga and Venables (1997) address location and regional integration. Furthermore, the question of marginal IIT (MIIT) has been raised, given the dynamic process of adjustment and the comparison of static measures at different points in time that may reflect IIT more as an increase in exports in an import-orientated industry. Hamilton and Kniest (1991) postulate that, when the adjustment consequences of trade expansion require assessment, dynamic measures of IIT can be more informative than static ones, with an index of MIIT more relevant for studies of the aforementioned SAH. The motivation to develop MIIT measurements originates from the need to assess the structure of changes in a country's trade patterns regarding structural adjustment, whereas static indices can only address a one-year period of a country's trade pattern. Nonetheless, MIIT measures are intended to complement the GLI: it relates more to structural changes with the inclusion of relatively low factor reallocation between industries. Intra-firm trade and IIT in services has also been a consideration of NEG. Most empirical studies and analyses of IIT focus on trade in goods, but Lee and Lloyd (2002) address the service sector, despite difficulties regarding the definition of service trade, finding that IIT is higher in services and associated production than in commodity trade.

The theoretical considerations of IIT are intertwined with many of the assumptions and findings of NTT, with trade flows measured on a multilateral[3] or bilateral basis, or on a specific group of countries. In particular, Lloyd (2002) notes that

[3] Greenaway and Milner argue that IIT is generated 'on a multilateral basis with or without two-way trade on a bilateral basis [because] there are no strong theoretical grounds for automatically measuring on a bilateral basis'. Hence, it is noteworthy that most empirical studies of IIT use a multilateral approach. D. Greenaway and C. Milner. *The Economics of Intra-Industry Trade*. (Oxford, 1986). p. 128.

the analysis of IIT has faced three persistent and significant controversies[4]: the problem of aggregation; the choice of measure and whether an adjustment should be made for trade imbalance; and, the incorporation of IIT into factor content analyses of international trade. In the first instance, the development of international trade models, producing both IIT and IT, provided the necessary empirical evidence to sustain the theory. Notwithstanding various modifications, the GLI remains the most commonly used model and appropriate empirical measure.[5] The two main refinements to it have been to separate HIIT and VIIT and to create a greater theoretical basis from which to analyse adjustment. What remains unsolved is the question of a correction to the measure where trade imbalance is concerned (see Aquino, 1978; Finger, 1975; Lloyd, 2002). However, 'the professional consensus has been to work with unadjusted GL indices', because of difficulties when 'estimating equilibrium trade imbalances'.[6] Vona (1991) further states an unreliable adjustment procedure results from using correction, a theoretically unsound proposition. However, the final controversy, regarding factor content analyses, remains outstanding, despite a plethora of empirical analyses unable to reach uniform consensus. In addition, Krugman (1994) postulates that not only has empirical research on NTT been incomplete, but that empirical confirmation involving its various models has also been lacking.

Based on product differentiation, IIT may also be classified as either horizontal intra-industry trade (HIIT) or vertical intra-industry trade (VIIT). On the one hand, Lancaster (1979, 1980), Krugman (1979, 1981), Helpman (1981, 1987) and Bergstrand (1990) are responsible for the theoretical basis of HIIT; in other words, the export and import of similar goods differentiated not by quality, but by features or attributes, e.g. consumer preferences or when offered at the same price two products enjoy a positive demand. Thus, countries with similar endowments may have a greater proportion of HIIT, the result of greater product differentiation, imperfect competition and economies of scale, often with an increasing reliance on foreign suppliers for intermediate inputs and

[4] For additional controversies, see D. Greenaway and J. Torstensson. 'Back to the future: taking stock on intra-industry trade', *Weltwirtschaftliches Archiv*. Vol. 133, No. 2, (1997), pp. 249-269.
[5] For a detailed analysis of various indices to measure IIT, see J. Gullstrand. 'Does the measurement of intra-industry trade matter?' *Weltwirtschaftliches Archiv*. Vol. 138, No. 2, (2002), pp. 317-339.
[6] M. Brülhart. 'Marginal intra-industry trade: towards a measure of non-disruptive trade expansion', *Frontiers of Intra-Industry Trade*. Lloyd & Lee (eds.). (Basingstoke, 2002), p. 114.

components. This can be explained as: the smaller the minimum efficient scale of production, the greater number of firms in an industry, with a greater number of varieties in the marketplace and more significant IIT levels. Hence, HIIT is often an indication of not only similarity, but also *convergence* with advanced economies (e.g. firms' technology, consumers' incomes and preferences and market size). As trade barriers decrease, there tends to be an increase in HIIT.

In addition, Krugman (1979, 1981) and Lancaster (1979, 1980) develop formal general equilibrium models of monopolistic competition, defined by analogous assumptions concerning industry structure and technology, in which the absence of barriers to market entry, a large number of firms in an industry, the use of similar technology to produce horizontally and vertically differentiated commodities and intra-firm increasing returns to scale are fundamental aspects. Whereas Krugman's neo-Chamberlinian 'love of variety' model (see Dixit & Stiglitz, 1977) advances greater product varieties symmetrically, helping to formulate the Increasing Returns Trade Theory, Lancaster's neo-Hotelling 'love of characteristics' model assumes asymmetry and accentuates a consumer's ideal variety which is simply different types of one good defined by specific features (see Hotelling, 1929). Both are characterised by variety production under decreasing costs, with demand similarity creating IIT.[7]

On the other hand, VIIT may be considered the result of a large number of firms experiencing no increasing returns in production, because of the manufacturing of similar goods with varieties of different qualities (Falvey, 1981; Falvey & Kierzkowski, 1987; Shaked & Sutton, 1984; Flam & Helpman, 1987). In other words, product differentiation is assumed as vertical, and the two-input process technology is one in which the quality of a product is independent from the amount of labour and capital increases because endowment differences are paramount, as are subcontracting and division of the value chain. An important consequence is that the very determinants of HIIT and VIIT are different. The latter has its roots in Linder (1961) who posits quality demand increases with per-capita income, itself determined by capital intensity, and a rank of consumer

[7] Armington was the first to employ IIT in a model and anticipated future research by using the separability of the utility function. See P. Armington. 'A theory of demand for products differentiated by place of production', *IMF Staff Papers*. Vol. 16, (1969), pp. 159-178.

preferences may be associated with factor endowment-based differences in quality (Falvey, 1981; Falvey & Kierzkowski, 1987). A positive influence on the quality of goods in vertical product differentiation further includes R&D (Gabszewicz *et al.*, 1981) and a highly qualified labour force (Gabszewicz & Turrini, 1997), whereas in HIIT products are perfect substitutes, providing they sell at the same price. Given that VIIT incurs higher adjustment costs, economic similarity is not a requirement (Rosati, 1998). Moreover, VIIT consists of trade involving the export of an intermediate product and the import of a final product, an example of the value-added-chain process (Balassa, 1986b; Hummels *et al.*, 1998). Therefore, a country with relative capital exports higher quality products, compared to a country with relative labour which manufactures lower quality commodities, in accordance with the traditional endowment-based models concerning comparative advantage (Greenaway & Milner, 1986; Greenaway *et al*., 1994, 1995; Tharakan & Kerstens, 1995; Blanes & Martín, 2000). In addition, the Falvey model (1981) assumes VIIT where relative factor endowments drive it, i.e. in a comparative advantage framework, in contrast to Helpman's (1981) model where scale economies drive HIIT.[8] Falvey and Kierzkowski (1987) address the demand side herein, assuming factor endowments determine trade patterns, with export specialisation determined by comparative advantage, and different product qualities consumed relative to income; hence, it explains export specialisation as a product of comparative advantage. This questions whether trade in differentiated products requires imperfect competition: VIIT concurs with the factor endowment aspect of the H-O theorem which supposes trade in homogeneous products and IT. Indeed Helpman (1981) postulates the H-O theorem remains applicable to IT in models with two industries and two factors; therefore, factor proportion variation within industries and between IIT exhibits no inconsistency. He further posits that, given specific conditions, the F-P-E theorem remains from the 2x2 H-O model, when applied to his two-factor and multiple-product model.

Greenaway and Milner (1986), Flam and Helpman (1987), Stokey (1991) and Davis (1995) further explain VIIT, using the Ricardian and H-O models. As HIIT mostly occurs between countries with similar factor endowments and possibly identical factor

[8] Falvey's model (1981) is one of the product varieties, ironically similar to the one proposed by Finger (1975) who had earlier questioned the scientific method behind IIT.

intensity, it cannot be explained by the traditional, classical trade theories. Yet VIIT is often ascribed to differences in countries' factor endowments, and the resulting specialisation in the production of quality varieties intensive in regard to a country's abundant resources. However, if foreign trade can be attributed to such differences, then the same explanation exists for both VIIT and IT in homogenous products (Lüthje, 2006). Having already acknowledged the simultaneous presence of VIIT and IT, the Falvey (1981) model further assumes that capital best defines a country's manufacturing industry, therefore, each industry is presumed to manufacture a non-homogeneous output, because of specific capital and labour inputs that produce a range of commodities. Capital and labour endowments are thus differentiated across the manufacturing industries of each country because factor prices vary; the higher the capital-labour ratio, the higher the quality of a vertically differentiated product. Finally, VIIT has a negative correlation with technology and a positive one with capital/labour ratios, something which is the opposite for IT.

Flam and Helpman (1987) construct a neo-Ricardian model of VIIT where technology differences determine a country's advantage in the production of a differentiated commodity's higher quality, an aspect absent from the Falvey-Kierzkowski (1987) model. Another important explanation of VIIT is found in the pioneering works of Linder (1961) whose theory of overlapping demands states a commodity must first be produced for a domestic market before it is exported to similar countries. This assumes a negative relationship between IIT and income differences; consequently, greater levels of VIIT exist alongside greater differences in per-capita income. Moreover, Shaked and Sutton (1984) argue that VIIT may be the product in market structures of increasing returns for a small number of firms. The impact of scale or concentration as a determinant of VIIT is largely without clear predictions, although it is normally associated with inward FDI. This is also related to the product cycle theory (Vernon, 1966; Posner, 1961) in which developed countries specialise in technological innovation and human capital-intensive goods for trade and investment, and FDI plays a decisive role when technology, in a given product's final stage, becomes obtainable to less-developed states. They, therefore, import high-quality product varieties from developed countries, in return exporting low-quality differentiated goods. Hence, Vernon suggests VIIT and per-capita

income differences enjoy a positive relationship, as do VIIT and FDI; when differences in per-capita income decline, levels of IIT increase. Nonetheless, FDI has a significant and positive effect on HIIT and VIIT in economies experiencing liberalisation (Aturupane *et al.*, 1997; Martín & Turrion, 2003; Camarero & Tamarit, 2004). When countries become more open to trade, the similarity of demands leads to greater IIT, with the horizontal variety more likely a product of trade between countries with similar factor endowments. Fontagné and Freudenberg (2002) find, however, that IIT in Europe from 1980 to 1999 was almost entirely two-way trade differentiated vertically, suggesting greater specialisation in qualities within products. Trade gains are thus created through price choice among different qualities, in addition to a larger choice of varieties.

Another important aspect of the vertically integrated production processes is the considerable amount of international fragmentation of such processes, given the declining costs of outsourcing parts. Labour-intensive fragments have increasingly moved from developed to less-developed countries to benefit from lower real wages abroad, with the most obvious example being in the automobile industry (manufacturing and components). Jones and Kierzkowski (1990, 2001a, 2001b, 2001c) developed the fragmentation scenario, prioritising the concept of increasing returns to highlight the relevance of the Ricardian and H-O theorems. Feenstra *et al*. (2000), Görg (2000) and Celi (2000) argue that the fragmentation process includes the following characteristics: greater fragmentation of the production processes across national borders; decreasing levels of fragmentation with distance between countries; and, that classical trade theory, based on capital- and labour-intensity, helps explain differences in variations of the degrees of fragmentation across countries and industries.

The question of separating HIIT from VIIT in empirical analysis is another issue for contemplation. Greenaway *et al.* (1994, 1995) argue that failure to do so can negatively affect the interpretation of empirical results because HIIT and VIIT theories produce contradictory hypotheses and entail different adjustment costs from specialisation, with the former considered a softer path of adjustment (see SAH). This is further supported by Kandogan (2003a), given that VIIT is a product of differences in factor intensity, and Broll and Gilroy (1988) on the relationship between technology diffusion and IIT. Using relative unit values for exports and imports, because of the

assumption such values reflect differences in quality, Abd-el-Rahman (1991) Vona (1990, 1991) Greenaway *et al.* (1994, 1995, 1999) Torstensson (1996) and Fontagné and Freudenberg (1997) calculate HIIT and VIIT at a unit value dispersion rate of 15% and/or 25%. This has since become the most common method of disentangling these two forms of IIT, by using the ratio between unit values per tonne in exports and imports, but it requires a rather disaggregated level of data. However, Nielsen and Lüthje (2002) find such attempts to differentiate the two problematic, because of a lack of universal applicability for the empirical methods of differentiating such goods, i.e. measurement by differences in unit values, given the different levels of economic development across countries. Instead, they argue a better alternative lies with Falvey (1981), using RCA indices as a theoretical basis combined with the GLI. Moreover, Faustino (2008) further questions the predictions found in the theory for differentiating HIIT and VIIT determinants because a common IIT determinant is relative autarky costs.

Related research into IIT in CEE has been conducted by several authors, since Balassa and Bauwens (1987, 1988) used the GLI and pioneered the eclectic approach involving a multi-country/multi-industry format. IIT analysis is suggested as a vital component to analysing EU-CEE trade (Freudenberg & Lemoine, 1999; Nevan, 1995; Fidrmuc, 2005) because the Dixit-Norman model (1980), based on increasing returns to scale and differentiated products, remains a fair explanation for EU trade (see Amiti & Venables, 2002; Brülhart, 1996, 2001). Moreover, there exists clear empirical evidence that the more advanced CEE states have been able to achieve higher IIT levels and greater product quality, with higher value-added components, because of trade liberalisation and reorientation (Landesmann, 2000; Dullec *et al.*, 2005).

Hoekman and Djankov (1996) investigate VIIT between the EU and CEE, finding a substantial relationship between VIIT growth with the EU and export performance, most of which was upgraded or differentiated, especially in the Czech Republic and Slovakia. They conclude that IIT has rapidly increased throughout the region, where the use of EU inputs was intense and a precondition for accession. This was augmented by significant amounts of OPT in 'sensitive' commodities, such as leather/footwear and textiles/clothing, in addition to those like electrical machinery, precision instruments and furniture. IIT growth in such industries further suggests that adjustment costs produced

by trade liberalisation are likely lower, and those transition countries which attracted greater FDI inflows were more reliant on VIIT. Greater IIT levels may also be explained by the incentive of firms to acquire access to greater know-how, distribution avenues, technology transfers, working capital and links with similar firms in Western Europe in the case of the early stages of economic transition towards a market economy. Aturupane *et al*. (1997) postulate that 80-90% of IIT between the EU and CEE is VIIT explained by the Falvey (1981) model, and that a positive relationship exists between HIIT and product differentiation, industry concentration, scale economies, labour-intensity and FDI. Country-specific factors, however, are stressed as key determinants of HIIT, as opposed to the industry factors suggested by Greenaway *et al.* (1995). Aturupane *et al*. (1999) and Burgstaller and Landesmann (1997) further conclude that EU-CEE trade is VIIT in nature. In particular, Aturupane *et al*. (1999) find the relationship between product differentiation and FDI, on the one hand, and HIIT and VIIT, on the other hand, were significantly positive, provided country-specific variables were considered. Scale and labour-intensity had a negative association with HIIT, with the reverse true for VIIT. Country factors were not essential determinants for VIIT, despite the fact it accounted for such a significant proportion of IIT between the EU and ACs. Kaitila (1999) analyses IIT with the Czech Republic and Hungary, and finds that the values are quite significant for the former with Germany, France and the UK, and the latter with Germany and Austria. Commodities with high IIT values were office machinery and motor car components, automobiles, video recording equipment and products for the electronics industry. Most of this was VIIT, although to a lesser extent in Hungary. Kaitila and Widgrén (1999) conduct a similar IIT analysis in the Baltic States, observing insignificant IIT percentages. Only in the Scandinavian countries are there any slightly higher values evident. In particular, Estonia enjoys greater values, usually with Finland and Sweden, whereas Lithuania tends to have the lowest values of the three. It had greater IIT with Germany and Denmark, like Latvia. Although VIIT again predominates, higher IIT values were found in different commodities for all three states. Much of this is further confirmed later by Widgrén (2006) in his analysis of the Baltic Sea region. Celi (2000) analyses OPT flows, designated as a good which is exported to another state for processing or assembly and subsequently re-imported, in the EU from 1989 to 1997,

concluding that such trade flows increased in 14 of the 15 states, with Germany, France and Italy exhibiting the largest amount of OPT most of which was with the CEE in electrical machinery and textiles/clothing. Thom and McDowell (1999) found higher average values than MIIT, using their own IIT index in EU-CEE trade. Czarny and Lang (2002) examine IIT in Poland's EU trade, declaring that its low GDP per-capita, at only 40% of the EU average, supports explanations found in the Ricardian and H-O theorems. Consequently, these theorems can be supplemented by VIIT, and that human capital-intensive industries are particularly vulnerable to transition because a low domestic capital base causes Poland to evolve into producing intermediate goods. There has been successful IIT in the automobile industry, with increasing FDI and personal incomes and the F-P-E theorem provides greater scope for HIIT in the long-term. However, in accordance with the Falvey-Kierzkowski model (1987), VIIT is more characteristic at present. Kandogan (2003a) emphasises the importance of income similarity on IIT, and particularly border regulations on VIIT, using different techniques to separate HIIT and VIIT in transition economies. Kandogan (2003b) further uses a variety of different measures to determine the factors behind country differences in the change in quantity, quality and variety of CEE and CIS exports. He concludes that the CEE states manage to perform better, partly because of FDI inflows and trade liberalisation agreements. In contrast, the CIS customs union did not encourage trade with developed economies, thus failing to improve the quality and variety of members' exports in the process. Algieri (2004) analyses VIIT and HIIT in Russia, and calculates that IIT grew between 1993 and 1999, as EU trade flows increased, but such levels were already low and even began to decrease from 2000; Russia's IIT is specialised and continues to be more so with time. VIIT dominates, particularly in low-quality goods, which confirms similar analyses for the ACs (see Aturupane *et al*., 1999; Kaitila & Widgrén, 1999). Fidrmuc (2005) notes that IIT growth has been a significant aspect of East-West European trade on account of tariff barrier reductions, with Hungary, the Czech Republic and Slovenia attaining much higher shares of IIT than Lithuania and Latvia. He concludes that differences in per-capita income determine a country's trade structure, but that the effects of location, market size and trade liberalisation are also important, given that some CEE states have higher proportions of IIT than comparable EU members. This supports earlier findings

which propose increasing IIT in the Czech Republic is attributed to OPT (see Fidrmuc *et al*., 1999), and that the growth of IIT validates the postulates of NTT in the same way the Dixit-Norman model (1980) complements the factor endowments explanation of the H-O theorem (Fidrmuc, 1999). Gabrisch (2006) echoes earlier analyses that VIIT is governed by determinants unable to explain HIIT, and agrees with Fidrmuc on the role of personal incomes and the effects of various policies. He finds a positive correlation between differences in GDP per capita variances and those in technology, but no convincing support to explain VIIT in CEE regarding relative factor endowments and technology differences, despite VIIT characterising EU-CEE trade (Gabrisch & Segnana, 2003). Palazuelos-Martinez (2007) concludes that IIT growth has been significant, reflecting increased trade in different varieties of the same product throughout the EU. Although largely a sign of modernisation, IIT growth has not been at either an equal intensity or pace in the Czech Republic, Slovakia, Hungary or Slovenia. Finally, Černoša (2007) measures VIIT and HIIT and states that the production of lower-quality, vertically-differentiated commodities in the predominant specialisation within the Czech Republic, Hungary, Poland, Slovakia and Slovenia remains intact. None of the countries enjoyed the same IIT specialisation, nor were they comparable with advanced EU economies. This observed lack of change in the specialisation pattern concurs with the earlier findings of Hildebrandt and Wörz (2004).

Several publications also relate IIT analysis to Ukraine. Mankovska and Dean (2002) observe a decrease for aggregate trade in the GLI between 1994 and 2000, but an increase at the bilateral level for those countries that were major investors in the Ukrainian market. FDI positively impacts on IIT in Ukraine-EU trade, but in secondary products only. Scale economies have not been an influence, and neither has vertical commodity manufacturing; in other words, the process of exporting some goods to assemble or process further only to re-import them. Hence, there was no positive influence on trade diversification, except from investing countries many of which were former CMEA members re-establishing links before EU accession. Luka and Levkovych (2004) examine IIT in agricultural and food products, by using the GLI and MIIT, based on Brülhart's *A* index (1994). They observe that a significant part of the industry's trade is IT, with IIT levels only 13.7% from 1996 to 2002. High adjustment costs have been

incurred because the trade-induced reallocation of production factors has not been within sectors, but rather between them. A shift towards raw materials (e.g. cereals, vegetable oils, dairy and meat products) away from processed products was further noted. IIT indices did not exhibit a distinct increasing level, contrary to the same trade in CEE observed by Fertő and Hubbard (2001, 2002) and Bojnec (2001). The World Bank (2005) calculate four GL indices, using two- and three-digit SITC data, to determine the extent of integration Ukraine experienced in trade with the EU, CIS and rest of the world (ROW) from 1996 to 2002. They observe a decline of IIT in total trade by 2.2%, calculating IIT with the CIS and ROW at 54% and 36% respectively. IIT growth with the CIS was 6.1%, whereas with the EU it was 3.9%. Overall IIT with the EU was not only lower than with the ROW, but it was almost three times less with the former when compared with Poland's percentage. Moreover, IIT was less concentrated in Poland. Pindyuk (2006) calculates GL indices for Ukraine with the CIS, EU-15 and EU-10 (ACs) at two- and three-digit level data for SITC industries 5-8 between 1996 and 2002. She concludes that Ukraine's share of IIT is low, within the range of 35-41%, when compared with similar transition states that have been more successful with economic restructuring. On average IIT levels were 21.5 times greater for CIS trade, indicating the continued importance of historical linkages, with IIT percentages increasing. The reason for lower IIT levels in EU trade can be accredited to exports of a low-processing nature and low FDI inflows. However, IIT levels with the EU-10 grew the quickest, because of previous economic relations and smaller geographic distances. Nevertheless, IIT remains mostly concentrated in machinery and steel commodities. Using cluster analysis, Konchyn (2005, 2007) states that Ukraine's international trade is predominantly IT, with higher levels of IIT only observed with Romania and Russia in mostly primary-resource commodities. Given greater economic cooperation with Russia and the EU, IIT levels are expected to increase. However, final goods are not the main focus of IIT; rather, intermediate industrial commodities represent its greater share. He concludes that NTT cannot currently provide a full explanation for Ukraine's trade, and that the process of integration and convergence will be painful, in accordance with the theory that IT entails higher adjustment costs, because of Ukraine's heterogeneous export structure and its export specialisation pattern.

The exchange of similar commodities within the EU, which broadly has similar levels of technology and tastes, produces a higher proportion of IIT in trade between member states, especially those more economically and technologically advanced. This suggests EU countries have similar sets of factor endowments. Consequently, IIT can be defined as a mechanism which encourages the transfer of information and technology across countries, and that IIT growth can be credited to a more liberalised trading regime accompanied by institutional reforms, of which some are specific requirements for EU membership, and enterprising entrepreneurs. Such characteristics promote greater EU integration and positively affect economic and political convergence. Although Ukraine is not a member of the EU, its attempts to engage further in harmonisation policies through the PCA and EUUAP and to attain WTO membership, alongside the gradual reduction in trade barriers, should produce closer economic cooperation and result in growing convergence. In other words, Ukraine's levels of IIT with the EU should increase. One should also expect the same with regard to the CIS; however, given its structure, organisation, trade regime and nature thereof, there is a less likely chance to see such similar developments amongst all its member states.

As noted earlier, trade in goods between developed countries is principally in the form of IIT, 'the value of exports of an "industry" which is exactly matched by the imports of the same given "industry".[9] Such an example would be the import and export of machinery, electronic goods and cars between France, Germany, the UK, Italy and Spain. However, Greenaway and Milner (1986, 2003) note problems associated with industry definitions, particularly the degree and amount of homogeneity given to the commodities of each statistical grouping for the purpose of identification and measurement, and the question of an adjustment for aggregate payment imbalance. This follows earlier questioning of the definition of an industry, according to the H-O model, based on the number of characteristics in goods and services (Lancaster, 1966). Given the importance of the GLI to calculate IIT, it is worth bearing in mind Lloyd's own definition

[9] H. Grubel and P. Lloyd. *Intra-Industry Trade: The Theory and Measurement of International Trade in Differentiated Products*. (London, 1975), p. 20.

of industries as 'product groups that are directly linked in production and/or consumption'.[10]

The statistical information compiled for this IIT analysis is again based upon the same three selected years (1996, 2001 and 2006) as those examined in RCA. The reasons for doing so are the same as those explained in Chapter 2. One aspect worth reinforcing is the importance of Comtrade three-digit SITC (Rev. 3) data to IIT analysis because they 'separate commodities into groups most closely corresponding to the concept of an "industry" conventionally used in economic analysis'.[11] Moreover, the aggregation is appropriate because goods have been categorised together on the basis of input requirements being similar. The third revision of SITC codes also prioritises the materials used in the production of a commodity and its nature over that of its usage. However, as Greenaway and Milner (1986), Pomfret (1999) and Gullstrand (2002) note, a significant problem regarding IIT research is the level of data aggregation employed, often seen as being based on a good's technical properties instead of a definition of industries, because it can create substantial problems when comparing different studies; hence, the chosen classification provides an appropriate level of aggregation. Regardless, IIT does not disappear with disaggregation: this explains its acceptance by international economists. Fontagné and Freudenberg (1997) highlight additional problems, such as the existence of both trade imbalances and simultaneous IIT/IT and the downward bias of the GLI when aggregate commodities trade is unbalanced. Nevertheless, the GLI, representing the share of absolute IIT for a given country's worldwide trade or subsets of trading partners, has been selected for IIT measurement. The unadjusted index is employed, because of earlier stated reasons. In addition, there will be no differentiation between HIIT and VIIT because the latter is widely considered to be the dominant variety throughout CEE. Given the low recorded levels of IIT, it is logical to expect that the overwhelming amount of this is VIIT. For the purpose of their formula, it is worth noting that Grubel and Lloyd state: '[IIT] is defined as the value of exports of an "industry" which is exactly matched by the

[10] P. Lloyd. 'Controversies concerning intra-industry trade', *Frontiers of Research in Intra-Industry Trade*, Lloyd & Lee (eds.). (Basingstoke, 2002), p. 15.
[11] H. Grubel and P. Lloyd. 'The empirical measurement of intra-industry trade', *Economic Record*. Vol. 47, (1971), p. 502.

imports of the same industry'.[12] This is the original and most common version of the formula[13] given as:

$$IIT = \left\{1 - \left[\sum \left| x_i - m_i \right| / \sum \left(x_i + m_i\right)\right]\right\} 100$$

Where: x_i = exports of industry *i* and m_i = imports of industry *i*

As both forms of trade (IIT/IT) are experienced, trade sheets constitute the value of total trade in measurement terms, and can be expressed as IIT plus IT equals 100 in the GLI. When a value is closer to 100, it would imply a larger proportion of IIT goods in a country's trade composition. Alternatively, a value closer to 0 would mean a smaller proportion of IIT to the advantage of IT. The measurement of trade flows between two countries reveals the nature of trade conducted between them, and to what extent countries are similar in their own respective factor endowments.[14] For instance, if trade is revealed as more IT oriented, then this would imply a difference between endowments, suggesting that a country may have a comparative advantage regarding the production of some commodity. This is consistent with the Ricardian and H-O theorems.

The results of such analysis will be illustrated in the following manner. A table will be provided for each individual year for the aforementioned years. The first column on the left-hand side of each table indicates the actual one-digit SITC industry, ranging from 0 to 9. This classification is indicative of the same following groups of commodities as used in Chapter 2 (see Table 2.05). The second column on each of the following tables illustrates the value of exports (x_i) from each of the abovementioned commodities. In the third column, the percentage share (%) is shown for each SITC industry in total exports. The corresponding two columns (four and five) illustrate the value of imports (m_i) and the percentage share (%) of total imports respectively. What follows in column six is the

[12] Grubel and Lloyd, *op. cit.*, (1975), p. 20.
[13] Grubel and Lloyd multiply the indices by 100 to provide a percentage rather than a fraction.
[14] One should bear in mind that the GLI disregards income flows created through repatriated profits. It is, therefore, a shortcoming which needs consideration. Ethier (1982), Tybout (1993) and Harrigan (1995) claim the index is invariant to changes in variables concerning measures of scale or product differentiation in a standard trade model under monopolistic competition.

trade balance $(x_i - m_i)$ for each SITC industry, and, in the far-right column (seven), each industry's respective levels of IIT. In the last row at the foot of the column the total IIT of the given year can be found. The values for all exports and imports are calculated in millions of US dollars, in accordance with UN Comtrade figures.

2. IIT Results in 1996

Statistical data for Ukraine's IIT results with the EU in 1996 are presented in Table 4.01.

Table 4.01: Ukraine-EU Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	96.925	5.69	319.290	11.20	-222.365	27.717
SITC 1	10.529	0.62	98.636	3.46	-88.107	19.290
SITC 2	355.117	20.86	67.345	2.36	287.772	6.711
SITC 3	177.752	10.44	65.548	2.30	112.202	53.808
SITC 4	13.073	0.77	9.461	0.33	3.611	14.099
SITC 5	255.839	15.03	447.268	15.68	-191.429	12.873
SITC 6	247.096	14.51	480.985	16.87	-233.888	30.800
SITC 7	140.135	8.23	911.040	31.95	-770.905	14.950
SITC 8	238.089	13.98	307.280	10.77	-69.191	24.998
SITC 9	168.068	9.87	144.850	5.08	2.322	92.580
Total	1,702.623	100	2,851.703	100	-1,149.080	26.278

Source: own calculations based on UN Comtrade three-digit data, 1996.

In terms of Ukraine's EU trade balance, it was negative at $1,149.080m. This figure can be found at the foot of the table in column six $(x_i - m_i)$. Of all given SITC industries, the highest trade surplus was calculated in SITC 2 at $287.772m (see column six again). A significantly lower one was recorded in SITC 3 at $112.202m, only 38.99% of the trade balance of SITC 2. The largest industry in deficit was SITC 7 at $770.905m (column six), which constituted 31.95% of total imports (column five) and 67.09% of the total accumulated deficit. Main exports were in SITC 2, totalling $355.117m and 20.86% of the total exports (columns two and three), followed by SITC 5 which accounted for $255.839m, or 15.03% of total exports. Overall exports were $1,702.623m and total imports were $2,851.703m. Ukraine's EU trade is influenced by the PCA and that tariff preferences, set at MFN rates of 15% on average for agricultural products and just under

5% for industrial products, are governed by the GSP. However, GSP treatment is non-applicable to certain commodities, like iron, steel, fertilisers, fishery products, grains, seeds, fruit and plants (mainly SITC 0, 2 & 5). Anti-dumping measures are employed by EU states concerning Ukrainian metallurgy and chemical products (e.g. sheet metal, metal rods, chemical fertilisers and ammonium nitrate), and EU steel import quotas remained in place. Furthermore, Ukraine makes use of agricultural subsidies and has increased export restrictions and government protection for agricultural products, despite stipulations to the contrary contained within the PCA.

The levels of IIT calculated for each respective SITC industry indicated that trade, with the exceptions of SITC 3 & 9, was characterised by the exchange of different, not similar, products. This was demonstrated by the low percentages of IIT (column seven): only two industries, SITC 9 (92.580%) and SITC 3 (53.808%), achieved a value greater than 50%. However, SITC 9 was comprised of one industry: special transactions not classified elsewhere (SITC 931) with an RCA value of 7.4202%. Ukraine-EU trade in 1996 may, therefore, be best characterised as IT, because of the considerably low IIT percentages. Although SITC 2 represented the largest industry in exports and profits and had the largest illustration of the leading RCA percentages, it had the lowest IIT value (6.711%). Therefore, Ukraine's leading export industry and strongest in RCA was the worst in IIT. Ukraine's overall IIT percentage was 26.278% (column seven at bottom). In order to determine the development of the extent of convergence and composition in Ukraine's EU trade, it will be necessary to compare these percentages with those of the other countries throughout the same years as those analysed for RCA developments (1996, 2001 & 2006).

Table 4.02: Russia-EU Trade Developments, 1996						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	122.722	0.48	2,311.446	14.69	-2,188.724	9.090
SITC 1	32.396	0.13	390.478	2.48	-358.082	15.322
SITC 2	1,827.811	7.19	313.370	1.99	1,514.441	6.948
SITC 3	15,908.768	62.57	125.775	0.80	15,782.993	1.569
SITC 4	2.209	0.01<	131.373	0.84	-129.164	3.307
SITC 5	1,527.905	6.01	2,194.704	13.95	-666.799	18.129
SITC 6	4,839.697	19.04	2,133.427	13.56	2,706.270	19.733
SITC 7	765.412	3.01	5,891.167	37.44	-5,125.755	19.429
SITC 8	397.557	1.57	2,242.159	14.25	-1,844.602	22.916
SITC 9	0.00	0.00	0.003	0.01<	-0.003	0.000
Total	25,424.477	100	15,733.902	100	9,690.575	11.273

Source: own calculations based on UN Comtrade three-digit data, 1996.

Statistical data for Russia are presented in Table 4.02. With a surplus of $9,690.575m, it was the only country to register a positive trade balance in 1996. The leading industry in profit was SITC 3 ($15,782.993m), followed distantly by SITC 6 at $2,706.270m. Ukraine's largest profit industry (SITC 2) was only 1.82% of Russia's SITC 3, which was 62.87% greater than its overall trade balance. Russia's largest deficit was likewise in SITC 7 ($5,125.755m), accounting for 37.44% of total imports. These figures were 564.9% greater ($4,354.850m) and 5.49% higher in total imports than Ukraine's SITC 7. Main exports were in SITC 3, $15,908.768m and 62.57% of total exports, as two industries (SITC 3 & 6) constituted the bulk of exports (81.61%) and profits ($18,489.263m). Russia's total exports and imports were $25,424.477m and $15,733.902m. Ukraine's values were only 6.7% and 18.12% correspondingly. As was the case with Ukraine, Russia's EU trade is PCA-governed, and Russian metallurgy and chemical products face anti-dumping measures, with its steel industry also facing import quotas.

Unlike Ukraine's trade, however, Russia's was solely IT. The highest IIT percentage belonged to SITC 8 (22.916%). Russia's leading export industry and most profitable one (SITC 3) also scored the lowest percentage (1.569%), like Ukraine's SITC 2. Russia's leading RCA industry was likewise SITC 2, but it only had an IIT value of 6.948%. Moreover, there were five industries with percentages less than 10 (SITC 0, 2, 3,

4 & 9). Russia's overall IIT was 11.273%, a figure 15.005% less than Ukraine's. Despite a positive trade balance, Russia's trade was even more IT than Ukraine's, which exhibited significant percentages in two industries (SITC 3 & 9).

Table 4.03: Poland-EU Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	1,157.597	7.18	1,390.353	5.91	-232.756	36.259
SITC 1	28.186	0.17	105.554	0.44	-77.368	27.814
SITC 2	605.083	3.75	610.367	2.65	-5.284	45.778
SITC 3	1,005.267	6.24	871.474	3.70	133.793	12.420
SITC 4	15.187	0.09	123.670	0.52	-108.483	21.874
SITC 5	834.561	5.18	3,580.654	15.24	-2,746.093	28.044
SITC 6	4,279.500	26.56	5,768.297	24.56	-1,488.797	43.722
SITC 7	3,952.648	24.53	8,860.759	37.72	-4,908.111	47.787
SITC 8	4,231.180	26.26	2,175.912	9.25	2,055.268	29.160
SITC 9	6.316	0.04	2.587	0.01	3.729	58.115
Total	16,115.525	100	23,489.627	100	-7,374.102	38.906

Source: own calculations based on UN Comtrade three-digit data, 1996.

Table 4.03 presents Poland's EU trade developments. Given the need to restructure during transition, it was not surprising that Poland also had a significant negative balance ($7,374.102m). In fact, Ukraine's deficit was only 15.58% of this value. The most profitable industry was SITC 8 ($2,055.268m), which was an industry in deficit for Ukraine and Russia. An appreciably lower surplus was recorded in SITC 3 ($133.793m), a figure 19.24% higher than Ukraine's same industry. As was the case with Russia and Ukraine, Poland's largest industry in deficit was SITC 7 ($4,908.111m). It represented 37.72% of total imports, with Poland's deficit here 4.25% less ($217.644m) than Russia's. SITC 7 constituted a considerable portion of Poland's total accumulated deficit at 66.56%. This value was only 0.53% less than the same industry's contribution to Ukraine's deficit, despite lower monetary values. Poland's main exports were in SITC 6, totalling $4,279.500m and 26.56%, followed closely by SITC 8 which accounted for $4,231.180m and 26.26% of total exports. Both were more significant in Poland's exports than in Ukraine's. Total exports and imports equalled $16,115.525m and $23,489.627m. Ukraine's corresponding values were only 10.57% and 12.14%.

Although the calculated levels of IIT indicated that Polish trade was IT, for the exception of SITC 9 which registered 58.115% yet was rather inconsequential in export and import shares, its trade was much closer to becoming IIT. SITC 9 consisted of two industries (SITC 931 & SITC 971: gold, non-monetary), both of which enjoyed RCA. Several borderline IIT industries were evident: SITC 2 (45.778%), which was also the leading RCA industry, SITC 6 (43.722%) and SITC 7 (47.787%). However, the leading profit industry (SITC 8) scored only 29.160%, which was 6.244% higher than Russia's same leading industry. Poland's leading export industry (SITC 6) fared considerably better (43.722%), as did its leading profit industry (SITC 8) at 29.160%. Therefore, Poland's leading export and profit industry (SITC 8) registered not only a more significant percentage, unlike those for Ukraine (SITC 2) and Russia (SITC 3), but it was also not characterised by the lowest overall percentage. Moreover, its leading RCA industry (SITC 2) also had a higher IIT percentage. As was the case with Russia, the lowest value belonged to SITC 3 (12.420%). In Russia's trade it had only 1.569%, although SITC 3 performed much better in Ukraine's trade (53.808%). Poland was the lone country not to have a single-digit IIT percentage, and it had the highest overall IIT at 38.906%. This figure was 12.628% greater than Ukraine's.

Table 4.04: Lithuania-EU Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	93.611	8.48	209.805	10.84	-116.194	20.528
SITC 1	0.213	0.02	32.867	1.70	-32.654	1.287
SITC 2	189.624	17.19	50.284	2.60	139.340	9.481
SITC 3	18.235	1.65	50.049	2.59	-31.814	10.646
SITC 4	0.029	0.01<	10.809	0.55	-10.780	0.541
SITC 5	185.720	16.83	240.766	12.44	-55.046	9.902
SITC 6	170.756	15.48	387.325	20.02	-216.569	39.892
SITC 7	146.702	13.30	743.388	38.42	-596.686	20.527
SITC 8	297.900	27.00	191.077	9.87	106.823	28.114
SITC 9	0.491	0.04	18.733	0.97	-18.242	5.105
Total	1,103.281	100	1,935.103	100	-831.822	22.341

Source: own calculations based on UN Comtrade three-digit data, 1996.

Table 4.04 shows Lithuania's EU trade. Lithuania's balance was negative ($831.822m), which was 72.39% of Ukraine's deficit. As was the case with Ukraine, SITC 2 enjoyed the highest trade surplus ($139.340m), a figure 48.42% of Ukraine's same industry, followed by SITC 8 ($106.823m). The largest discrepancy was also in SITC 7 ($596.686m), which accounted for 38.42% of total imports and 71.73% of the total deficit. Ukraine, Poland and Lithuania all had similar percentages in the contribution of SITC 7 to the overall deficit. Despite this industry's share of imports being 6.47% greater than what it was in Ukrainian trade, the monetary difference was 22.6% less ($174.219m). Main exports were in SITC 8 at $297.900m and 27% of total exports. Overall exports totalled $1,103.281m and imports $1,935.103m, figures which were correspondingly 64.8% and 67.86% of Ukraine's totals.

As was the case with Russia, no industry experienced IIT: the highest overall value was in SITC 6 (39.892%). The lowest belonged to SITC 4 (0.541%), although its exports were less than 0.01% overall. The leading export industry (SITC 8) had a value of 28.114%, but the most profitable industry (SITC 2) only had 9.481%, similar to the most profitable industries in Ukraine (SITC 2 at 6.711%) and Russia (SITC 3 at 1.569%). Furthermore, this industry had the greater amount of RCA, but its IIT percentage was insignificant. Lithuania's overall IIT was 22.341%, which was 3.937% less than Ukraine's.

Table 4.05: Belarus-EU Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	29.565	5.72	106.852	9.72	-77.287	13.391
SITC 1	0.017	0.01<	98.576	8.97	-98.559	0.034
SITC 2	68.888	13.32	10.533	0.96	58.355	6.450
SITC 3	1.468	0.28	4.642	0.42	-3.174	3.634
SITC 4	0.084	0.02	4.739	0.43	-4.655	3.472
SITC 5	82.127	15.88	167.368	15.22	-85.241	9.730
SITC 6	120.797	23.36	183.400	16.68	-62.603	32.458
SITC 7	57.839	11.18	351.102	31.93	-293.263	15.021
SITC 8	156.274	30.22	152.287	13.85	3.987	43.103
SITC 9	0.072	0.01	19.981	1.82	-19.909	0.718
Total	517.131	100	1,099.480	100	-582.349	21.118

Source: own calculations based on UN Comtrade three-digit data, 1996.

Data for Belarus-EU trade are presented in Table 4.05. Belarus also had a negative balance ($582.349m), which was 50.68% of Ukraine's. As was the case with Ukraine and Lithuania, Belarus' greatest trade surplus was found in SITC 2 ($58.355m), although this was only 20.28% and 41.88% of their respective values. The second most profitable industry was SITC 8 ($3.987m), but this value was only 3.73% of Lithuania's. SITC 7 constituted the largest discrepancy ($293.263m), accounting for 31.93% of all imports and approximately half of the total deficit. The SITC 7 deficit was 38.04% of its discrepancy for Ukraine. Belarus shared its main export industry with Lithuania in SITC 8 ($156.274m and 30.22% of total exports). However, the figures were 47.54% less ($141.626m), yet 3.22% higher for overall exports. Over half of Belarus' exports were dominated by two industries (SITC 6 & 8). Total exports amounted to $517.131m, whereas the figure was $1,099.480m for imports, values which were respectively 30.37% and 38.56% of Ukraine's.

The leading export industry (SITC 8) had the highest IIT value (43.103%), followed by SITC 6 (32.458%). SITC 8 was also Russia's leading industry, but the difference was 20.187% less. Belarus' most profitable industry (SITC 2) likewise scored a single-digit value of 6.450%, similar to Ukraine's 6.711% and Lithuania's 9.481% for the same industry. This industry was also the leader in RCA and insignificant in IIT. The lowest value was 0.034% in SITC 1; however, it accounted for less than 0.01% of all exports. Belarus' overall IIT was 21.118%, which was 5.160% less than Ukraine's.

Table 4.06: Moldova-EU Trade Developments, 1996						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	26.807	34.32	9.428	5.33	17.379	10.501
SITC 1	7.582	9.71	3.849	2.17	3.733	56.289
SITC 2	12.031	15.40	6.090	3.44	5.941	2.422
SITC 3	0.002	0.01<	0.884	0.50	-0.882	0.000
SITC 4	0.198	0.25	0.089	0.04	0.109	34.323
SITC 5	1.593	2.04	19.036	10.75	-17.443	13.110
SITC 6	3.915	5.01	37.007	20.91	-33.092	9.576
SITC 7	0.392	0.50	82.294	46.49	-81.902	0.896
SITC 8	25.476	32.61	18.298	10.34	7.178	11.024
SITC 9	0.120	0.15	0.048	0.03	0.072	56.810
Total	78.116	100	177.023	100	-98.907	9.039

Source: own calculations based on UN Comtrade three-digit data, 1996.

The results of Moldova's EU trade are presented in Table 4.06. Its balance was negative at $98.907m, a figure 8.61% of Ukraine's. Its greatest profit was found in SITC 0 ($17.379m), the only country to have a positive balance in this industry, followed by SITC 8 ($7.178m). Both were in deficit in Ukraine's trade, but SITC 8 was Poland's most profitable. SITC 7 exhibited the largest deficit ($81.902m). Although the discrepancy was only 10.62% of Ukraine's shortfall for SITC 7, it constituted a much greater share of overall imports at 14.54% higher than Ukraine's. With 46.49% of total imports, it played a larger role in Moldova's trade than elsewhere. Furthermore, SITC 7 accounted for 82.81% of Moldova's overall deficit, compared with 67.09% of Ukraine's. Main exports were in SITC 0, totalling $26.807m and 34.32% of overall exports, followed closely by SITC 8 at $25.476m and 32.61%. Overall exports were valued at $78.116m and imports at $177.023m. These figures were 4.59% and 6.21% of the value of Ukrainian exports and imports.

Moldova's trade can best be described as IT, but calculations revealed two IIT industries: SITC 9 (56.810%) & SITC 1 (56.289%). Nevertheless, both accounted for merely 2.20% of overall imports, 9.86% of exports and $3.805m in profit. Ukraine and Poland also had SITC 9 as their leading IIT industries, but the corresponding values were 35.770% and 2.416% greater. The leading export and profit industry (SITC 0) only had 10.501%, whereas SITC 4 was 34.323% but accounted for less than 1% of exports and

imports. The lowest values were 0% in SITC 3, which recorded less than 0.01% of exports, and 0.896% in SITC 7, the largest import industry. Russia and Poland also had SITC 3 as their poorest value. Moldova's leading RCA industry was SITC 2 (2.422%). This was the lowest percentage calculated for the leading RCA industry in any country's EU trade in 1996. Only Poland experienced its leading RCA industry having a double-digit IIT value (45.778%). Moldova's overall IIT was only 9.039%, a figure 17.239% less than Ukraine's.

2.1 IIT Results in 2001

Ukraine's balance remained negative at $284.329m, as illustrated in Table 4.07, although this deficit was 75.26% less ($864.751m) than previous. This was the greatest reduction of deficit experienced by any of the countries in 2001.

Table 4.07: Ukraine-EU Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	201.883	6.27	154.834	4.42	47.049	19.564
SITC 1	5.949	0.19	39.903	1.14	-33.954	25.951
SITC 2	310.948	9.66	80.135	2.29	230.813	11.098
SITC 3	348.263	10.82	45.822	1.31	302.441	23.187
SITC 4	31.497	0.98	28.046	0.79	3.451	4.541
SITC 5	271.303	8.43	662.436	18.91	-391.133	16.352
SITC 6	871.406	27.07	774.109	22.10	97.297	23.074
SITC 7	397.814	12.36	1,247.738	35.62	-849.924	27.286
SITC 8	468.472	14.55	263.813	7.53	204.659	17.204
SITC 9	311.425	9.67	206.453	5.89	104.972	79.730
Total	3,218.960	100	3,503.289	100	-284.329	25.876

Source: own calculations based on UN Comtrade three-digit data, 2001.

The industry with the greatest surplus switched from SITC 2, ranked second having fallen by 19.79% ($56.959m), to SITC 3 ($302.441m). Previously the second most profitable industry, SITC 3 experienced growth of 169.55% ($190.239m). The majority of the deficit again originated in SITC 7 ($849.924m), an increase of 10.25% ($79.019m). This industry constituted 35.62% of total imports (+3.67%) and was greater than the amount of deficit by 198.92%. SITC 7 previously accounted for 67.09% of the

deficit; however, the change can be attributed to a decreasing overall deficit. Ukraine's main export shifted from SITC 2 ($310.948m and 9.66% of the total exports) to SITC 6 ($871.406m and 27.07% of overall exports). The latter increased by 252.66% ($624.310m) and its total export shares rose by 12.56%. Overall exports grew by 89.06% to $3,218.960m, and for imports by 22.85% to $3,503.289m. However, from 2001 inflated export figures were related to the issue of VAT refunds, whereby Ukrainian exporters increased values in export bills to claim budget reimbursement.[15] The trade balance was further improved by growing export prices and the further positive impact of export growth, whilst significant depreciation of the real exchange rate encouraged growth through the advancement of import substitution.

Low IIT percentages continued to illustrate the exchange of different, not similar, commodities. The exception again was SITC 9 (SITC 931) which had 79.730%. Its RCA value also improved from 7.4202% to 20.2696%. In terms of import/export percentages, this industry showed consistency, despite a decrease of 12.850%. Four industries experienced growth (SITC 1, 2, 5 & 7), but only SITC 7 had a noticeable increase (12.336%). Ukraine's leading export industry (SITC 6) and profitable one (SITC 3) both suffered declines of 7.726% and 30.621% to 23.074% and 23.187% correspondingly. In fact, SITC 3 experienced growing divergence, having formerly been characterised as IIT (58.808%). Replacing SITC 2, SITC 4 had the lowest value at 4.541% (-9.558%). The leading RCA industry remained SITC 2, but it only increased to 11.098% (+4.387%). Trade between the EU and Ukraine continued as IT: Ukraine's overall IIT marginally declined by 0.402% to 25.876%.

Whereas Ukraine continued to experience a trade deficit, albeit one which contracted, Russia not only maintained a positive balance, but also experienced an increase of 85.88% ($8,322.411m) to $18,012.986m. Russia's overall trade results are shown in Table 4.08.

[15] For further details, see World Bank, *op. cit.*, pp. 30-32.

Table 4.08: Russia-EU Trade Developments, 2001						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	185.336	0.56	1,685.272	11.03	-1,499.936	12.531
SITC 1	10.800	0.03	347.625	2.27	-336.825	6.026
SITC 2	1,320.649	3.97	325.433	2.13	995.216	9.350
SITC 3	23,565.530	70.78	75.201	0.50	23,490.329	0.636
SITC 4	3.840	0.01	232.553	1.52	-228.713	3.249
SITC 5	1,346.038	4.04	2,868.523	18.77	-1,522.485	20.189
SITC 6	5,531.710	16.61	2,128.800	13.93	3,402.910	27.313
SITC 7	875.163	2.63	6,016.002	39.37	-5,140.839	18.403
SITC 8	455.321	1.37	1,601.992	10.48	-1,146.671	36.451
SITC 9	0.000	0.00	0.000	0.00	0.000	0.000
Total	33,294.387	100	15,281.401	100	18,012.986	11.383

Source: own calculations based on UN Comtrade three-digit data, 2001.

The industry with the greatest trade surplus remained SITC 3 ($23,490.329m), an increase of 48.83% ($7,707.336m). Ukraine also shared SITC 3 as its leading profit industry, but with a value only 1.29% of Russia's. This industry was 30.41% greater than the total positive balance, compared with 62.87% in 1996. No change was observed in the industry with the single largest deficit: SITC 7 was in deficit at $5,140.839m and 39.37% of all imports. It should be noted, however, that this was a very marginal increase of 0.29% ($15.084m) from the previous figure, and a 1.93% greater share of overall imports. Main exports remained in SITC 3: $23,565.530m and 70.78% of total exports. This was a rise of 48.13% in monetary terms ($7,656.762m) and 8.21% in export market share. The value of overall exports grew by 30.95% to $33,294.387m, but for imports it decreased by 2.88% to $15,281.401m. This indicated strong export growth, much of it owing to increased world prices for SITC 3 commodities. Combined with a contraction in imports, it explained the significant increase in the positive balance. This growth in exports, however, was 58.11% less than that calculated for Ukraine.

The exchange of goods across all industries remained IT: the highest value was recorded in SITC 8 again at 36.451% (+13.535%). Five industries experienced greater percentages (SITC 0, 2, 5, 6 & 8). For the largest export and profit industry (SITC 3), the value contracted by 0.933% to 0.636%, the lowest of all industries again. The leading RCA industries (SITC 2 & 3) had insignificant IIT percentages, with the former the

greater of the two having increased its value by 2.402%. Russia's overall IIT value increased to 11.383% (+0.110%). This figure was 14.493% less than Ukraine's.

Table 4.09: Poland-EU Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	1,288.303	5.15	1,399.433	4.53	-111.130	39.077
SITC 1	33.030	0.14	92.729	0.31	-59.699	40.040
SITC 2	682.756	2.73	572.167	1.85	110.589	44.736
SITC 3	1,480.227	5.92	495.464	1.61	984.763	35.681
SITC 4	3.575	0.01	124.735	0.40	-121.160	5.572
SITC 5	978.983	3.92	5,343.060	17.31	-4,364.077	27.280
SITC 6	5,750.329	23.01	7,481.372	24.24	-1,731.043	57.767
SITC 7	9,740.302	38.97	12,322.277	39.92	-2,581.975	60.815
SITC 8	4,794.367	19.18	2,624.785	8.50	2,169.582	41.981
SITC 9	242.269	0.97	410.956	1.33	-168.687	74.164
Total	24,994.141	100	30,866.978	100	-5,872.837	51.483

Source: own calculations based on UN Comtrade three-digit data, 2001.

Table 4.09 shows the relevant data for Poland-EU trade. Likewise, Poland experienced a contracting trade deficit. In 2001, its negative balance shrank by 20.36% to $5,872.837m. Ukraine's deficit was only 4.84% of this, compared with 15.58% of the previous balance. Again SITC 8 earned the largest profit ($2,169.582m), an increase of 5.56% ($114.314m), followed by SITC 3 ($984.763m). This value was 225.6% higher ($682.322m) than Ukraine's same industry, despite Ukraine's export shares being 4.90% greater. SITC 3 showed significant growth in Polish trade, having increased by 636.03% ($850.970m). Unlike Russia and Ukraine, Poland's largest deficit industry shifted from SITC 7 to SITC 5 ($4,364.077m), although the former had 39.92% of overall imports. The value of SITC 7 declined by 47.39% ($2,326.136m), whereas SITC 5 increased by 58.92% ($1,617.984m). It accounted for only 17.31% of total imports, yet 74.31% of the overall accumulated deficit. In Ukraine's trade it had a similar share of imports (18.91%), but was higher than the figure for total deficit by 37.56%. Poland's main exports changed from SITC 6 to SITC 7 ($9,740.302m and 38.97% of total exports). Poland was unique in that its main exports and imports originated from the same industry. Moreover, SITC 7 represented an increase of 146.42% ($5,787.654m) and 14.44% for overall exports. Total

exports stood at $24,994.141m (+55.09%) and imports rose by 31.41% to $30,866.978m. Poland's increase in import growth was greater than Ukraine's by 8.56%, but its export growth was 33.97% less.

In 2001, trade showed several changes. Poland's position approaching accession was one whereby it remained a chief importer of technical (machinery and transport) and manufactured goods, but also a main exporter of the same commodities. This not only provided an explanation for the decreasing SITC 7 deficit ($2,326.136m), but also a clear example of the growing trade of similar products. This constituted a primary example of IIT reflected in the fact that the IIT percentage for SITC 7, the country's leading export industry, rose by 13.028% to 60.815%. However, SITC 9 increased its percentage by 14.938% to the highest recorded level for all industries (74.164%), and it now included a third sub-industry (SITC 961: coin, other than gold coin). SITC 9 was also Ukraine's leading IIT industry at a value 5.566% greater. Two statistically significant industries also exhibited IIT, SITC 6 (57.767%) and SITC 7 (60.815%), with two more approaching the 50% mark (SITC 1 at 40.040% & SITC 2 at 44.736%). The latter remained the leading RCA industry and continued to have a higher value, despite a decline of 1.042%. The leading profit industry (SITC 8) rose to 41.981% (+12.821%), which was 5.53% higher than Russia's highest IIT industry (SITC 8). In total, seven industries experienced increasing percentages (SITC 0, 1, 3, 6, 7, 8 & 9). For the second time Poland's leading export and profit industries (SITC 7 & 8) registered not only more significant values, unlike those for Ukraine (SITC 6 & 3) and Russia (SITC 3), but they were also not characterised by being the country's lowest figures, as was the case with SITC 3 in Russia's trade. SITC 4 replaced SITC 3 to represent Poland's poorest IIT value at only 5.572% (-16.302%). It was also lowest in Ukraine (4.541%). Again Poland had the highest overall IIT at 51.483%. This was an increase of 12.577%, and was 25.607% greater than Ukraine's.

Table 4.10: Lithuania-EU Trade Developments, 2001						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	166.878	7.62	182.374	6.53	-15.496	35.530
SITC 1	0.133	0.01<	20.601	0.74	-20.468	1.288
SITC 2	166.106	7.59	77.937	2.79	88.169	13.995
SITC 3	436.996	19.96	11.562	0.42	425.434	4.545
SITC 4	0.035	0.01<	26.888	0.96	-26.853	0.257
SITC 5	174.237	7.96	447.559	16.01	-273.322	9.535
SITC 6	280.473	12.81	617.212	22.08	-336.739	41.120
SITC 7	280.201	12.80	1,134.439	40.59	-854.238	22.832
SITC 8	682.227	31.17	256.612	9.18	425.615	26.424
SITC 9	1.543	0.08	19.630	0.70	-18.087	14.577
Total	2,188.829	100	2,794.814	100	-605.985	23.708

Source: own calculations based on UN Comtrade three-digit data, 2001.

As shown in Table 4.10, Lithuania's balance continued to remain negative at $605.985m (-27.15%). This development was comparable to the contracting deficits of Ukraine (75.26%) and Poland (20.36%). Although the trade deficit was less, it was 113.13% greater than Ukraine's, the previous value was 72.39%. SITC 8 replaced SITC 2 as the industry with the greatest trade surplus at $425.615m, a rise of 298.43% ($318.792m), and was followed very closely by SITC 3, formerly in deficit, at $425.434m. Poland also had SITC 8 as its most profitable industry, but Lithuania's value was only 19.62% of it. No change was recorded for the industry with the largest deficit: SITC 7 had a negative balance of $854.238m, an increase of 43.16% ($257.552m), to constitute 40.59% of total imports (+2.17%). This industry was 40.97% greater than the overall deficit, compared with 71.73% previously, and in Ukraine it also accounted for more than the total deficit (198.92%). For SITC 7 statistics in terms of exports, imports and balance, Ukraine (12.36%, 35.62% and $849.924m) and Lithuania had very similar figures. Lithuania's main exports remained in SITC 8 at $682.227m and 31.17% of total exports, figures which rose by 129.01% ($384.327m) and 4.17%. SITC 1 & 4 continued to decline in export potential and each represented less than 0.01% of total exports. Lithuania's exports grew by 98.39% to $2,188.829m, whereas imports rose by 44.43% to $2,794.814m. These were the highest percentages for export and import growth in 2001. Export and import growth was less in Ukraine by 9.33% and 21.58% respectively.

Despite significant growth, not one industry's trade was characterised by IIT. SITC 6 retained its position with the highest overall value at 41.120% (+1.228%). Lithuania's leading export and profit industry (SITC 8) contracted to 26.424% (-1.690%). SITC 8 was also the leading profit industry in Poland, although its monetary values were 409.75% higher ($1,743.967m) and IIT value was 15.557% greater. As was the case with Ukraine and Poland, the lowest value was in SITC 4 at 0.257% (-0.284%). In comparison, SITC 4 in Ukraine and Poland was 4.541% and 5.572%; however, such exports in Lithuania were less than 0.01%. The country's leading RCA industry continued to be SITC 2, although its IIT value was merely 13.995% (+4.514%). Despite six industries illustrating increasing percentages (SITC 0, 1, 2, 6, 7 & 9), Lithuania's overall IIT only rose by 1.367% to 23.708%, a figure 2.168% less than Ukraine's. Clearly, Lithuania did not experience the significant IIT growth that Poland did approaching EU membership.

Table 4.11: Belarus-EU Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	14.709	1.79	56.174	4.42	-41.465	14.098
SITC 1	0.467	0.06	31.927	2.51	-31.460	2.886
SITC 2	78.218	9.52	27.047	2.13	51.171	3.814
SITC 3	278.553	33.91	7.584	0.60	270.969	5.109
SITC 4	0.018	0.01<	14.695	1.16	-14.677	0.241
SITC 5	36.865	4.49	253.172	19.93	-216.307	6.060
SITC 6	166.005	20.21	209.351	16.48	-43.346	30.924
SITC 7	37.720	4.59	558.098	43.93	-520.378	8.791
SITC 8	202.986	24.72	105.331	8.29	97.655	30.869
SITC 9	5.792	0.71	6.992	0.55	-1.200	90.610
Total	821.333	100	1,270.371	100	-449.038	15.412

Source: own calculations based on UN Comtrade three-digit data, 2001.

Table 4.11 provides data for Belarus' EU trade. The country's balance likewise remained negative at $449.038m, although it also shrank by 22.89% and closely reflected the contractions experienced by Poland (20.36%) and Lithuania (27.15%). However, Belarus' deficit was 57.93% greater than Ukraine's, whereas in 1996 it was 50.68% less. As was the case with Ukraine, Belarus' greatest surplus moved from SITC 2 to SITC 3

($270.969m), an industry previously in deficit. This figure was 10.41% less ($31.472m) than the value recorded for Ukraine; however, for Belarus SITC 3 now represented the bulk of exports at $278.553m and 33.91%, compared with $1.468m and 0.28% of overall exports in 1996. This illustrated the considerable growth of this industry in export potential, but in 2001 it was merely 1.18% of the monetary value of Russia's SITC 3 exports, and it had 36.87% less in overall exports. SITC 7 retained the largest discrepancy at $520.378m (+77.44%), totalling 43.93% of all imports and 15.89% greater than the total deficit. The SITC 7 deficit was 61.23% of Ukraine's in the same industry. SITC 3, 6 & 8 now constituted over three-quarters of all exports. Overall exports were $821.333m (+58.82%), and total imports were $1,270.371m (+15.54%). These figures were 30.24% and 7.31% less than those calculated for Ukraine.

In terms of IIT the previous leading industry (SITC 8) fell by 12.234% to 30.869%. This left it third behind SITC 9 (90.610%) and SITC 6 (30.924%). However, SITC 9 accounted for less than 1% of overall exports and imports, so it cannot be considered significant, despite being the only industry to experience IIT. It had the highest percentage in Ukrainian and Polish trade, but Belarus' value was respectively 10.880% and 16.446% greater. In total, four industries showed growth (SITC 0, 1, 3 & 9). The leading industry in exports and profits (SITC 3) had an insignificant value (5.109%). Considering that many of Belarus' imports here originated from Russia, it is ironic that this figure was higher than Russia's SITC 3 value (0.636%), the main result of re-imports. The lowest percentage switched from SITC 1 to SITC 4 (0.241%), which was worse than the corresponding percentages calculated for Ukraine, Poland and Lithuania, all of which shared this industry as their poorest. SITC 2 remained the leading RCA industry; however, its IIT value fell to 3.814% (-2.636%). Belarus' overall IIT value declined to 15.412% (-5.706%). This figure was 10.464% less than Ukraine's, yet 4.029% higher than Russia's.

Table 4.12: Moldova-EU Trade Developments, 2001						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	24.508	20.27	12.583	5.13	11.925	20.673
SITC 1	0.575	0.48	23.135	9.44	-22.560	4.849
SITC 2	5.677	4.70	10.633	4.34	-4.956	6.529
SITC 3	0.000	0.00	1.349	0.55	-1.349	0.000
SITC 4	0.027	0.02	0.984	0.40	-0.957	5.344
SITC 5	1.147	0.95	26.162	10.67	-25.015	4.254
SITC 6	4.659	3.85	77.146	31.47	-72.487	11.171
SITC 7	5.515	4.56	64.328	26.24	-58.813	11.260
SITC 8	78.805	65.17	28.498	11.62	50.307	7.367
SITC 9	0.000	0.00	0.334	0.14	-0.334	0.000
Total	120.913	100	245.152	100	-124.239	9.836

Source: own calculations based on UN Comtrade three-digit data, 2001.

As illustrated in Table 4.12, Moldova's balance was again negative ($124.239m). Unlike the four countries to experience a contracting deficit, Moldova witnessed an increase of 25.61%. Its deficit was 43.7% of Ukraine's, compared with only 8.61% before. The increase was attributed to Ukraine's ability to close the gap in monetary differences between its imports and exports and Moldova's inability to do likewise. The greatest trade surplus moved to SITC 8 at $50.307m, a substantial rise of 600.85% ($43.129m), from SITC 0 which declined by 31.38% ($5.454m) to $11.925m. Given the importance of agriculture, this was a worrying development. However, it also reflected the growth of the textile industry, as the production of such commodities declined in the majority of ACs. SITC 8 was also the most profitable industry for Poland and Lithuania, but Moldova's profits were only 2.32% and 11.82% of their respective values. As was the case with Poland, Moldova experienced a shift in the industry with the largest deficit: from SITC 7 which consequently became the second largest at $58.813m, a significant decrease of 28.19% ($23.089m) and 20.25% in total imports, to SITC 6 at $72.487m, a figure which grew by 119.05% ($39.395m) and represented 31.47% of all imports and 58.34% of the total deficit. Moldova was the only country to have SITC 6 leading its deficit, whilst Ukraine and Russia had a positive balance. Moldova's main exports also changed from SITC 0, totalling $24.508m and 20.27% of the overall exports, a decrease of 8.58% ($2.299m) and 14.05%, to SITC 8 which accounted for $78.805m and 65.17%

of total exports. The increases for this industry were 209.33% ($53.329m) and 32.56% of total exports. Moldova's overall exports and imports were $120.913m and $245.152m, figures which rose by 54.79% and 38.49%. Although export growth was 34.27% less than what was calculated for Ukraine, imports grew by 15.64% in comparison.

Moldova's trade structure very much became IT, as the previous two industries with higher IIT values (SITC 1 & 9) saw their values of 56.289% and 56.810% drop to 4.849% and 0% correspondingly. The main export and profit industry (SITC 8) only had a figure of 7.367% (-3.657%). This industry further replaced SITC 2 as the country's leading RCA industry. Despite the loss of export share and profitability, SITC 0 actually increased its value to the highest at 20.673%, a figure which almost doubled. Moreover, increases were observed in four industries (SITC 0, 2, 6 & 7). A significant decline was calculated in SITC 4 from 34.323% to 5.344%; however, the industry with the lowest value was SITC 5 (4.254%), although exports here were only 0.95%. Moldova's overall level of IIT was merely 9.836% (+0.797%), qualifying for the lowest value. Moreover, it was 16.04% less than Ukraine's. In 2001, Moldova was the only country to witness a change of its leading RCA and IIT industries. Again, no country had a leading RCA industry which could be defined as IIT.

2.2 IIT Results in 2006

Table 4.13 illustrates Ukraine's EU trade statistics. It is important to bear in mind that 2006 statistics reflect EU Enlargement, and that trade with Poland and Lithuania was included here.

Table 4.13: Ukraine-EU Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT
SITC 0	489.779	4.51	882.029	5.64	-392.250	30.282
SITC 1	18.471	0.17	149.457	1.01	-130.986	21.998
SITC 2	1,318.369	12.13	293.471	1.87	1,024.898	16.023
SITC 3	1,451.980	13.36	411.230	2.62	1,040.749	31.117
SITC 4	469.468	4.32	25.973	0.17	443.494	2.325
SITC 5	1,081.219	9.95	3,118.708	19.97	-2,037.489	26.785
SITC 6	4,138.293	38.06	2,946.796	18.87	1,191.497	24.294
SITC 7	953.192	8.77	6,531.415	41.84	-5,578.223	19.671
SITC 8	922.245	8.48	1,073.175	6.87	-150.930	24.202
SITC 9	28.432	0.25	179.602	1.14	-151.170	27.335
Total	10,871.448	100	15,611.856	100	-4,740.408	23.261

Source: own calculations based on UN Comtrade three-digit data, 2006.

Ukraine's balance remained negative for the third time ($4,740.408m), a substantial increase of 1,567.23% from 2001. In stark contrast, Ukraine's deficit contracted by 75.26% in 2001. This dramatic growth was not surprising, given that enlargement included the ACs with which Ukraine has strong trade links. Trade surpluses again remained identifiable in the same two leading industries (SITC 2 & 3); however, SITC 6 became the most profitable at $1,191.497m, a rise of 1,124.6% ($1,094.200m). The largest deficit still involved SITC 7 at $5,578.223m, which reflected growth of 556.32% ($4,728.299m), following a previous rise of 10.25% in 2001. It constituted 41.84% of total imports (+6.22%) and was 17.67% greater than the total deficit. Despite the vast monetary growth, SITC 7 accounted for a greater percentage of the overall deficit in 2001, when the figure was 98.92%. Main exports also remained the same: SITC 6 grew by 374.89% ($3,266.887m) to $4,138.293m. This represented a 38.06% share of exports (+10.99%). Overall exports rose by 237.73% to $10,871.448m with imports experiencing a larger increase of 345.63% to $15,611.856m, thus accounting for the growth in the

negative balance. Moreover, Ukraine experienced the largest import growth in 2006. In comparison, these figures grew by 89.06% and 22.85% respectively in 2001.

IIT levels still indicated the exchange of different commodities; hence, Ukraine-EU trade remained IT. No single industry attained IIT, although six increased their percentages (SITC 0, 2, 3, 5, 6 & 8). The leading export and profit industry (SITC 6) had only 24.294% (+1.220%). Replacing SITC 9, SITC 3 had the highest value at 31.117% (+7.93%). A higher increase was recorded in SITC 0 of 10.718% to 30.282%. SITC 9 fell by 52.395%, as its export and import shares contracted considerably. SITC 4 continued to have the lowest value at 2.325% (-2.216%). The leading RCA industry remained SITC 2 which further increased to 16.023% (+4.925%). The overall IIT figure fell again to 23.261% (-2.615%). This was 3.017% lower than the 1996 level, indicating that Ukraine-EU trade was not moving towards greater IIT, but had consistently declined. This is contrary to what was expected to happen with attempts towards harmonisation through the PCA and EUUAP, and the gradual reduction in trade barriers by closer economic cooperation, as noted in Chapter 2.

EU expansion clearly impacted the results, with a massive increase in trade flows between the enlarged EU and Ukraine. Market access particularly improved for Ukrainian exports in clothing and steel production in part to the decline of tariffs and the introduction of the GSP throughout the ACs. The impact of EU expansion and the domestic implications of the Orange Revolution followed by the EU granting Ukraine MES in 2005 seem not to have substantially affected Ukraine-EU IIT in 2006.

Table 4.14: Russia-EU Trade Developments, 2006						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT**
SITC 0	508.544	0.30	5,210.050	8.61	-4,701.506	13.860
SITC 1	58.964	0.03	1,051.275	1.74	-992.311	10.622
SITC 2	4684.342	2.74	706.801	1.17	3,977.541	7.388
SITC 3	10,6761.136	62.49	355.937	0.58	10,6405.199	82.216
SITC 4	168.627	0.10	307.731	0.50	-139.104	18.653
SITC 5	4,057.638	2.38	11,672.376	19.29	-7,614.738	15.628
SITC 6	17,925.623	10.49	8,073.219	13.34	9,852.404	22.951
SITC 7	2,198.934	1.29	28,099.083	46.43	-25,900.149	12.013
SITC 8	489.302	0.29	4,857.442	8.03	-4,368.140	18.165
SITC 9	33,978.448	19.89	185.613	0.31	33,792.835	1.087
Total	170,831.558	100	60,519.527	100	110,312.031	6.707

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 4.14 illustrates Russia's trade data. Its balance not only remained positive, but increased substantially, compared with the previous period's growth (85.88%). The balance improved by 512.4% to $110,312.031m. Much of this can be attributed to increased world prices for exports of SITC 3 commodities to the ACs, despite the fact that the industry's export shares fell by 8.29% to 62.49% overall. Nevertheless, it further strengthened its position as the one with the greatest trade surplus ($106,405.199m), a rise of 352.97% ($82,914.870m). This meant that SITC 3 now accounted for 96.46% of the positive balance, although this marked the first time the figure was not greater than it. SITC 3 consistently remained in the leading exports and profits, illustrating a heavy dependency on one particular industry throughout. In 2006, it led in exports, with a value of $106,761.136m (+353.04%). SITC 7 remained the industry with the largest deficit at $25,900.149m and 46.43% of imports, a significant rise of 403.81% ($20,759.310m) and 7.06% in import shares. Ukraine's SITC 7 deficit was 21.54% of Russia's. Total exports grew by 413.09% to $170,831.558m, and imports rose by 296.03% to $60,519.527m. Changes in export figures were 175.36% higher, yet imports were 49.6% lower than the same calculated for Ukraine.

The trade of commodities across all but one industry was IT. The obvious exception was SITC 3 which now experienced IIT (82.216%). This is a remarkable development, considering that in 2001 its level of IIT was the lowest (0.636%). Its

imports were 0.58% of the total value (+0.08%). Ukraine also had SITC 3 as its leading industry, but its value was 51.099% less. Despite half of the industries showing growth (SITC 0, 1, 3, 4 & 9), the former leading industry (SITC 8) suffered a decline of roughly half to finish with 18.165%. The lowest value was 1.087% for SITC 9, but this industry had never registered a value previously, given the absence of trade. SITC 2 remained the leading RCA industry, yet its IIT value was merely 7.388% (-1.962%). Moreover, IIT levels decreased by 4.676% to a total of only 6.707% for overall trade. This value was the lowest of all in 2006 and it was 16.554% less than Ukraine's.

Table 4.15: Poland-EU Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT
SITC 0	7,066.562	8.34	3,817.213	4.81	3,249.349	55.473
SITC 1	521.419	0.62	392.219	0.49	129.200	55.205
SITC 2	2,054.082	2.42	1,707.643	2.15	346.439	55.204
SITC 3	4,217.756	4.98	2,734.606	3.45	1,483.150	48.683
SITC 4	171.432	0.19	317.307	0.41	-145.875	48.176
SITC 5	5,025.136	5.93	13,710.275	17.28	-8,685.139	50.954
SITC 6	18,765.275	22.14	20,198.923	25.46	-1433.648	64.237
SITC 7	34,131.277	40.27	29,058.363	36.63	5,072.914	66.781
SITC 8	11,511.864	13.58	5,751.783	7.25	5,760.081	58.765
SITC 9	1,294.610	1.53	1,645.426	2.07	-350.816	88.004
Total	84,759.413	100	79,333.758	100	5,425.655	62.004

Source: own calculations based on UN Comtrade three-digit data, 2006.

The impact of EU accession and the dismantling of the remaining trade restrictions helped Poland record its first positive balance ($5,425.655m), as shown in Table 4.15. This figure was nevertheless only 4.92% of Russia's. The most profitable industry remained SITC 8 ($5,760.081m), up 165.49% ($3,590.499m), followed by SITC 7 ($5,072.914m), growth of $7,654.889m from its previous position of deficit. As the most profitable, SITC 8 was 6.16% greater than the positive balance. The leading deficit remained in SITC 5 ($8,685.139m), a figure which almost doubled. Despite such an increase, this industry accounted for only 17.28% of overall imports (-0.03%). The largest percentage of imports was found in SITC 7 at 36.63% (-3.29%). SITC 5 had a similar percentage in Ukraine (19.97%), but its deficit amounted to only 23.46% of the

same industry's deficit in Poland-EU trade. The main export industry remained SITC 7 which now totalled $34,131.277m and 40.27% of overall exports, growth of 250.41% ($24,390.975m) and 1.3% correspondingly. Overall exports stood at $84,759.413m (+239.12%) and imports grew by 157.02% to $79,333.758m. The expansion in exports was similar to that experienced in Ukraine (237.73%), but the growth in Ukraine's imports was 188.61% greater.

EU accession helped facilitate remarkable IIT growth. Given overall high export and import figures, combined with a high IIT percentage, SITC 7 continued to illustrate a very good example of trade in similar products. In fact, IIT levels for SITC 7, the leading export industry, increased again to 66.781% (+5.966%). However, SITC 9 remained the industry with the highest value at 88.004% (+13.840%), although it still constituted a small proportion of total exports and imports. All but two of Poland's industries (SITC 3 & 4) exhibited IIT. The leading profit industry (SITC 8) again increased its value by 16.784% to 58.765%. Poland's leading export and profit industries continued to register not only more significant percentages, unlike those for Ukraine (SITC 6), but they were also not characterised by continuing IT either. SITC 4 witnessed a substantial increase from 5.572% to 48.176% in five years, but still remained the industry with the lowest percentage. It was also Ukraine's poorest at 2.325%. As the leading RCA industry, SITC 0 replaced SITC 2 which meant that for the first time in this study a leading RCA industry was also characterised by IIT (55.473%). Poland's overall IIT percentage remained the most robust, having grown by 10.521% to 62.004%. This figure was 38.743% higher than Ukraine's.

Table 4.16: Lithuania-EU Trade Developments, 2006						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	1,065.715	11.92	1,081.349	8.90	-15.634	59.566
SITC 1	136.506	1.53	174.978	1.44	-38.472	45.828
SITC 2	459.413	5.14	270.814	2.23	188.599	29.368
SITC 3	2,036.669	22.79	148.715	1.22	1,887.954	13.516
SITC 4	28.040	0.31	57.743	0.48	-29.703	65.374
SITC 5	869.311	9.73	1,873.447	15.42	-1,004.136	28.865
SITC 6	1,041.505	11.65	2,338.625	19.25	-1,297.120	48.754
SITC 7	1,519.346	17.00	4,995.012	41.11	-3,475.666	36.902
SITC 8	1,689.659	18.91	1,100.472	9.06	589.187	54.057
SITC 9	91.428	1.02	108.876	0.89	-17.448	91.289
Total	8,937.592	100	12,150.031	100	-3,212.439	40.414

Source: own calculations based on UN Comtrade three-digit data, 2006.

As illustrated in Table 4.16, Lithuania, unlike Poland, did not manage to produce a positive balance after EU accession. In fact, Lithuania's negative balance grew significantly by 430.12% to $3,212.439m, contrary to 2001 when it contracted (27.15%). Lithuania's deficit was 67.77% of Ukraine's, whereas it was formerly 113.13% greater. For the third time a new industry had the greatest trade surplus: SITC 3 replaced SITC 8 at $1,887.954, a value 343.77% higher ($1,462.520m) than before. It is interesting to note that it was in deficit ($31.814m) in 1996. SITC 3 was also Russia's most profitable, but Lithuania's value was only 1.77% of it. In trade deficits there was no change of industry: SITC 7 experienced a rise of 306.87% ($2,621.428m) to $3,475.666m. It accounted for 41.11% of all imports (-0.52%) and it was greater than the total deficit by 8.19%, compared with 40.97% before. Although Ukraine and Lithuania had approximately 40% of all imports originating in SITC 7, Ukraine's level of deficit here was 60.49% higher ($2,102.557m). Reflecting the significant growth of SITC 3 in profitability, the same industry also displaced SITC 8 to constitute the largest percentage of exports. With 22.79% of overall exports and a balance of $2,036.669m, this represented an increase of 2.83% and 366.06% ($1,599.673m). Lithuania witnessed similar rises of 308.33% and 334.75% in its overall exports and imports to $8,937.592m and $12,150.031m respectively. Its export growth was 70.6% greater than Ukraine's, whereas import growth was similar, with Ukraine's only 10.88% greater.

As was the case with Poland, all 10 Lithuanian SITC industries experienced IIT growth. Four industries were now characterised by IIT (SITC 0, 4, 8 & 9), when previously there were none. There were also two industries near IIT characteristics (SITC 1 at 45.828% & SITC 6 at 48.754%). SITC 9 was the leading industry with 91.289% (+76.712%), like in Poland. Lithuania's value here was 3.285% greater, although less trade was conducted. This was followed by SITC 4 with 65.374% (+0.257%). Both showed significant growth; however, SITC 4 & 9 each accounted for import and export volumes which were normally less than 1% of the totals. Lithuania's leading export and profit industry (SITC 3) had a modest value of 13.516% (+8.971%). This was the lowest value in 2006, replacing SITC 4, and it was substantially less than SITC 3 in Russia-EU trade which was characterised as IIT by comparison. Not only did SITC 2 retain its position as the leading RCA industry, but it increased its IIT value substantially to 29.368% (+15.373%). Lithuania's overall level of IIT proved to be much more significant following accession: it grew by 16.706% to 40.414%. This was not only much more substantial than the previous period, where a marginal increase of 1.367% had been observed, but it also marked the single largest increment in EU trade. Lithuania's value, moreover, was 17.153% greater than Ukraine's.

Table 4.17: Belarus-EU Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	55.214	0.61	452.118	9.07	-396.904	13.335
SITC 1	5.062	0.06	70.437	1.41	-65.375	9.013
SITC 2	242.247	2.70	78.107	1.57	164.140	9.299
SITC 3	6,802.507	75.71	55.953	1.12	6,746.554	1.348
SITC 4	20.201	0.23	26.369	0.53	-6.168	30.073
SITC 5	367.194	4.09	974.038	19.54	-606.844	21.339
SITC 6	933.531	10.39	830.933	16.67	102.598	28.907
SITC 7	238.438	2.65	2,130.033	42.73	-1891.595	15.767
SITC 8	307.193	3.42	351.535	7.05	-44.342	38.583
SITC 9	12.965	0.14	15.827	0.31	-2.862	90.062
Total	8,984.552	100	4,985.350	100	3,999.202	11.886

Source: own calculations based on UN Comtrade three-digit data, 2006.

Data for Belarus-EU trade, as shown in Table 4.17, illustrates its first positive balance ($3,999.202m). This figure was 73.71% of Poland's and 3.63% of Russia's. As

was the case with Russia and Lithuania, Belarus' most profitable industry was SITC 3 at $6,746.554m, reflecting significant growth of 2,389.79% ($6,475.585m). This figure was 257.35% greater ($4,858.600m) than its value in Lithuania-EU trade; however, it was only 6.34% of the value of SITC 3 profits calculated for Russia. Belarusian profits from SITC 3 were also 68.7% higher than the final balance. The vast majority of exports was concentrated in SITC 3 at $6,802.507m and 75.71% of overall exports, a rise of 2,342.09% ($6,523.954m) and 41.8% in overall exports. In comparison, SITC 3 had 52.92% and 13.22% more export shares in Belarus' trade than its representation in Lithuanian and Russian exports. The industry with the largest deficit remained SITC 7 at $1,891.595m, a figure which grew by 263.5% ($1,371.217m) and 77.44% in 2001. Its percentage of overall imports was 42.73%. However, the SITC 7 discrepancy was only 33.91% of Ukraine's deficit in the same industry, down from 61.23% previously. Belarus' increasing concentration of exports was illustrated by the fact that SITC 3 & 6 accounted for 86.1% of all exports. With total exports valued at $8,984.552m and imports at $4,985.350m, they rose by 993.9% and 292.43%. Belarus experienced the greatest export growth in 2006. This in itself is rather remarkable, because of the lack of trade agreements and cooperation. Compared with Ukraine, export growth was 756.17% higher, but import growth was 53.2% less.

SITC 9 was the only IIT industry at 90.062% (-0.548%). However, its total exports and imports amounted to less than 1%, making this achievement insignificant by contrast. Lithuania and Poland also witnessed SITC 9 as their leading IIT industries, with values of 88-91%. No other industry was close to being defined as IIT, despite six illustrating growing IIT percentages (SITC 1, 2, 4, 5, 7 & 8). Of the other two with higher previous percentages, SITC 6 declined to 28.907% (-2.017%), but SITC 8 increased its value to 38.583% (+7.714%). Moreover, SITC 4 improved appreciably from 0.241% to 30.073%. The leading industry in exports and profits (SITC 3) had an insignificant value, the lowest of 2006 at 1.348% (-3.761 %). This value was 80.868% and 12.168% less than its percentages in Lithuania and Russia respectively. Lithuania also experienced a change in the lowest percentage from SITC 4 to SITC 3 (13.516%). There was no change in the leading RCA industry: SITC 2 did not manage to increase its IIT percentage significantly, as calculated in Lithuania, and finished with 9.299% (+5.485%). Belarus' overall IIT

percentage declined again to 11.886% (-3.526%). This value was 11.375% less than Ukraine's, yet 5.179% higher than Russia's.

Table 4.18: Moldova-EU Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT
SITC 0	63.551	17.27	54.162	6.47	9.389	25.708
SITC 1	13.257	3.60	9.213	1.10	4.044	57.370
SITC 2	21.461	5.83	19.740	2.36	1.721	12.662
SITC 3	0.192	0.05	10.173	1.21	-9.981	3.710
SITC 4	7.612	2.07	3.788	0.45	3.824	5.451
SITC 5	3.166	0.86	141.749	16.93	-138.583	3.652
SITC 6	44.155	12.00	246.525	29.44	-202.370	10.945
SITC 7	14.815	4.03	255.909	30.56	-241.094	10.887
SITC 8	199.793	54.29	95.744	11.43	104.048	14.354
SITC 9	0.000	0.00	0.455	0.05	-0.455	0.000
Total	368.002	100	837.458	100	-469.457	13.138

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 4.18 lists Moldova's trade data and shows that its balance remained negative again ($469.457m). This represented growth of 277.87% ($345.218m), and it was 9.9% of Ukraine's deficit, compared with 43.7% before. Ukraine and Lithuania also experienced increasing deficits in their balances in 2006 by 1,567.23% and 430.12%. Moldova's main profits remained in SITC 8 with a value of $104.048m, a rise of 106.83% ($53.741m). However, this growth was significantly less than the previous value (600.85%). The next most profitable industry was SITC 0 at $9.389m, a decline of 21.27% ($2.536m) preceded by a decrease of 31.38% in 2001. This year also saw Moldova's largest deficit industry return to SITC 7 at $241.094m, an increase of 309.93% ($182.281m), which totalled just over half of the total deficit (51.36%). This industry accounted for 30.56% of all imports (+4.32%). However, the discrepancy in SITC 7 was significantly smaller than those calculated for the other five countries. Main exports continued in SITC 8 at $199.793m, with 54.29% of total exports. Although monetary values grew by 153.53% ($120.988m), its percentage of overall exports shrank by 10.88% to 54.29%. Overall exports rose by 204.35% to $368.002m, whereas imports

increased by 241.61% to $837.458m. Growth rates were correspondingly 33.38% and 104.02% less than Ukraine's.

The nature of Moldova-EU trade largely remained IT; however, SITC 1 could be described as IIT because its value was 57.370%, compared with only 4.849% in 2001. Six industries experienced growth (SITC 0, 1, 2, 3, 4 & 8), but four had values less than 10% (SITC 3, 4, 5 & 9), whereas that figure was seven in 2001 (SITC 1, 2, 3, 4, 5, 8 & 9). The main export and profit industry (SITC 8) only had a level of 14.354% (+6.987%). Despite continued losses of export share and profitability, SITC 0 increased its percentage again by 5.035% to 25.708%. This industry also remained the country's leading RCA one. For the second time, SITC 5 had the lowest value at 3.652% (-0.602%). Despite five industries experiencing growth, Moldova's overall IIT percentage increased by merely 3.302% to 13.138%. This figure was greater than either Belarus' (11.886%) or Russia's (6.707%), but it was less than Ukraine's (23.261%).

3. An Assessment of IIT Developments

The importance of EU markets has been further emphasised by the considerable revenue exchanged through trade, and the intricate trade agreements and protocols signed with the organisation by the countries herein, for the exception of Belarus (see Chapter 2). This section provides a closer examination of IIT developments on the basis of the one-digit SITC industries and draws conclusions about these developments. Having established some key facts behind export and import growth and changes in trade balances, a closer evaluation of IIT developments in each one-digit SITC industry is in order. Table 4.19 provides crucial information on developments, and is referenced throughout this assessment, with individual figures for each industry on a comparative basis. The table illustrates changes in percentage values for each SITC industry in each country from rows one to ten. Moreover, the final six rows provide an identification of the top SITC industry and any subsequent change (i.e. main export industry changing from 2→6).

Table 4.19: Changes in IIT Percentages in SITC Industries (EU Trade), 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	+2.565%	+4.770%	+19.214%	+39.038%	-0.056%	+15.207%
1 Beverages & tobacco	+2.708%	-4.700%	+27.391%	+44.541%	+8.979%	+1.081%
2 Crude materials	+9.312%	+0.440%	+9.426%	+19.887%	+2.849%	+10.240%
3 Mineral fuels	-22.691%	+80.647%	+36.263%	+2.870%	-2.286%	+3.710%
4 Animal & vegetable oil	-11.774%	+15.346%	+26.302%	+64.833%	+26.601%	-28.872%
5 Chemicals & related	+13.912%	-2.501%	+22.910%	+18.963%	+11.609%	-9.458%
6 Manufactured goods	-6.506%	+3.218%	+20.515%	+8.862%	-3.551%	+1.369%
7 Machinery/Transport	+4.721%	-7.416%	+18.994%	+16.375%	+0.746%	+9.991%
8 Misc. manufactured prd	-0.796%	-4.751%	+29.605%	+25.943%	-4.520%	+3.330%
9 Not classified	-65.245%	+1.087%	+29.889%	+86.184%	+89.344%	-56.810%
Main Export Industry	2→6	3→3	6→7	8→3	8→3	0→8
Main Import Industry	7→7	7→7	7→7	7→7	7→7	7→7
Most Profitable Industry	2→6	3→3	8→8	2→3	2→3	0→8
Least Profitable Industry	7→7	7→7	7→5	7→7	7→7	7→7
Leading Industry by IIT	9→3	8→3	9→9	6→9	8→9	9→1
Poorest Industry by IIT	2→4	3→9	3→4	4→3	1→3	3→5

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

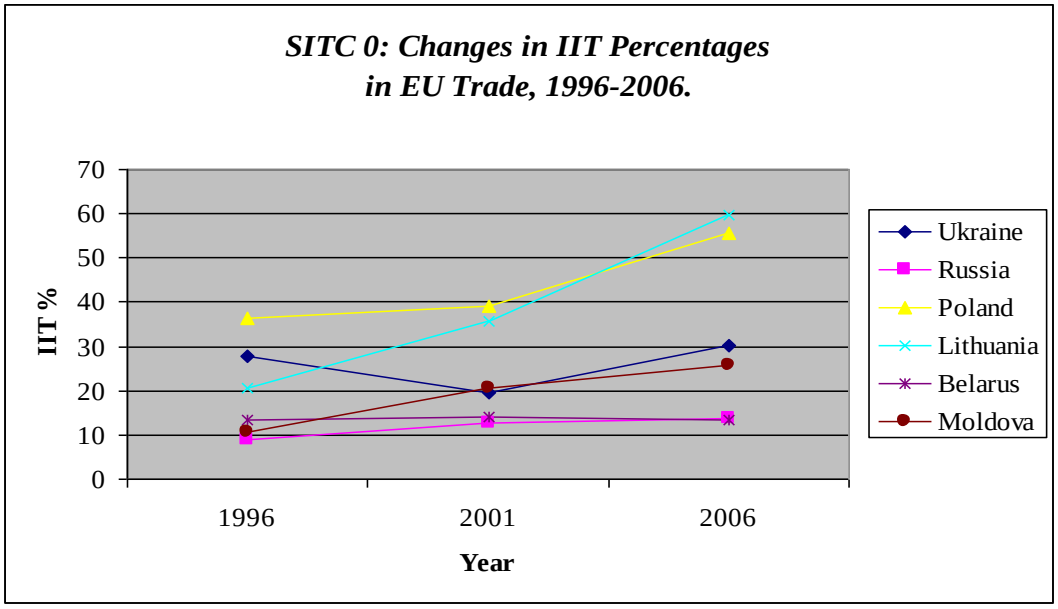
Regarding each country's main export industry, only Russia's remained constant (SITC 3). Lithuania and Belarus experienced a change from SITC 8 to SITC 3, whereas Moldova's changed from SITC 0 to SITC 8. Another example of a country developing a main export industry which formerly was associated with another country's was Ukraine in which SITC 6 replaced SITC 2. The latter was Poland's main export industry initially, but changed to SITC 7. The main export industry for Russia, Lithuania and Belarus was SITC 3. The main import industry for all remained SITC 7 throughout. The most profitable industry followed an identical pattern as the main export industry for Ukraine, Russia and Moldova. Lithuania and Belarus again experienced parallel developments here from SITC 2 to SITC 3. Poland was the only country not to have its main export industry the same as its most profitable one, as SITC 8 retained its position as the most profitable. The least profitable industry remained constant with SITC 7 throughout, like each country's main import industry. The sole exception was in Poland where SITC 5 became the least profitable. Poland and Lithuania experienced greater increases in SITC 7, a similar development observed earlier by Kaitila (1999) in the Czech Republic and Hungary.

The leading IIT industry did not exhibit the same consistency as the main RCA industry in EU trade (SITC 2). It was initially SITC 9 in two countries (Ukraine and Moldova) and became the leading IIT industry in two others (Lithuania and Belarus). No industry illustrated dominance, although SITC 3 & 9 were more prominent, and each country experienced change in its leading IIT industry, except Russia. The same was also applicable to the poorest IIT industry, with SITC 3 initially having more representation (Russia, Poland and Moldova) and becoming the poorest IIT one (Lithuania and Belarus). Concerning each country's initial leading industries according to IIT, only SITC 9 in Ukraine and Moldova experienced a decline in exports (see Table 2.01). This did not apply to any other industry in any country. In terms of changes in SITC industries as a percentage of overall exports, the initial leading IIT industry in each country, except in Poland, experienced a decrease in representation, the largest of which was recorded at -26.80% in SITC 8 in Belarus (see Table 2.02). In three cases this decrease came at the expense of the new leading IIT industry (Ukraine, Lithuania, Belarus), yet in two others it did not (Russia and Moldova). An examination of the poorest industry by IIT illustrates that its representation in total exports declined in Ukraine, Russia and Poland, yet increased in Lithuania, Belarus and Moldova. The new industry characterised as having the poorest IIT value recorded the largest growth in total exports in Russia (19.89%), Lithuania (21.14%) and Belarus (75.43%), and moderate growth in Ukraine. However, exports from the new industry also declined in Poland and Moldova.

A comparison of the percentage changes in exports by SITC industries (Table 2.01) and changes in SITC industries as a percentage of overall exports (Table 2.02) with the greatest increase in IIT percentages (Table 4.19) revealed the following information. On no single occasion did the industry with the leading growth in its IIT percentage experience the greatest percentage change in its exports either in percentage changes or representation in total exports. In terms of the industry which experienced the greatest increase in its IIT percentage, no industry had either the leading percentage change, or smallest increase, in a country's respective imports (Table 2.03). Furthermore, there were no examples of an industry with the greatest increase in IIT percentage also experiencing either the largest increase or decrease as a percentage of overall imports (Table 2.04). Therefore, no such relationships existed in EU trade.

A comparison of the percentage changes in imports by SITC industries (Table 2.03) and changes in SITC industries as a percentage of overall imports (Table 2.04) with the greatest decrease, or lowest increase in the examples of Poland and Lithuania, in IIT percentages (Table 4.19) further produced some notable observations. The industry with the greatest decrease in its IIT percentage experienced the poorest change in its imports in Ukraine (SITC 9) and Lithuania (SITC 3). There was no example of a relationship between the greatest decrease in an industry as a percentage of overall imports and the greatest decline in RCA percentage. Concerning the industry which experienced the greatest decrease in its IIT percentage, SITC 9 (Ukraine and Moldova) had the poorest percentage changes in exports, whilst no country experienced the greatest growth in exports (see Table 2.01). There were two examples of an industry with the greatest decrease in its IIT percentage also recording the greatest decrease as a percentage of overall exports (Table 2.02). They were SITC 9 in Ukraine and SITC 8 in Belarus. However, one industry with the greatest decrease in its IIT percentage experienced the greatest increase as a percentage of overall exports. This was observed in SITC 3 in Lithuania.

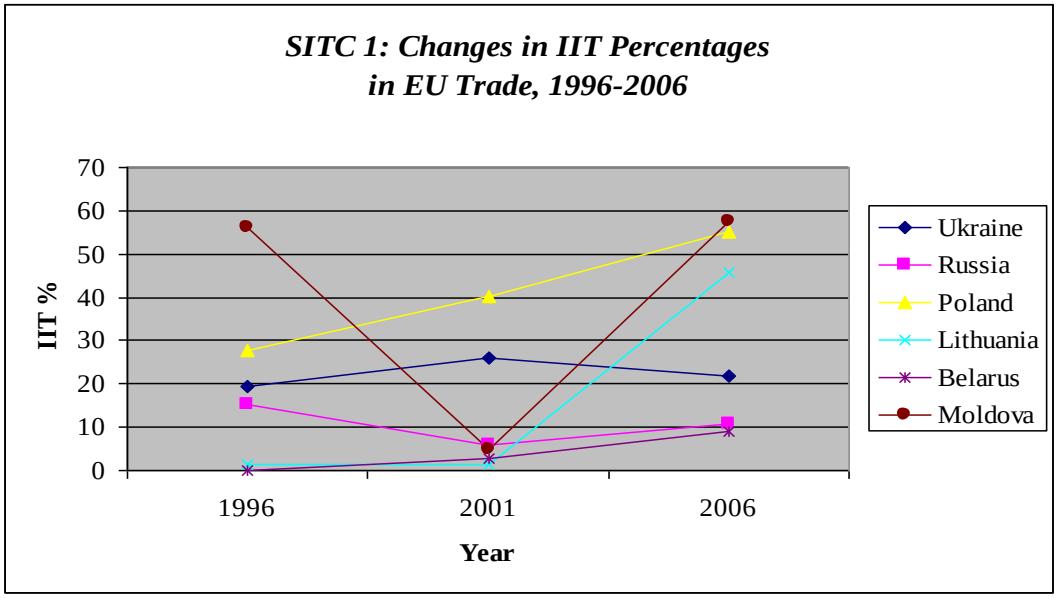
Figure 4.01



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.01 shows the evolution of each country's IIT percentage regarding SITC 0 (food & live animals). In 1996, Poland had the highest level of IIT at 36.259% (Table 4.03). However, by 2006 Lithuania clearly had the highest at 59.566% (see Table 4.16), having eclipsed Poland's value after 2001. Only Lithuania and Poland managed to achieve IIT in SITC 0, and both also witnessed corresponding significant growth of 39.038% and 19.214% (for all references to percentages not noted elsewhere, please see Table 4.19). In comparison, the majority of Poland's growth was from 2001. Moreover, it became Poland's leading RCA industry and the only example where a leading RCA industry experienced IIT. Moldova experienced its greatest single increase (+15.207%). SITC 0 constituted its most improved industry in EU trade. Furthermore, this industry was initially Moldova's main export and most profitable one. Having dipped in 2001, Ukraine's improvement was rather modest (2.565%), like Russia's (4.770%), but its value was more significant. SITC 0 showed no greater significance in Russia or Belarus, which was the only country to experience a declining value (-0.056%) here.

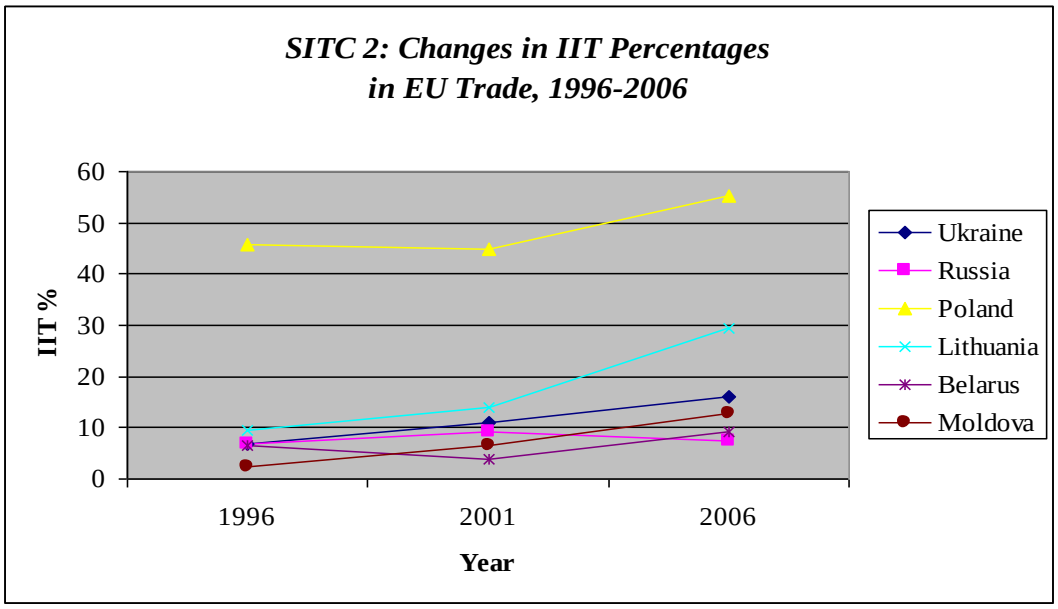
Figure 4.02



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.02 illustrates changes in SITC 1 (beverages & tobacco). Moldova managed to remain the leader, notwithstanding a significant drop in 2001 which can be explained as the result of collapse in exports and an increase in imports that produced a negative balance. Although experiencing only a slight increase of 1.081% as a consequence, Moldova's leading industry by IIT percentage in 2006 was SITC 1 at 57.370% (Table 4.18). Poland witnessed steadier growth of 27.391% to facilitate greater IIT, whereas the majority of Lithuania's leading growth (44.541%) occurred after 2001. Ukraine and Belarus saw only a moderate increase of 2.708% and 8.979%; however, SITC 1 growth in Belarus was enough to remove it from its position as having the country's lowest degree of IIT in 1996. Russia was the only country to experience a contraction in its percentage (-4.700%).

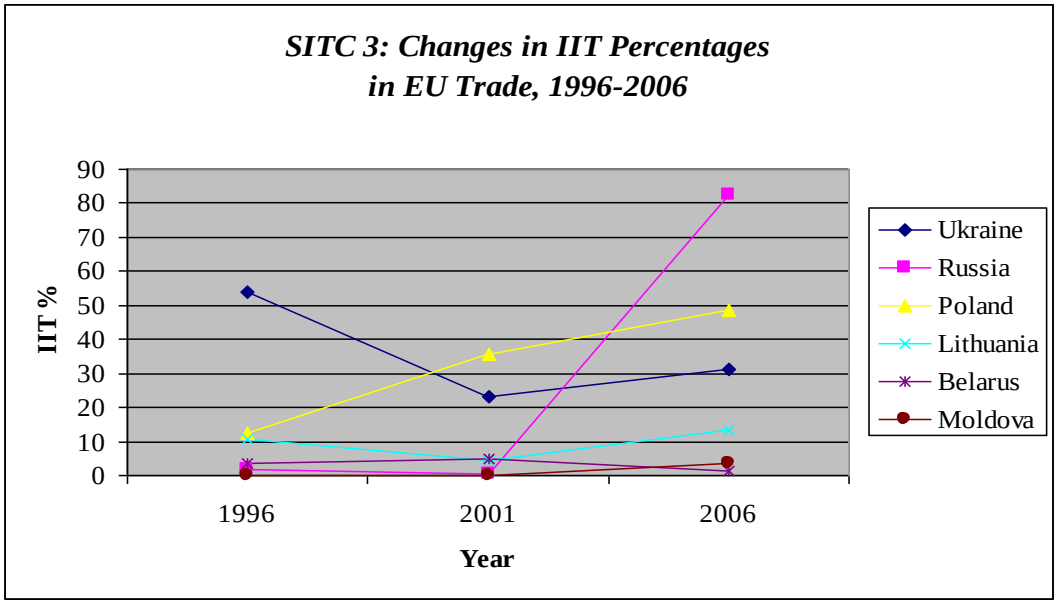
Figure 4.03



Source: own calculations based on UN Comtrade three-digit data, 2006

As evident from Figure 4.03, Poland consistently maintained the highest value in SITC 2 (crude materials) and finished with 55.204% (Table 4.15), despite the fact that the increase of 9.426% was its lowest growth figure recorded for EU trade. Lithuania also remained second, but had the highest growth (19.887%). Both countries had similar higher growth after 2001. Moldova and Ukraine had lower growth of 10.240% and 9.312%, whereas lower increases were calculated for Belarus (2.849%) and Russia (0.440%). This industry was the most profitable for Ukraine, Lithuania and Belarus, yet proved unsustainable. In addition, it was the main export industry yet the poorest IIT one for Ukraine in 1996. SITC 2 was the only industry in which no country recorded a decline in EU trade. Furthermore, it remained the leading RCA industry in Ukraine, Russia, Lithuania and Belarus.

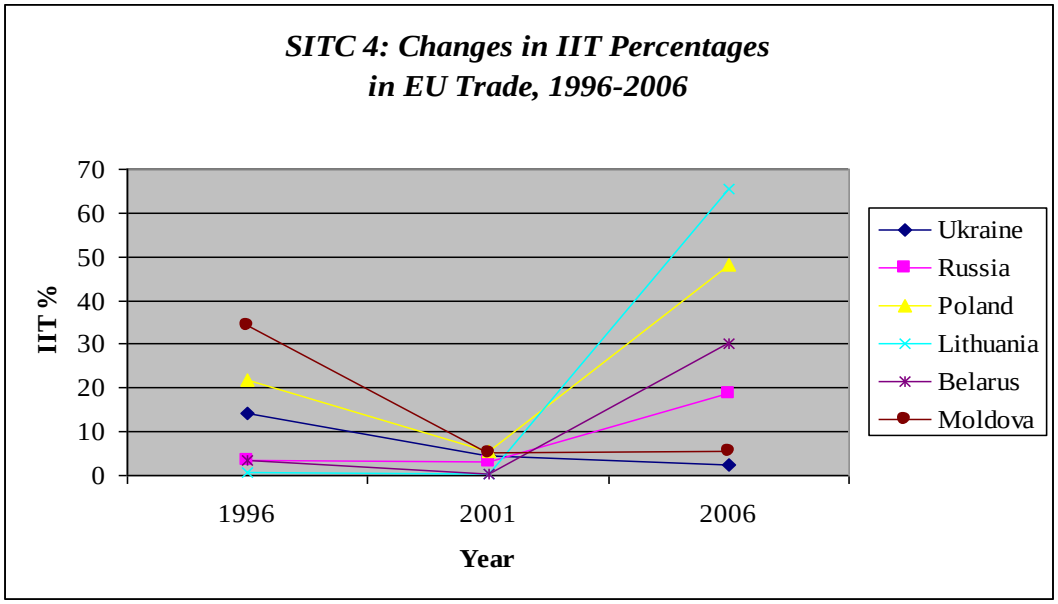
Figure 4.04



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.04 highlights the IIT changes in SITC 3 (mineral fuels). Russia experienced its greatest growth (80.647%), allowing it to become the leading IIT industry at 82.216% (Table 4.14). Moreover, Poland recorded its highest IIT increase in EU trade (36.263%), although the overall percentage remained just below 50. However, this industry represented the lowest growth for Lithuania (2.870%). Insignificant changes were observed for Moldova (+3.710%), and Belarus (-2.286%). Although growth was observed from 2001, Ukraine suffered the greatest decline in this industry (22.691%). Nonetheless, by 2006 it was its leading IIT industry at 31.117% (Table 4.13). SITC 3 not only remained Russia's main export industry and most profitable one, but it also became the main export industry and most profitable one for Lithuania and Belarus. This industry's significance in IIT was also apparent: it had the lowest percentages for Russia, Poland and Moldova in 1996, but became the poorest IIT industry for Lithuania at 13.516% (Table 4.16) and Belarus 1.348% (Table 4.17).

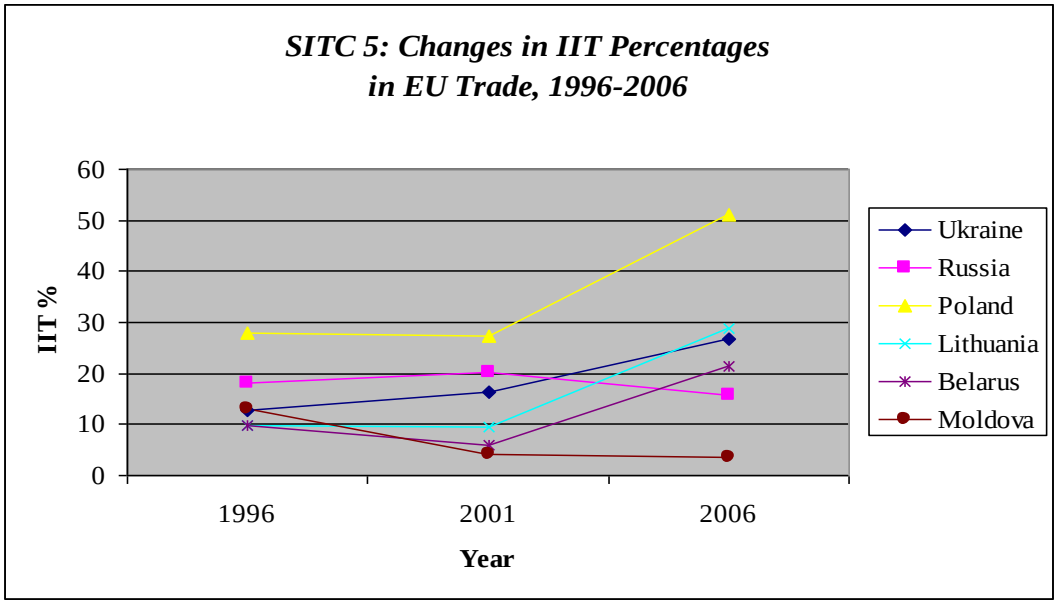
Figure 4.05



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.05 shows a unique development in IIT for SITC 4 (animal & vegetable oil): each country recorded a decline in 2001, yet only Moldova and Ukraine did not recover. In fact, both saw respective decreases of 28.872% and 11.774%, and this industry had the lowest IIT percentage for Ukraine in 2006 at only 2.325% (Table 4.13). Conversely, similar growth was recorded for Poland (26.302%) and Belarus (26.601%), whilst growth in Russia was 15.346%. However, the greatest increase belonged to Lithuania at 64.833% to a total of 65.374% (Table 4.16), which was the highest value recorded. This marked the fourth and last time that Lithuania had the greatest IIT increase in an industry in EU trade. Such growth was sufficient to allow SITC 4 no longer to be defined as Lithuania's poorest IIT industry. Nonetheless, this industry had Poland's lowest value at 48.176% in 2006 (Table 4.15), a substantial increase notwithstanding.

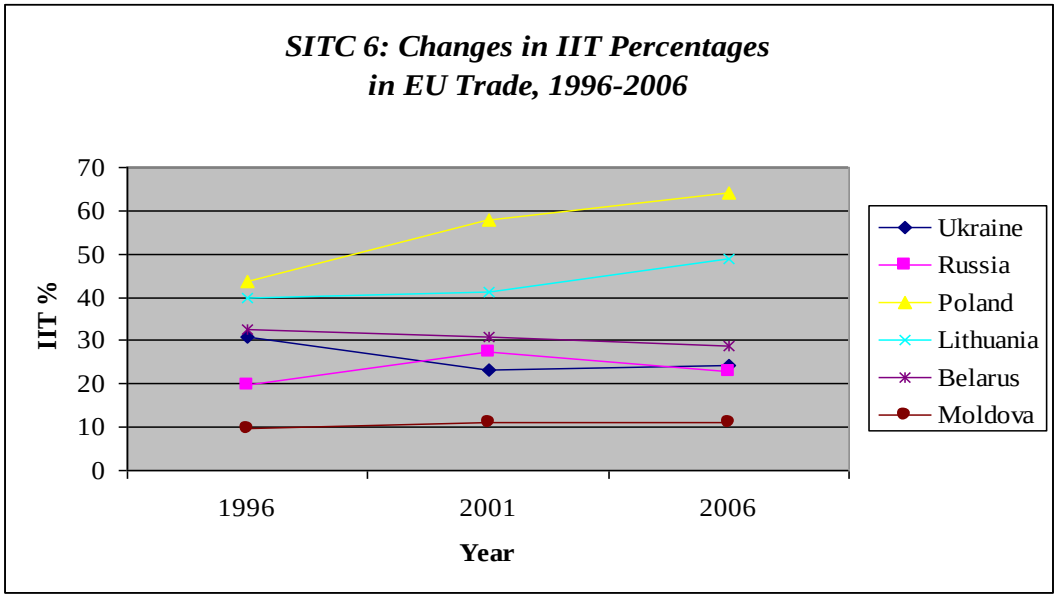
Figure 4.06



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As shown in Figure 4.06, Poland continued to have the leading IIT percentage in SITC 5 (chemicals & related products). Growth was calculated at 22.910%, the highest of any country, and the final value was 50.954% (Table 4.15). Lithuania had the next largest increase at 18.963% to finish second. Ukraine experienced its single largest increase (13.912%) and a similar rise of 11.609% was calculated for Belarus. Moldova and Russia witnessed respective declines of 9.458% and 2.501%. SITC 5 became the least profitable industry in Poland, and the one with the lowest degree of IIT in Moldova at 3.652% (Table 4.18).

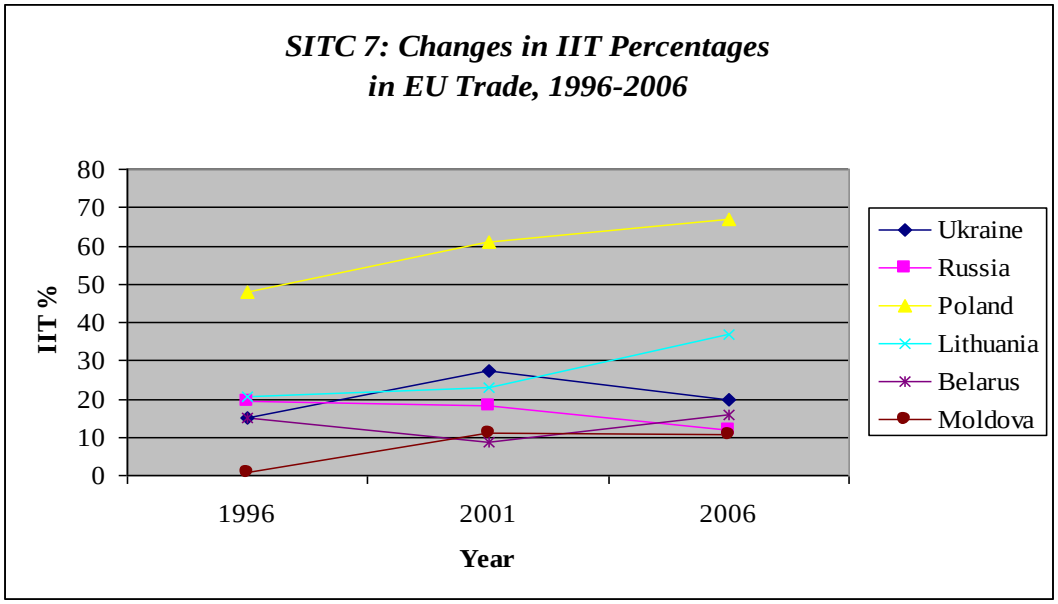
Figure 4.07



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.07 illustrates values for SITC 6 (manufactured goods). As was the case with SITC 2 & 5, Poland maintained the highest IIT value, with the greatest increase at 20.515% to 64.237% (Table 4.15). Conversely, Moldova maintained the lowest value which only increased by 1.369%. Russia recorded a rise of 3.218%, but Ukraine and Belarus experienced decreases of 6.506% and 3.551%. Despite declining IIT levels, SITC 6 became the main export and profitable industry for Ukraine, whereas it ceased being the main export industry for Poland. In Lithuania SITC 6 lost its position as the leading IIT industry, but growth of 8.862% was observed.

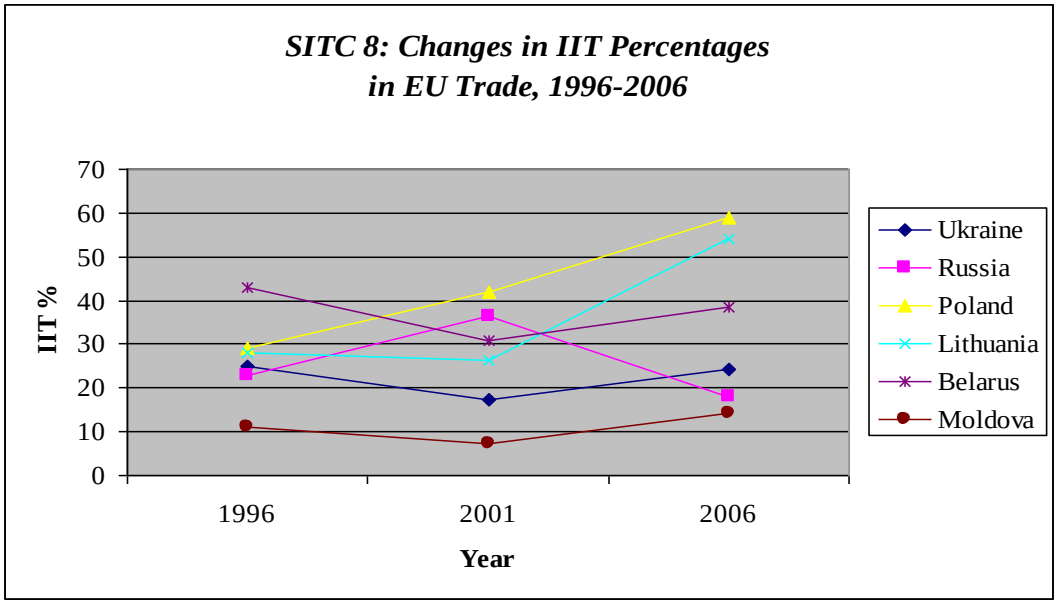
Figure 4.08



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Poland's ability not only to maintain, but increase its degree of IIT in a given industry is illustrated again in Figure 4.08, which displays values for SITC 7 (machinery & transport equipment). Poland had the most significant growth of 18.994% to a value of 66.781% (Table 4.15). Lithuania had comparable growth (16.375%), and lesser increases were observed in Moldova (9.991%), Ukraine (4.721%) and Belarus (0.746%). This industry was where Russia performed the worst in its IIT trade, as its percentage decreased by 7.416%. SITC 7 had the distinction of being the main import industry for each country and, for the exception of Poland, it remained the least profitable one throughout. Only Poland was able to make this industry constitute its main exports.

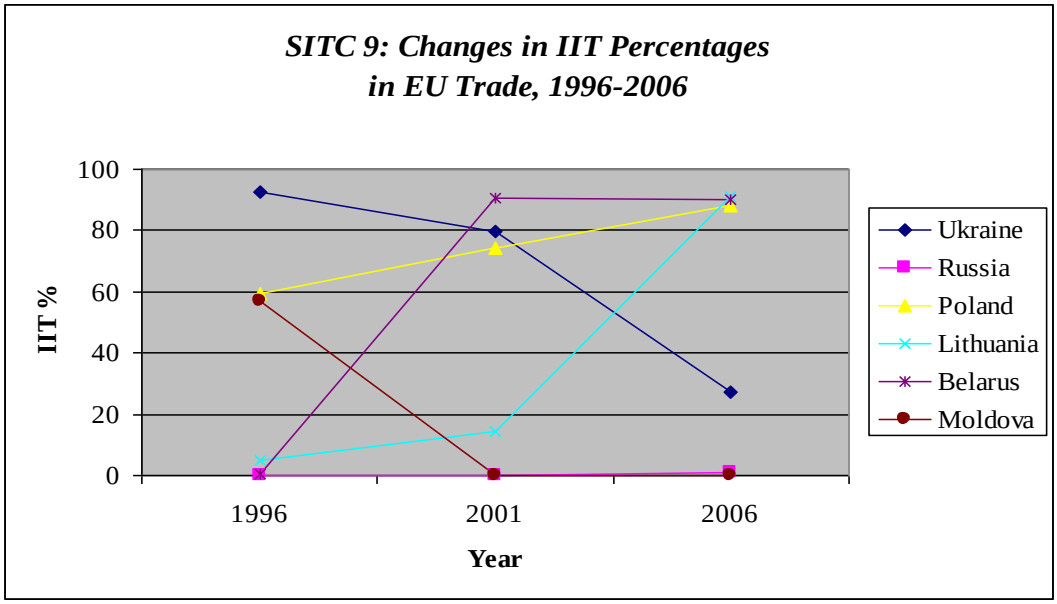
Figure 4.09



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.09 outlines developments for SITC 8 (miscellaneous manufactured articles). Once again Poland experienced the greatest increase (29.605%) and was in the leading position with 58.765% (Table 4.15). Lithuania's growth was calculated at 25.943%, which allowed it to place second at 54.057% (Table 4.16). Moldova was the only other country to record growth, but at 3.330% it was considerably less. Ukraine's percentage shrank by 0.796%, whereas for Russia and Belarus a higher decline of 4.751% and 4.520% was calculated. For Belarus, this decrease was the greatest it experienced in EU trade. SITC 8 further constituted a loss of leading IIT industry for Russia and Belarus, and it was replaced by SITC 3 as the main export industry for Lithuania and Belarus. It did, however, remain Poland's most profitable industry throughout, and it replaced SITC 0 as Moldova's main export and most profitable industry, despite an insignificant degree of IIT. This industry also replaced SITC 2 as Moldova's leading RCA industry.

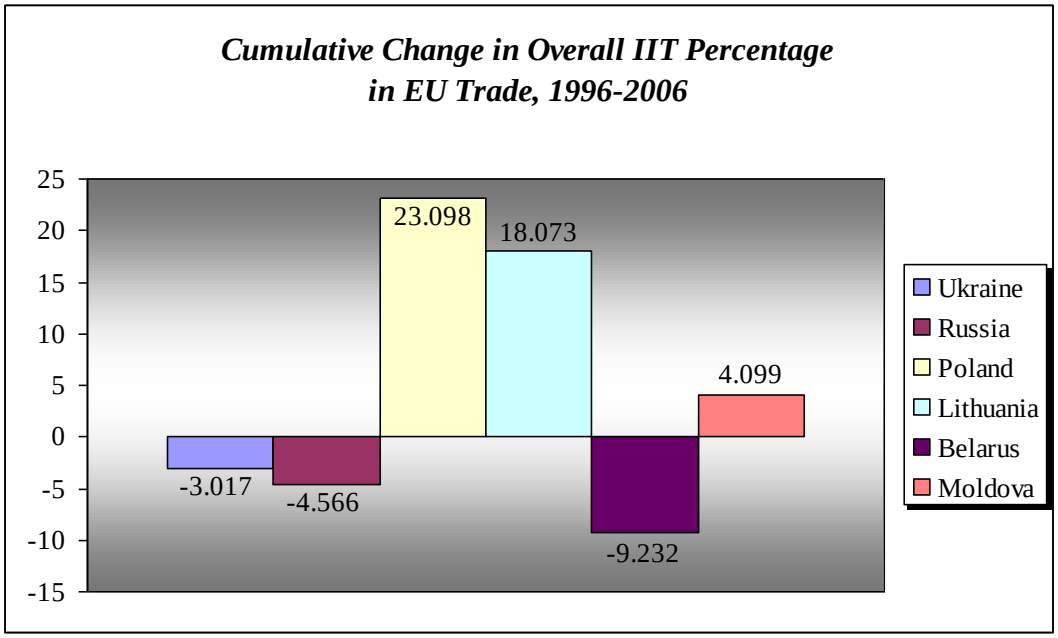
Figure 4.10



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

The most obvious characteristic of SITC 9 (commodities & transactions not classified elsewhere), as shown in Figure 4.10, is that its IIT developments were highly erratic. This was illustrated by the fact that two countries experienced their greatest single increases, Belarus (89.344%) and Lithuania (86.184%), whilst two others witnessed their greatest decreases, Ukraine (-65.245%) and Moldova (-56.810%). Lithuania had the highest value at 91.289% (Table 4.16), but this was less than Ukraine's 92.580% in 1996 (Table 4.01). Poland experienced significant growth (29.889%), a figure often substantial enough to constitute the greatest increase. Only in Russia's trade did SITC 9 illustrate greater consistency (+1.087%). Consequently, the industry became the least characterised by IIT. A key explanation for such developments is not only the nature of the industry by definition, but also the fact that its overall exports and imports usually constituted around 1% or less; hence, it was not a significant industry. Nonetheless, it remained Poland's leading IIT industry. Moreover, it became the leading IIT industry in Lithuania and Belarus, but lost the same position in Ukraine and Moldova.

Figure 4.11



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 4.11 illustrates cumulative changes in overall IIT percentages. Having reviewed developments from SITC 0 to SITC 9, it is not surprising that Poland not only remained the country with the highest degree of IIT, but that it also experienced a substantial increase of 23.098% to have the highest overall at 62.004% from 38.906%. As Czarny and Lang (2002) state, much of this IIT growth may be attributed to the Ricardian and H-O theorems, with Poland's low GDP per capita and the Falvey-Kierzkowski model (1987) defining IIT. Lithuania's increase was less (18.073%), but it ranked second in 2006 with an overall value of 40.414%. Both saw increased IIT throughout all 10 SITC one-digit industries. Furthermore, Poland had eight industries with an overall value greater than 50% (SITC 0, 1, 2, 5, 6, 7, 8 & 9), and Lithuania had four (SITC 0, 4, 8 & 9). Poland initially had one (SITC 2), whereas Lithuania did not have any. The fact such growth was not of an equal intensity, pace or specialisation was noted earlier in CEE by Palazuelos-Martinez (2007) and Černoša (2007). Moreover, IIT growth in ACs was calculated by Kaitila and Widgrén (1999), Czarny and Lang (2002) and Fidrmuc (2005). An important aspect herein is that the rapid growth of IIT in Poland and Lithuania supports the findings by Grubel and Lloyd (1971, 1975) that the extent of IIT increases

faster when customs unions and regional trading agreements exist. The extent to which this is true in developed economies is reinforced by the fact IIT in CIS trade was significantly less (see Chapter 4). Much of the increasing IIT results from greater market penetration from domestic and international firms (Brander, 1981; Brander & Krugman, 1983).

Three of the core CIS economies experienced decreases in their total IIT percentage: Ukraine from 26.278% to 23.261%; Russia from 11.273% to 6.707%; and Belarus from 21.118% to 11.886%. Despite these countries being in close geographical proximity and having comparative economic structures, they did not experience significant IIT values, contrary to Vanek (1968). In fact, IT is the expected outcome for countries with fewer similarities (Helpman & Krugman, 1985), so in this instance the low IIT percentages may be credited to the lack of similarities with the EU, in addition to the numerous protectionist measures employed. Ukraine lost its two industries with IIT characteristics (SITC 3 & 9), yet experienced growth in five (SITC 0, 1, 2, 5 & 7). However, Russia gained one IIT industry (SITC 3), despite declining percentages which mirror observations by Algieri (2004), and saw increases in six (SITC 0, 2, 3, 4, 6 & 9). Likewise, Belarus also acquired one IIT industry (SITC 9) and experienced growth in six (SITC 0, 2, 3, 4, 6 & 9). Moldova witnessed a small rise from 9.039% to 13.138%, the loss of SITC 9 as an IIT industry notwithstanding, and maintaining SITC 1. In addition, increases were observed in seven Moldova industries (SITC 0, 1, 2, 3, 6, 7 & 8). Much of the country's IIT increase can be attributed to significant OPT in 'sensitive' commodities which entail lower adjustment costs, most notably in textiles and clothing (Hoekman & Djankov, 1996; Celi 2000; Fidrmuc *et al.*, 1999). In 2006, Ukraine was the only country not to have at least one industry with an IIT value greater than 50%.

Using the Dixit-Norman model (1981) as an explanation for EU trade, the assertions made by Freudenberg and Lemoine (1999), Nevan (1995) and Fidrmuc (2005) that IIT analysis is fundamental to analysing trade relations between the EU and CEE is strengthened by the IIT results calculated for Poland and Lithuania. This clearly supports empirical research undertaken by Landesmann (2000) and Dullec *et al.* (2005), suggesting that higher IIT levels were achieved by more advanced CEE states engaged in trade liberalisation and reorientation. The postulates of Hoekman and Djankov (1996)

that IIT would increase, where EU inputs were intense and a precondition for accession, have been shown to be true, as domestic firms sought greater know-how, technology transfer, working capital and distribution networks through more advanced links to the EU during and after the accession process. The empirical results herein also support observations made by Kandogan (2003b) that higher IIT percentages would be possible in CEE, largely because of greater FDI, trade liberalisation and the EU accession process.

4. Main Exports and Imports with the EU in 2006

To illustrate further each country's trade situation, it is necessary to re-examine EU and CIS exports and imports for 2006. Ukraine's overall IIT was 23.261% and trade throughout all one-digit SITC industries was IT. With regard to Ukraine-EU trade (see Table 4.13), 38.06% of exports were concentrated in SITC 6, 13.36% originated from SITC 3 and 12.13% were from SITC 2. These three industries represented 63.55% of total exports, and all had similar positive balances. Constituting the largest share of exports, SITC 6 had six of the country's top 15 exports (SITC 611, 671, 672, 673, 676 & 679). Ukraine's high import of SITC 7 commodities, 41.84% of total imports, was the main determinant of the country's deficit. In fact, this industry accounted for nine of Ukraine's top 15 imports (SITC 721, 728, 741, 744, 745, 764, 772, 781 & 784). SITC 5 & 6 imports, with 19.97% and 18.87% respectively, brought the total import share of these three industries to 80.68%. Only SITC 6 did not have a positive balance. Table 4.20 illustrates the leading position of SITC 6 in Ukraine's upper fifteen exports and the dominance of SITC 7 in Ukraine's upper fifteen imports with the EU in 2006. These commodities have been listed in order of highest monetary values in descending order. An asterisk indicates that the three-digit industry has IIT. The letter to the right of each commodity designates the factor content involved in its production. This is explained at the bottom of the table.

Table 4.20: The Dominance of SITC 6 & 7 Industries in Ukraine-EU Trade, 2006

Ukraine's Top 15 Exports		Ukraine's Top 15 Imports	
672 INGOTS ETC.IRON OR STEEL	C	781 PASSENGER CARS ETC,	C
334 PETROLEUM PRODUCTS	P	542 MEDICAMENTS	T
671 PIG IRON,SPIEGELEISN,ETC	R	784 MOTOR VEHICHLES PARTS/ACC.	C
281 IRON ORE, CONCENTRATES	P	764 TELECOMM.EQUIPMENT, NES,	C
421 FIXED VEG.FAT,OILS, SOFT	P	641 PAPER AND PAPERBOARD	C
676 IRON/STEEL BARS/RODS ETC.	C	728 SPECIAL INDUSTRIAL MACH.	T
673 FLAT-ROLLED IRON ETC.	C	741 INDUS. HEATNG/COOLNG EQP.	T
679 IRON/STEEL TUBES/PIPES , ETC	C	553 PERFUMERY, COSMETICS, ETC.	C
842 WOMEN/GIRL CLOTHING, WOVEN	L	721 AGRICULTURE MACHINES	T
511 HYDROCARBONS, NES, DERIVTS	T	334 PETROLEUM PRODUCTS	P
611 LEATHER	R	745 NONELECTRIC MACH./TOOLS	T
773 ELECTRICAL DISTRIB. EQP,NES*	T	582 PLASTIC PLATES/SHEETS, ETC	T
841 MENS/BOYS CLOTHING, WOVEN	L	772 ELECT. SWITCH, RELY.CIRCTS	T
248 WOOD, SIMPLY WORKED	P	642 PAPER,PAPERBOARD,CUT ETC	C
222 OILSEED (SFT.FIX VEG.OIL)	P	744 MECHANICAL HANDLING EQP.	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

P: Primary products; R: Natural resource-intensive; L: Labour-intensive; T: Technology-intensive; C: Human capital-intensive

SITC 6 & 7 combined for a total of 18 positions within the top exports and imports, by far greater than any other one-digit industries. Nine of the upper 15 exports consisted of primary products, natural resource- and labour-intensive goods. Many of these products were the same as those produced before and during the Soviet era, largely from SITC 6, but also petroleum products (SITC 334). The oil industry has been the focus of Russian investments into Soviet-built petroleum refinery plants for processing Russian oil. With the exception of electrical distribution equipment (SITC 773) and hydrocarbons, nes, derivatives (SITC 511), exports to the EU lacked technology-intensive products, like electrical equipment, vehicles and television receivers and electrical machinery. Thus, it can be said that the medium- to high-technology sector was not expanding and developing, and much of this may be attributed to a lack of FDI. Four of the top export commodities were human capital-intensive industries (SITC 672, 673, 676 & 679) which were the object of FDI, although such products lacked greater technological sophistication and innovation. An influential factor that had export implications was EU protectionism in the trade of metals: iron and steel were excluded from the GSP and thus MFN tariff rates applied alongside quantitative quotas. Another factor in EU trade was the textile agreement of 2000, whereby Ukraine lowered import

tariffs on textile and clothing products in return for the removal of quotas on Ukrainian apparel. Evidence of this can be found in the leading export industries SITC 841 & 842, although Moldova-EU trade in such commodities provides a better example. The EU further exercised protectionism in agro-food products, by exempting further selected products from GSP and applying quotas to grains. No SITC 0 products ranked in the top 15 exports, as exports and imports were only 4.51% and 5.64% of total trade. In contrast, only one leading export had IIT (SITC 773). In terms of imports, technology- and capital-intensive products dominated with 14 positions. Many of these were for domestic consumption, like cars, car parts, telecommunications equipment, computers and electrical goods. There also existed imports for agricultural and special industrial machinery (SITC 721 & 728). Many imports were from SITC 5, 6 & 7, mostly because such goods were superior to domestic products from the same industry. Three commodities were from the leading RCA industry (SITC 222, 248 & 281). Petroleum products (SITC 334) were the only primary product good and the only one to feature from the leading IIT industry (SITC 3). None of the leading imports were either natural resource- or labour-intensive. Furthermore, SITC 334 was the only commodity to feature in the leading exports and imports. The value of its IIT was only 37.457%, however. Significant RCA percentages (RCA>90%) were recorded in eight goods (SITC 248, 281, 421, 671, 672, 673, 841 & 842). These commodities, however, had low IIT percentages ranged from 0.003% (SITC 281) to 5.344% (SITC 671).

Regarding Russia-EU trade (Table 4.14), the overall IIT value was 6.707%, with only SITC 3 exhibiting IIT. This industry accounted for 62.49% of total exports, followed by SITC 9 with 19.89% and SITC 6 with 10.49%. All three industries had positive balances, accounting for 92.87% of all exports. The latter was Ukraine's largest export industry (38.06%), with its products constituting six top exports. Despite accounting for significantly less in overall exports, seven SITC 6 commodities were in the top exports (SITC 667, 671, 672, 673, 682, 683 & 684), compared to only three from the leading export industry (SITC 321, 333 & 334). As was the case with Ukraine, Russia had a heavy reliance on SITC 7 commodities, responsible for 46.43% of overall imports. It accounted for two-thirds of the top imports (SITC 721, 728, 741, 743, 744, 764, 772, 775, 781 & 784). Only SITC 743 & 775 were leading imports for Ukraine. SITC 5 & 6

imports, at 19.29% and 13.34% of respective overall values, brought the total import share of these three leading industries to 79.06%, although SITC 6 likewise had a positive balance. Table 4.21 illustrates the influence of SITC 6 in Russia's leading exports, and the clear dominance of SITC 7 in its top imports. Russia had five leading identical exports (SITC 248, 334, 671, 672 & 673) with Ukraine, and had the highest number of identical exports of any country with 11 (SITC 542, 553, 641, 721, 728, 741, 744, 764, 772, 781 & 784). In fact, Russia and Ukraine had the greatest number of identical imports in either EU or CIS trade.

Table 4.21: The Dominance of SITC 6 & 7 in Russia-EU Trade, 2006

Russia's Top 15 Exports		**Russia's Top 15 Imports**	
333 PETROLEUM OILS, CRUDE	P	781 PASSENGER CARS ETC…	C
931 SPECIAL TRANS., NON-CLASSIFIED		542 MEDICAMENTS	T
334 PETROLEUM PRODUCTS	P	764 TELECOMM. EQUIPMENT, NES,	C
683 NICKEL	R	728 SPECIAL INDUSTRIAL MACHINERY	T
684 ALUMINIUM	R	741 INDUS. HEATNG/COOLNG EQP.	T
682 COPPER	R	553 PERFUMERY, COSMETICS, ETC.	C
321 COAL, NOT AGGLOMERATED	P	641 PAPER & PAPERBOARD*	C
671 PIG IRON, SPIEGELEISN	R	533 PIGMENTS, PAINT ETC…	C
667 PEARLS, PRECIOUS STONES	R	775 DOM. ELEC, NON-ELEC. EQP.	T
672 INGOTS ETC…IRON OR STEEL	C	744 MECHANICAL HANDLING EQP.	T
673 FLAT-ROLLED IRON ETC…	C	743 PUMP NES, CENTRIFUGS ETC…	T
248 WOOD, SIMPLY WORKED	P	784 MOTOR VEHICLES PARTS/ACC.	C
247 WOOD ROUGH, ROUGH SQUARED	P	721 AGRICULTURE MACHINES	T
562 FERTILISER, EXCEPT GRP 272	T	012 OTHER MEAT, MEAT OFFAL	P
282 FERROUS WASTE & SCRAP	P	772 ELECT. SWITCH, RELY.CIRCTS	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

As was the case with Ukraine-EU trade, SITC 6 & 7 accounted for 18 positions. In exports, 11 commodities were either primary products or natural resource-intensive ones. This was the highest concentration of leading exports in the two factor intensities. Russia was the only country not to have a leading labour-intensive export. Again these were largely a continuation of Soviet and pre-Soviet ones, in addition to human capital-intensive exports (SITC 672 & 673). Russia also lacked greater leading technology-intensive exports, the sole exception being SITC 562, a good also subjected to EU protectionism. As was the case with Ukraine, Russia's medium- to high-technology sector showed little progress in penetrating the EU market. Only two human capital-

intensive goods were present (SITC 672 & 673). Russia likewise had technology- and capital-intensive products dominate 14 imports, many of which were the same as Ukraine's. Although Russian exports were heavily concentrated in primary products and natural resource-intensive commodities, imports only reflected one good from either category (SITC 012). The reasons for the concentration of imports from SITC 5, 6 & 7 were the same as for Ukraine. However, Russia had no identical commodities in its leading exports and imports. Three commodities were from the leading RCA industry (SITC 247, 248 & 282) and the leading IIT one (SITC 321, 333 & 334). One of each was common to Ukraine's top commodities (SITC 248 & 334). Moreover, all but two exports (SITC 673 & 684) enjoyed RCA. Again, IIT percentages for these leading goods were poor, as values were from 0% (SITC 333) to 7.175 % (SITC 682). Only one leading commodity experienced IIT (SITC 641), but it had a negative RCA.

Poland's EU trade (Table 4.15) had an overall IIT of 62.004%, with IIT evident across all but two industries (SITC 3 & 4). 40.27% of overall exports were in SITC 7, followed by 22.14% in SITC 6 and 13.58% in SITC 8. Therefore, slightly more than three-quarters of all Polish exports originated from these three industries. SITC 6, however, had a negative balance, unlike its position in Ukrainian and Russian trade. SITC 7 commodities combined for seven of the leading export commodities (SITC 713, 761, 773, 775, 778, 781 & 784), many of which were also the leading import goods for Ukraine and Russia. None of Poland's three leading SITC 6 exports (SITC 635, 682 & 699) were in common with Ukraine's. Poland's leading imports also originated from SITC 7, although its balance remained positive, with 36.63% of total imports, followed by SITC 6 with 25.46% and SITC 5 with 17.28%. These three industries constituted 79.37% of total imports, but only SITC 7 had a positive balance. This industry's goods had six of the leading export positions (SITC 713, 728, 764, 772, 781 & 784). Table 4.22 shows the dominance of SITC 6 & 7 in Poland's top exports and imports. With only two leading identical exports with Ukraine (SITC 334 & 773), leading Polish and Ukrainian exports had little in common. However, greater similarities were observed in imports with nine (SITC 334, 542, 582, 641, 728, 764, 772, 781 & 784).

Table 4.22: The Dominance of SITC 6 & 7 in Poland-EU Trade, 2006

Poland's Top 15 Exports		**Poland's Top 15 Imports**	
781 PASSENGER CARS ETC…*	C	784 MOTOR VEHICHLES PARTS/ACC. *	C
821 FURNITURE & PARTS THEREOF	L	781 PASSENGER CARS ETC..*	C
784 MOTOR VEHICHLES PARTS/ACC.*	C	542 MEDICAMENTS	T
713 INT. COMB. PISTON ENGINES & PARTS*	T	641 PAPER & PAPERBOARD*	C
761 TELEVISION RECEIVERS	C	699 MANUFACTURES BASE METALS, NES*	C
682 COPPER*	R	713 INT. COMB. PISTON ENGINES & PARTS*	T
773 ELECTRICAL DISTRIB. EQP,NES*	T	334 PETROLEUM PRODUCTS*	P
699 MANUFACTURES BASE METALS, NES*	C	931 SPECIAL TRANS., NON-CLASSIFIED*	
775 DOM. ELECECTRICAL, NON-ELEC. EQP.*	T	728 SPECIAL INDUSTRIAL MACHINERY	T
893 ARTICLES OF MATERIALS (DIV 58)*	T	893 ARTICLES OF MATERIALS (DIV 58)*	T
931 SPECIAL TRANS., NON-CLASSIFIED*		764 TELECOMM. EQUIPMENT, NES*	C
778 ELEC. MACHINERY & APP, NES*	T	772 ELECT. SWITCH, RELY.CIRCTS*	T
635 WOOD MANUFACTURES, NES	R	582 PLASTIC PLATES/SHEETS, ETC	T
321 COAL,NOT AGGLOMERATED	P	684 ALUMINIUM*	R
334 PETROLEUM PRODUCTS*	P	674 UNIV. PLATES/SHEETS IRON/STEEL	C

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 were responsible for 20 placements, which was two greater than Ukraine and Russia. A clear illustration of the difference in exports between Poland, Ukraine and Russia was the fact that only five of Poland's top exports were primary products, natural resource- or labour-intensive products, the most import of which were SITC 821 & 682. Unlike leading Ukrainian and Russian exports, Poland's top exports were better represented by technology- and capital-intensive products. In fact, Poland had the greatest number of such goods with nine. As was the case with Ukraine, Poland had four leading exports from human capital-intensive industries (SITC 699, 761, 781 & 784), none of which were common to both, but it also had five technology-intensive ones (SITC 713, 773, 775, 778 & 893), with SITC 773 common to both. Technology- and capital-intensive products constituted 12 imports. Poland clearly had experienced greater restructuring, but it still had an import market for more advanced technology- and capital-intensive goods. This was true for each country. The two commodities differing from this classification were SITC 334 & 684. Poland was the only country not to have any commodities from its leading RCA industry (SITC 0) in its top exports and imports, but it did have representation from its leading IIT one (SITC 9). Furthermore, it was the only country not to have any of its leading exports with significant RCA values, but it did have the greatest amount of commodities experiencing IIT in either EU or CIS trade with 15

altogether and eight recording a negative RCA. SITC 773 was also a leading IIT export in Ukraine, and SITC 641 was a leading IIT import in Russia. The country had, however, also the greatest number of commodities to feature in its top exports and imports with a total of seven. This helps explain why the country had better overall IIT (62.004%). These goods were as follows:

SITC 334	Petroleum products	78.179%
SITC 699	Manufactures of base metals, nes	98.202%
SITC 713	Internal combustion piston engines and parts	68.171%
SITC 781	Passenger cars, etc…	67.441%
SITC 784	Motor vehicle parts and accessories	91.733%
SITC 893	Articles of materials (Div 58)	99.652%
SITC 931	Special transactions, non-classified	87.917%

Each is characterised by IIT, and SITC 334 was also common to Ukraine's leading exports and imports. However, it was IT by contrast (37.457%). The existence of IIT in the automobile industry (see SITC 781 & 784) supports the findings of Czarny and Lang (2002) and that long-term prospects for HIIT exist. The continued success of these industries suggests that the vulnerability of some human capital-intensive industries has actually been lessened during transition, a low domestic capital base notwithstanding.

With regard to Lithuania-EU trade (Table 4.16), the country's IIT value was 40.414% and SITC 0, 4, 8 & 9 were calculated to have IIT. SITC 3 had the largest percentage of overall exports at 22.79%, followed by SITC 8 with 18.91% and SITC 7 with 17.00%. In total, 58.70% of exports was attributed to these three industries, although SITC 7 had a notable negative balance. Despite its position as the leading export industry, SITC 3 had only one commodity (SITC 334) in the top exports, whereas SITC 8 had five (SITC 821, 841, 842, 845 & 893) and SITC 7 had four (SITC 752, 761, 773 & 793). Likewise, Lithuania's high import of SITC 7 commodities (41.11%) served as the main deficit. The importance of this industry is evident, with seven of the top imports (SITC 728, 752, 764, 781, 782, 783 & 786). Imports in SITC 5 at 15.42% and SITC 6 at 19.25% meant that 75.78% of overall imports belonged to these three industries. Table

4.23 illustrates the influential positions of SITC 7 & 8 in Lithuania's upper exports, and SITC 5 & 7 in its leading imports. Ukraine and Lithuania had five leading exports in common (SITC 248, 334, 773, 841 & 842), and six leading imports (SITC 542, 582, 641, 728, 764 & 781).

Table 4.23: The Dominance of SITC 7 & 8 Industries in Lithuania-EU Trade, 2006

Lithuania's Top 15 Exports		Lithuania's Top 15 Imports	
334 PETROLEUM PRODUCTS	P	781 PASS.MOTOR VEHCLS.EX.BUS	C
821 FURNITURE & PARTS THEREOF	L	542 MEDICAMENTS	T
562 FERTILISER,EXCEPT GRP272	T	782 GOODS/SERVICE VEHICHLES	C
893 ARTICLES OF MATERIALS (DIV 58)*	T	752 AUTO. DATA PROCESSING MACHINES*	T
842 WOMEN/GIRL CLOTHING, WOVEN	L	764 TELECOMM. EQUIPMENT, NES,	C
773 ELECTRICAL DISTRIB. EQP,NES*	T	783 ROAD MOTOR VEHICLES, NES	C
761 TELEVISION RECEIVERS*	C	786 TRAILERS & OTHER VEHICLES	C
793 SHIPS, BOATS & FLOATING STRUCT.	L	513 CARBOXYLIC ACIDS/ANHYDRIDES	T
248 WOOD, SIMPLY WORKED	P	699 MANUFACTURES, BASE METAL, NES*	C
635 WOOD MANUFACTURES, NES	R	728 MACH & EQP. FOR PART. INDUSTRIES	T
841 MENS/BOYS CLOTHING, WOVEN	L	582 PLASTIC PLATES/SHEETS, ETC*	T
574 POLYACETAL, POLYCARBONATE*	T	057 FRUIT & NUTS FRESH/DRIED	P
081 FEED STUFF FOR ANIMALS*	P	641 PAPER & PAPERBOARD	C
752 AUTO. DATA PROCESSING MACHINES*	T	533 PIGMENTS, PAINT ETC…	C
845 OUTER GARMENTS & KNITTED ART.*	L	893 ARTICLES OF MATERIALS (DIV 58)*	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

In Lithuania's trade SITC 6 & 7 combined for 14 positions, which was four less than in Ukraine's trade. In common with Ukraine-EU trade, nine commodities consisted of primary goods, natural resource- and labour-intensive products. However, like Poland, Lithuania's exports were marked by a greater level of technology-intensive goods with five (SITC 562, 574, 752, 773 & 893), but only one capital-intensive good (SITC 761) in contrast. Technology-intensive products accounted for six of the leading imports, and capital-intensive goods totalled more than half with eight. Lithuania had the highest amount of human capital-intensive commodities in its leading imports. Only one product (SITC 057) was a primary one. The leading IIT industry (SITC 9) did not feature in the leading exports and imports, as it did in Poland-EU trade, and only one good from the leading RCA industry ranked in the leading commodities (SITC 248). This good was also common to the leading RCA industry and top exports in Ukraine. Two commodities were in the leading exports and imports: SITC 752 (59.070%) and SITC 893 (82.170%). Only

one of the country's leading exports had a significant RCA percentage (SITC 562), although its IIT value was only 5.629%. Conversely, nine leading commodities had IIT, although three had a negative RCA (SITC 582, 699 & 752), including SITC 773 which was Ukraine's only leading IIT export.

Concerning Belarus-EU trade (Table 4.17), a substantial 75.71% of all exports originated from SITC 3 and 10.39% from SITC 6. Thus, 86.10% of all exports were found in only two industries, both of which had positive balances. However, the country's IIT was 11.886%, with SITC 9 as the only IIT industry. Three significant industries from the leading category had positions within the leading export commodities (SITC 333, 334 & 342); however, seven leading commodities could be found in SITC 6 (SITC 635, 651, 672, 676, 678, 679 & 693). Dependency on SITC 7 imports accounted for 42.73% of overall imports, and this industry accounted for eight of Belarus' leading imports (SITC 713, 721, 728, 741, 743, 764, 772 & 781). SITC 5 imports were 19.54% of overall imports, with four top imports (SITC 533, 542, 575 & 591), followed by SITC 6 with 16.67%. Only the latter had a positive balance. These three industries thus accounted for 78.94% of all imports. Table 4.24 illustrates the position of SITC 6 goods in Belarus' leading exports, and SITC 7 & 5 in its leading imports. Belarus had the greatest amount of leading identical exports with Ukraine at six (SITC 248, 334, 672, 676, 679 & 842), and the third highest amount of identical imports with seven (SITC 542, 721, 728, 741, 764, 772 & 781).

Table 4.24: The Dominance of SITC 6 & 7 in Belarus-EU Trade, 2006			
Belarus' Top 15 Exports		**Belarus' Top 15 Imports**	
334 PETROLEUM PRODUCTS	P	721 AGRICULTURE MACHINES	T
333 PETROLEUM OILS, CRUDE	P	781 PASS.MOTOR VEHCLS.EX.BUS	C
562 FERTILISER,EXCEPT GRP272	T	764 TELECOMM. EQUIPMENT, NES,	C
672 INGOTS ETC.IRON OR STEEL	C	542 MEDICAMENTS	T
676 IRON/STEEL BARS/RODS ETC.	C	741 INDUS. HEATNG/COOLNG EQP.	T
342 LIQUEFIED PROPANE, BUTANE	P	533 PIGMENTS, PAINT ETC…	C
693 WIRE PRODUCTS & FENCING GRILLS	C	728 SPECIAL INDUSTRIAL MACHINERY	T
248 WOOD, SIMPLY WORKED	P	081 FEED STUFF FOR ANIMALS	P
722 TRACTORS WITH POWER TAKE-OFFS	T	575 OTH. PLASTIC, PRIMARY FORM	P
678 TUBES/PIPES/FITTINGS OF IRON/STEEL	C	012 MEAT & EDIBLE OFFAL SALTED/DRIED	P
842 WOMEN/GIRL CLOTHING, WOVEN	L	699 MANUFACTURES OF BASE METALS, NES	C
679 IRON/STEEL TUBES/PIPES, ETC	C	743 PUMPS NES,CENTRIFUGS ETC	T
651 TEXTILE YARN	L	591 DISINFECTANTS, INSECTICIDES ETC…	T
821 FURNITURE & PARTS THEREOF	L	713 INT. COMB. PISTON ENGINES & PARTS	T
635 WOOD MANUFACTURES, NES	R	772 ELECT. SWITCH, RELY.CIRCTS	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 had a total of 17 positions, which was only one less than in Ukraine-EU trade. Concerning exports, eight of the leading goods were either primary products, natural resource- or labour-intensive ones. With the exception of SITC 562 & 722, exports lacked technology-intensive products. Five of the top export commodities were human capital-intensive industries (SITC 672, 676, 678, 679 & 693), which was greater representation in this intensity than elsewhere. In imports, technology-intensive products accounted for eight entries, whereas capital-intensive ones totalled four. This meant that three commodities, however, were similar primary products (SITC 012, 081 & 575), thus the country had the highest amount of leading imports from this category. As was the case with Russia, Belarus did not have any commodity feature in its leading exports and imports. Identical to Lithuania-EU trade, Belarus had only one good from its leading RCA industry (SITC 248) and none from its leading IIT industry (SITC 9). However, eight exports had significant RCA percentages (SITC 248, 333, 334, 562, 672, 676, 678 & 842). With a range from less than 0.001% (SITC 334) to 9.524% (SITC 678), IIT percentages were also low for these commodities. Belarus was the only country to have none of its leading imports or exports experience IIT.

In Moldova-EU trade (Table 4.18), overall IIT was 13.138% and only SITC 1 exhibited IIT. Exports differed considerably by one-digit classification in comparison.

For example, the influence of SITC 2 & 3 was rather negligible. The country's leading export industry was SITC 8 with 54.29% of export shares, followed by SITC 0 with 17.27% and SITC 6 with 12.00%. These three industries represented 83.56% of total exports, with SITC 6 having a negative balance. SITC 8 constituted the largest share of exports, and seven of the country's top exports were from this industry (SITC 831, 841, 842, 843, 844, 845 & 851). Moldova's slightly lesser dependency on SITC 7 imports, 30.56% of total imports, was followed closely by SITC 6 imports with 29.44% of the total. The former accounted for five top imports (SITC 741, 745, 764, 781 & 792), whereas the latter was responsible for six (SITC 611, 651, 652, 653, 655 & 699). SITC 5 was the third leading import industry (16.93%), bringing the total value of all three trade deficit industries in overall imports to 76.93%. Table 4.25 illustrates the influence of SITC 8 in Moldova's exports, and SITC 6 & 7 in its imports. Despite differences in export and import composition, Moldova, like Lithuania and Russia, had five leading identical exports with Ukraine (SITC 222, 421, 676, 841 & 842), and six identical imports (SITC 542, 553, 741, 745, 764, & 781).

Table 4.25: The Dominance of SITC 6, 7 & 8 in Moldova-EU Trade, 2006

Moldova's Top 15 Exports		**Moldova's Top 15 Imports**	
842 WOMEN/GIRL CLOTHING, WOVEN	L	542 MEDICAMENTS	T
841 MENS/BOYS CLOTHING, WOVEN	L	781 PASS.MOTOR VEHCLS.EX.BUS	C
845 OUTER GARMENTS & KNITTED ART.	L	764 TELECOMM. EQUIPMENT, NES,	C
057 FRUIT & NUTS, FRESH/DRIED	P	699 MANUFACTURES OF BASE METALS, NES	C
676 IRON/STEEL BARS/RODS ETC.	C	553 PERFUMERY, COSMETICS, ETC.	C
851 FOOTWARE	L	655 KNITTED OR CROCHETED FABRICS	L
844 UNDERGARMENTS OF TEXTILE FABRICS	L	792 AIRCRAFT & ASS. EQP. & PARTS	T
112 ALCOHOLIC BEVERAGES*	P	653 FABRICS, WOVEN OF MAN-MADE FABR.	L
059 FRUIT, VEGETABLE JUICES	P	652 COTTON FABRICS, WOVEN	L
288 N-FERROUS BASE METAL WASTE/SCRAP	P	651 TEXTILE YARN	L
843 OUTER GARMENTS, WOMENS, TEXTILES	L	741 INDUS. HEATNG/COOLNG EQP.	T
041 WHEAT & MESLIN	P	745 NONELECTRIC MACH./TOOLS	T
421 FIXED VEG.FAT,OILS, SOFT	P	611 LEATHER	R
831 TRAVEL GOODS, HANDBAGS, CASES	L	812 SANITARY, PLUMBING, HEATING FIXT.	L
222 OILSEED (SFT.FIX VEG.OIL)*	P	893 ARTICLES OF MATERIALS (DIV 58)	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 totalled only 12 positions, the lowest amount of any country and six less than the figure calculated for Ukraine. Seven exports each were either primary

products or labour-intensive ones, which was the highest amount of leading exports for both intensities in EU trade. Only one (SITC 676) was a human capital-intensive good. Moldova was the only country not to have any representation from either technology-or natural resource-intensive commodities. As was the case with Ukraine, it benefited from the EU textile agreement and corresponding evidence can be found in the fact that SITC 8 was the leading export industry and that seven of its commodities were included in the country's leading exports. Similarly, EU protectionism in agro-food products, by exempting further selected products from GSP and applying quotas to grains, meant that no SITC 0 products ranked in the top exports, despite this industry having 17.27% of total export shares. SITC 8 was also the country's leading RCA industry and Moldova had the highest representation from this classification with nine, six greater than either Ukraine or Russia. However, only one good (SITC 112) originated from the leading IIT industry. Nine of the leading imports were either technology- or capital-intensive goods. However, four were also labour-intensive in nature (SITC 651, 652, 653 & 655) which were directly connected to the key exporting industries in SITC 8. This provided a clear example of intensive OPT, where finished textile products were exported to the EU. Moldova was the only country to import leading labour-intensive goods and not import any primary products. As was the case with Belarus and Russia, Moldova did not have any identical commodities appear in its leading exports and imports. However, nine of its leading exports had significant RCA (SITC 041, 288, 421, 831, 841, 842, 843, 844 & 845). IIT percentages were again low for leading exports with significant RCA, ranging between 0% (SITC 041) to 9.582% (SITC 831). IIT was calculated in two leading exports, neither of which had RCA.

In sum, SITC 6 & 7 constituted the majority of leading exports and imports in EU trade for Ukraine, Russia, Poland and Belarus. Only Ukraine had SITC 6 as the leading industry in exports and profits. SITC 7 was the major import industry for each country and was the leading industry in deficit, except for Poland. Despite the importance of SITC 6 & 7, Poland was the only country in which both achieved IIT. It would, however, be reasonable to expect that SITC 6 could soon be defined as IIT in Lithuania-EU trade, given its IIT value in 2006 was 48.754%. The number of identical commodities to feature

in the leading exports and imports was low. Poland had the greatest amount (7), followed by Lithuania (2) and Ukraine (1).

Tables 4.26 and 4.27 illustrate the leading exports and imports, as defined by factor intensity. The final row states the number of commodities in the leading exports and imports which are held in common with Ukraine by the other states.

Table 4.26: Top 15 Exports to the EU by Factor Intensity, 2006

	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
Primary products	5	6	2	3	4	7
Natural resource-intensive	2	5	2	1	1	0
Labour-intensive	2	0	1	5	3	7
Technology-intensive	2	1	5	5	2	0
Human capital-intensive	4	2	4	1	5	1
In Common with Ukraine	n/a	5	2	5	6	5

Source: own calculations based on UN Comtrade three-digit data, 2006.

It is clear that the majority of exports were primary products and natural resource- and labour-intensive ones. The exception again to this is Poland where human capital- and technology-intensive exports accounted for nine positions. This indicates greater trade restructuring and trade in more similar products which is indicated by a greater overall IIT value of 62.004%. With seven goods each attributed to primary products and labour-intensive ones, Moldova had the least amount of variation. Similarities with Ukraine's exports were high, with at least one-third of all exports being common to each country, except for Poland which only had two in common.

Table 4.27: Top 15 Imports from the EU by Factor Intensity, 2006

	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
Primary products	1	1	1	1	3	0
Natural resource-intensive	0	0	1	0	0	1
Labour-intensive	0	0	0	0	0	5
Technology-intensive	8	8	6	6	8	5
Human capital-intensive	6	6	6	8	4	4
In Common with Ukraine	n/a	11	9	6	7	6

Source: own calculations based on UN Comtrade three-digit data, 2006.

Results for imports were almost the opposite of those for exports. For example, human capital- and technology-intensive goods dominated in every country, accounting for 14 of the top 15 positions in Ukraine, Russia and Lithuania. The number of common import goods with Ukraine and the other countries was also greater than those in exports in each case. Russia had the highest amount (11), followed by Poland (9). Moldova's trade once again showed greater dissimilarities with the other countries: it had the least amount of representation from human capital- and technology-intensive commodities and the highest, in fact the only, representation of labour-intensive commodities.

Table 4.28 illustrates the IIT percentages between the leading RCA industry and the leading IIT industry of each country for 1996, 2001 and 2006. Columns two, six and ten show the leading RCA industry, followed by the IIT percentage for this industry in columns three, seven and eleven. The leading IIT industry is shown in columns four, eight and twelve, with its IIT percentage in columns five, nine and thirteen.

Table 4.28: IIT Percentages for the Leading RCA & IIT Industries in EU Trade, 1996-2006

	1996				2001				2006			
	RCA	**IIT %**	**IIT**	**IIT %**	**RCA**	**IIT %**	**IIT**	**IIT %**	**RCA**	**IIT %**	**IIT**	**IIT %**
Ukraine	2	6.71	9	92.58	2	11.10	9	79.73	2	16.02	3	31.12
Russia	2	6.98	8	22.92	2/3	9.35/0.64	8	36.45	2	7.38	3	82.22
Poland	2	45.78	9	58.11	2	44.74	9	74.16	0	55.47	9	88.00
Lithuania	2	9.48	6	39.89	2	14.00	6	41.12	2	29.37	9	91.29
Belarus	2	6.45	8	43.10	2	3.81	9	90.61	2	9.30	9	90.06
Moldova	2	2.42	9	56.81	8	7.37	0	20.67	8	14.35	1	57.37

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

On no occasion was the leading RCA industry the same as the leading IIT industry. SITC 2 remained the leading RCA industry throughout in Ukraine, Russia, Lithuania and Belarus. It changed from SITC 2 to SITC 0 in Poland and from SITC 2 to SITC 8 in Moldova. The leading IIT industry only remained constant in Poland (SITC 9). Although the IIT percentages for the leading RCA industry increased by various amounts on each occasion in all countries, the values remained low throughout and the leading RCA industry was characterised as IT. The only exception to this was in Poland where the leading RCA industry (SITC 0) attained IIT with 55.473% (+19.214%). Thus, it can be

said that those strong RCA industries were usually identified as IT, despite increasing values. In addition, those industries with significant RCA failed to achieve an IIT value greater than 9.582%. Therefore, the relationship between significant RCA and IIT was weak. Further evidence of this can be found in the fact that those leading industries with weak IIT often had significant RCA and that some industries with IIT not only had a low RCA, but some had a negative RCA. Poland had the most leading commodities with IIT at 15; however, not a single one had RCA. Conversely, Russia had only one commodity with IIT, yet 13 defined as having significant RCA. Poland finished with the highest IIT percentage (62.004%), whereas Russia had the lowest (6.707%).

5. Conclusion

In IIT the leading industry initially for Ukraine, Poland and Moldova was SITC 9. Only Poland retained this. SITC 9 was replaced in Ukraine (SITC 3), and in Moldova (SITC 1). However, SITC 9 became the leading IIT industry in Lithuania, replacing SITC 6, and Belarus where SITC 8 lost its position as the main export industry and leading IIT one. In Russia the leading IIT industry changed from SITC 8 to SITC 3, also the main export industry and most profitable one. The industry with the lowest IIT percentage originally belonged to SITC 3 in Russia, Poland and Moldova, but changed to SITC 9, SITC 4 and SITC 5 respectively. However, SITC 3 also became the poorest one in Lithuania and Belarus, replacing SITC 4 & 1 correspondingly. Ironically, SITC 3 also became the main export industry and most profitable one in these two countries. As was the case with Poland, Ukraine's lowest IIT percentage was calculated in SITC 4, but was initially the same as its most profitable industry (SITC 2). Poland and Lithuania were the only countries to have increased percentages throughout all ten one-digit industries. They also saw the highest cumulative growth in overall IIT percentage; however, only the former experienced IIT. EU Accession largely facilitated increased IIT in both which allowed Poland to have eight industries exhibit IIT and Lithuania four, compared with only one in Poland in 1996. This rapid IIT growth validates the findings of Grubel and Lloyd (1971, 1975) that regional trading agreements and customs unions facilitate such growth. Moldova was the only other country to increase its cumulative percentage, but lost one IIT industry. Belarus witnessed the largest decline, followed by Russia and Ukraine.

Despite greater percentage decreases, Belarus and Russia acquired one IIT industry apiece, whereas Ukraine lost two. Moreover, SITC 2 was the only industry to exhibit growing IIT values throughout.

SITC 6 & 7 commodities were the majority of leading exports and imports for Ukraine, Russia, Poland and Belarus, but only in Poland did these industries attain IIT. The number of identical goods in these leading exports and imports was low, with only Poland achieving a notable number (7). The majority of exports according to factor intensity were primary products, natural resource- and labour-intensive ones. Poland again was an exception: human capital- and technology-intensive dominated. This indicated greater restructuring and movement towards IIT. Except for Poland, similarities with Ukraine's exports were identified throughout, indicating greater competition. Regarding imports, human capital- and technology-intensive goods dominated each country, and the number of imports between Ukraine and the other countries was universally greater than exports. The relationship between the leading RCA industry and IIT one was weak: leading RCA industries remained IT in all, except Poland in 2006. The highest overall IIT percentage belonged to Poland, and the worst was calculated in Russia.

When industries are examined against IIT percentages and export and import figures, there are some interesting observations to be noted. For example, each country's initial leading IIT industry increased its exports, with the exception of SITC 9 in Ukraine and Moldova. In terms of overall exports, however, the initial leading IIT industry in each country, except in Poland, experienced a decrease. This occurred at the expense of the new leading IIT industry in three countries (Ukraine, Lithuania and Belarus), but not in two others (Russia and Moldova). In three countries this export growth as a percentage of total exports constituted the leading figure (Russia, Lithuania and Belarus). Similar observations were made concerning the poorest IIT industry: total exports from this industry fell in half of the countries (Ukraine, Russia and Poland), yet rose in the other half (Lithuania, Belarus and Moldova). Moreover, the new industry with the poorest IIT percentage experienced export growth in all but two countries (Poland and Moldova). In a comparison of the percentage changes in exports by SITC industries and changes in SITC industries as a percentage of overall exports with the greatest increase in IIT

percentages no relationships existed. However, a comparison of the percentage changes in imports by SITC industries and changes in SITC industries as a percentage of overall imports with the greatest decrease, or lowest increase in the examples of Poland and Lithuania, in IIT percentages illustrated a very weak relationship with the former, and no such relationship with the latter. Having concluded IIT developments in EU trade, the final chapter evaluates IIT in CIS trade.

CHAPTER 5

EMPIRICAL ANALYSES OF INTRA-INDUSTRY TRADE WITH THE COMMONWEALTH OF INDEPENDENT STATES

Having explained IIT, the key issues surrounding it, the GLI measurement and examined such developments in EU trade, this chapter presents additional empirical analyses of IIT in CIS trade. It is largely structured in the same manner as the previous chapter. Section 1 examines IIT increases, or lack thereof, and again compares this with RCA developments between 1996 and 2006. Section 2 analyses export and import growth with the CIS and assesses the changes in each country's trade balance, before addressing the key IIT developments across the 10 one-digit SITC industries and the cumulative changes in overall IIT percentage. Section 3 illustrates each country's top 15 exports and imports on the basis of their monetary values and determines the nature of their respective factor intensities. This chapter will also continue an important theme of the previous one: the nature of the relationship between RCA and IIT.

1. IIT Results in 1996

When analysing Ukraine-CIS trade, one must consider that most Ukrainian exports are duty-free and have MFN status or greater access to joint CIS and WTO members like Armenia, Georgia, Kyrgyzstan and Moldova. Moreover, CIS free trade is largely based on bilateral agreements and is intra-bloc in nature. FTAs in the CIS allow for protectionist measures (safeguards, anti-dumping measures and quantitative restrictions) that may only be unilaterally introduced on a temporary basis under specified circumstances.

Table 5.01: Ukraine-CIS Trade Developments, 1996						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	1,698.054	23.01	51.341	0.46	1,646.713	3.002
SITC 1	168.867	2.29	24.791	0.22	144.076	6.271
SITC 2	379.444	5.14	485.714	4.36	-106.270	22.832
SITC 3	138.740	1.88	7,832.783	70.27	-7,694.043	3.295
SITC 4	90.584	1.23	3.579	0.03	87.005	7.154
SITC 5	759.594	10.29	323.453	2.90	436.141	44.385
SITC 6	2,423.116	32.84	987.499	8.86	1,435.617	35.381
SITC 7	1,535.391	20.81	1,352.323	12.13	183.068	58.834
SITC 8	185.334	2.51	84.320	0.76	101.013	55.717
SITC 9	0.042	0.01<	0.566	0.01	-0.525	13.860
Total	7,379.165	100	11,146.369	100	-3,767.204	21.961

Source: own calculations based on UN Comtrade three-digit data, 1996.

As evident in Table 5.01, Ukraine's CIS trade balance was negative ($3,767.204m). The highest trade surplus was calculated in SITC 0 ($1,646.713m), with a slightly lower profit recorded in SITC 6 ($1,435.617m). The overwhelming majority of deficit originated in SITC 3 at $7,694.043m and 70.27% of all imports, 104.24% greater than the total deficit. Main exports were in SITC 6 which totalled $2,423.116m and 32.84% of overall exports, followed by SITC 0 at $1,698.054m and 23.01%. It is not surprising that traditional Ukrainian industries developed and prioritised under the Soviet system, such as iron and steel (SITC 6) and machinery and equipment (SITC 7), should figure prominently in exports to the CIS. However, such commodities did not enjoy equivalent competition in EU trade. Total exports were valued at $7,379.165m, whereas for imports this figure was $11,146.369m.

The calculated levels of IIT indicated that trade in all but two industries was IT. The exceptions were SITC 7 (58.834%) & SITC 8 (55.717%). However, the latter played a minimal role, having only 2.51% of total exports and less than 1% of imports. The leading export industry (SITC 6) had a value of 35.381%, but the industry exhibiting the greatest amount of profit (SICT 0) had the lowest IIT value (3.002%). This industry was also the leader in RCA. Ukraine's overall level of IIT stood at 21.961%.

Table 5.02: Russia-CIS Trade Developments, 1996						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	402.262	2.60	2,541.564	17.90	-2,139.302	24.796
SITC 1	33.584	0.22	634.144	4.47	-600.560	10.059
SITC 2	601.028	3.88	1,210.634	8.53	-609.606	27.259
SITC 3	6,152.349	39.71	1,213.758	8.55	4,938.591	29.323
SITC 4	24.486	0.16	88.885	0.62	-64.399	40.816
SITC 5	667.305	4.31	631.877	4.45	35.428	71.165
SITC 6	1,826.834	11.79	2,840.607	20.00	-1,013.773	59.091
SITC 7	2,143.852	13.84	1,834.549	12.92	309.303	73.353
SITC 8	282.514	1.82	295.775	2.08	-13.261	75.313
SITC 9	3,357.192	21.67	2,907.600	20.48	449.593	92.824
Total	15,491.406	100	14,199.393	100	1,292.014	55.064

Source: own calculations based on UN Comtrade three-digit data, 1996.

Table 5.02 illustrates that Russia's balance was positive ($1,292.014m). As was the case with EU trade in 1996, it was the only country to have a positive balance. The industry with the greatest surplus was SITC 3 ($4,938.591m). In comparison, Ukraine's leading profit industry (SITC 0) was only 33.34% of this value, whilst Russia's SITC 3 was 282.24% greater than the positive overall balance. The largest deficit was calculated in SITC 0 at $2,139.302m and 17.90% of overall imports, but the greatest concentration of imports was found in SITC 9 with 20.48%. Main exports were in SITC 3 at $6,152.349m and 39.71% of total exports, followed by SITC 9 at $3,357.192m and 21.67%. Overall exports and imports were worth $15,491.406m and $14,199.393m. These figures were 109.93% and 27.39% higher than Ukraine's total exports and imports.

Half of the industries experienced IIT (SITC 5, 6, 7, 8 & 9). The highest percentage belonged to SITC 9 (92.824%), followed by SITC 8 (75.313%). The former was significant with at least one-fifth of total export and import shares. The latter, however, only accounted for 1.82% of exports and 2.08% of imports. Russia's leading export industry and most profitable one (SITC 3) had an IIT value of 29.323%. Although this was higher than Ukraine's most profitable industry (SITC 0) by 26.321%, it was lower than its leading export industry (SITC 6) by 6.058%. The lowest value was calculated in SITC 1 (10.059%), thus not one industry had a single-digit percentage. As was the case with Russia-EU trade in 1996, SITC 2 was the leading RCA industry.

However, its IIT value was higher (27.259%) than it was in EU trade (6.948%). Russia's overall IIT was 55.064%, which was 33.103% greater than Ukraine's. In 1996, Russia not only had a positive balance, but a notable proportion of IIT.

Table 5.03: Poland-CIS Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	883.260	29.86	142.003	4.25	741.257	7.183
SITC 1	66.738	2.26	1.148	0.04	65.590	3.382
SITC 2	15.393	0.52	517.795	15.50	-502.402	5.016
SITC 3	200.892	6.79	2,108.875	63.13	-1,907.983	3.850
SITC 4	14.741	0.50	6.054	0.18	8.687	14.003
SITC 5	428.822	14.50	211.068	6.32	217.754	12.417
SITC 6	405.694	13.72	185.013	5.54	220.681	21.145
SITC 7	344.218	11.64	146.420	4.38	197.798	32.501
SITC 8	597.195	20.19	22.206	0.66	574.989	3.359
SITC 9	0.586	0.02	0.00	0.00	0.586	0.000
Total	2,957.539	100	3,340.582	100	-383.043	9.196

Source: own calculations based on UN Comtrade three-digit data, 1996.

As shown in Table 5.03, Poland had a negative balance ($383.043m). This figure was, however, only 10.17% of Ukraine's deficit. The most profitable industry was SITC 0 at $741.257m, as it was for Ukraine, but the difference was 122.15% less ($905.456m). In comparison, SITC 0 served as the main discrepancy for Russia. Poland also shared its greatest deficit with Ukraine in SITC 3 at $1,907.983m and 63.13% of import shares. Some interesting observations can be made: Poland's deficit here represented only 24.8% of that incurred by Ukraine in the same industry, the share of imports was 7.14% less and the amount was 398.11% greater than the overall deficit, compared with 104.24% for Ukraine. Poland's main exports were in SITC 0 ($883.260m and 29.86% of total exports), followed by SITC 8 ($597.195m and 20.19%). SITC 0 also played a leading role in Ukraine's exports, although it was responsible for 92.25% more ($814.794m) yet 6.85% less in export totals. Overall exports were valued at $2,957.539m and imports at $3,340.582m. These totals were 40.08% and 29.97% of Ukraine's corresponding figures.

Unlike Ukraine and Russia, Poland did not have a single IIT industry: the highest IIT value was in SITC 7 (32.501%). It was IIT in Ukrainian and Russian trade. In the former it was the leading industry and 26.333% higher than Poland's value, whereas in

the latter the value was 40.852% greater. The leading export and profit industry (SITC 0) registered only 7.183%, although this value was 4.181% greater as Ukraine's most profitable one. SITC 0 was the leading RCA industry for both. Russia's leading export and profit industry (SITC 3) fared better at 29.323%. Poland had a total of six industries characterised by single-digit percentages (SITC 0, 1, 2, 3, 8 & 9), whereas Ukraine had four (SITC 0, 1, 3 & 4). The lowest value was in SITC 8 (3.359%). SITC 9 had 0%, but it did not register imports. Poland had the lowest level of overall IIT at 9.196%, a value which was 12.765% less than Ukraine's.

Table 5.04: Lithuania-CIS Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	328.346	21.53	108.457	7.23	219.889	24.720
SITC 1	11.870	0.78	5.481	0.37	6.389	62.129
SITC 2	42.315	2.77	154.007	10.27	-111.692	23.616
SITC 3	278.271	18.24	700.448	46.72	-422.177	19.526
SITC 4	6.898	0.45	2.682	0.18	4.216	55.986
SITC 5	150.211	9.85	149.368	9.96	0.843	58.068
SITC 6	195.309	12.80	183.766	12.26	11.543	49.959
SITC 7	389.447	25.53	116.873	7.80	272.574	34.577
SITC 8	122.208	8.01	14.720	0.98	107.488	19.790
SITC 9	0.408	0.04	63.346	4.23	-62.938	1.280
Total	1,525.283	100	1,499.148	100	-26.135	30.681

Source: own calculations based on UN Comtrade three-digit data, 1996.

As illustrated by Table 5.04, Lithuania's balance was also negative ($26.135m), a mere 0.7% of Ukraine's deficit. SITC 7 had the highest surplus ($272.574m), followed by SITC 0 ($219.889m). The latter was the most profitable industry for Ukraine and Poland, but the value calculated for Lithuania was only 13.35% and 29.66% of their respective figures. Lithuania further shared the same deficit with both in SITC 3 ($422.177m); however, this figure was 5.49% and 22.13% of the totals for Ukraine and Poland. SITC 3 accounted for 46.72% of Lithuania's total imports and the monetary figure was a significant 1,515.37% greater ($396.042m) than its deficit. In comparison, SITC 3 accounted for 23.55% more of Ukraine's total imports, but only 104.24% in its contribution to the overall deficit. The leading exports were in SITC 7 ($389.447m and

25.53% of total exports). It was ranked third in Ukraine's exports with a value $1,145.944m greater, but 4.72% less regarding export market share. Exports totalled $1,525.283m, and imports were worth $1,499.148m, figures which were 20.67% and 13.45% of Ukraine's.

Lithuania had three IIT industries (SITC 1, 4 & 5). At 62.129% SITC 1 posed a problem: its contributions to export and import shares amounted to less than 1%. This was also applicable to SITC 4 (55.986%). SITC 5 proved more influential (58.068%) because it accounted for almost 10% of total export and import flows. SITC 1 & 4 registered single-digit percentages in Ukraine, but the value of SITC 5 was 13.683% more in Lithuania's trade. The country's leading export and profit industry (SITC 7) attained 34.577%, but this was less than its percentage in Ukraine (58.834%) and Russia (73.353%). The poorest value was recorded in SITC 9 (1.280%). As was the case with Ukraine and Poland, Lithuania had SITC 0 as its leading RCA industry; however, its IIT value of 24.720% was significantly better. Lithuania's overall IIT was 30.681%, 8.72% greater than Ukraine's.

Table 5.05: Belarus-CIS Trade Developments, 1996

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	25.068	0.72	225.238	5.40	-200.170	13.531
SITC 1	1.166	0.04	17.894	0.43	-16.728	9.758
SITC 2	36.180	1.04	22.629	0.54	13.551	9.698
SITC 3	85.473	2.45	7.151	0.17	78.322	9.789
SITC 4	0.299	0.01<	30.267	0.73	-29.968	1.423
SITC 5	46.467	1.34	90.306	2.17	-43.839	36.485
SITC 6	130.806	3.75	257.821	6.18	-127.015	36.573
SITC 7	216.596	6.22	144.275	3.46	72.321	47.576
SITC 8	34.128	0.98	16.146	0.39	17.982	29.738
SITC 9	2,907.600	83.46	3,356.949	80.53	-449.349	92.827
Total	3,483.783	100	4,168.676	100	-684.893	81.605

Source: own calculations based on UN Comtrade three-digit data, 1996.

Illustrated by Table 5.05, Belarus also had a negative balance ($684.893m), which was 18.18% of Ukraine's. Belarus' greatest trade surplus, like Russia's, was found in SITC 3 ($78.322m), although this was only 1.59% of Russia's value, followed closely by

SITC 7 ($72.321m), which was Lithuania's most profitable industry ($272.574m). With a negative balance of $449.349m accounting for 80.53% of total imports and 65.61% of the total deficit, Belarus was the only country to have SITC 9 as its leading industry in deficit. It was virtually non-existent in Ukrainian and Polish trade, but was more active in Russian trade where its contribution to total exports and imports averaged 21%. SITC 9 constituted Belarus' main export and import industry at $2,907.600m and 83.46% of export shares and at $3,356.949m and 80.53% of imports. No country had its trade so dominated by one single industry; in fact, four export industries and five import ones accounted for less than 1% overall. Total exports and imports were valued at $3,483.783m and $4,168.676m. Exports were 47.21% of Ukraine's, and imports were 37.4%.

Only SITC 9 (92.827%) illustrated IIT. With a value merely 0.003% less, this was also Russia's leading one. The next closest was SITC 7 (47.576%). It was Poland's leading one, but its value was 15.075% less. Belarus' leading profit industry (SITC 3) only achieved a value of 9.789%, contributing only 2.45% of overall exports and 0.17% of imports. SITC 4 (1.423%) had the lowest value. As was the case with Russia, Belarus had SITC 2 as its leading RCA industry in CIS and EU trade. Although its value in CIS trade (9.698%) was greater by 3.248%, it was still a significant 17.561% less than Russia's SITC 2. Given the predominance of SITC 9 as the leading export and import industry, in addition to its substantial percentages, Belarus attained the highest overall IIT value in this study (81.605%). This was 59.644% more than Ukraine's, and greater than Russia's by 26.541%.

Table 5.06:Moldova-CIS Trade Developments, 1996						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	180.969	33.32	38.464	5.89	142.505	17.210
SITC 1	231.694	42.67	3.354	0.51	228.340	2.854
SITC 2	5.808	1.07	22.465	3.44	-16.657	26.871
SITC 3	0.088	0.01	373.723	57.27	-373.635	0.047
SITC 4	2.860	0.53	0.235	0.05	2.625	15.200
SITC 5	11.243	2.07	39.777	6.10	-28.534	32.835
SITC 6	45.238	8.33	101.354	15.53	-56.116	26.034
SITC 7	43.671	8.04	62.393	9.56	-18.722	39.811
SITC 8	21.486	3.96	10.759	1.65	10.727	36.283
SITC 9	0.000	0.00	0.052	0.01<	-0.052	0.000
Total	543.057	100	652.576	100	-109.519	13.512

Source: own calculations based on UN Comtrade three-digit data, 1996.

As shown in Table 5.06, Moldova's balance was also negative ($109.519m), only 2.91% of Ukraine's. Its greatest surplus was found in SITC 1 ($228.340m), followed by SITC 0 ($142.505m), a figure 8.65% of Ukraine's. With a negative balance of $373.635m and 57.27% of overall imports, SITC 3 exhibited the largest deficit. Moreover, it was 241.16% greater than the total deficit. Ukraine, Poland and Lithuania also shared SITC 3 as their largest deficit industry, whereas it was the most profitable for Russia and Belarus. In comparison, Moldova's SITC 3 discrepancy was only 4.86% of Ukraine's, its share of overall imports was 13% less and yet it was 136.91% greater in its contribution to the total deficit. Moldova's main exports were in SITC 1 ($231.694m and 42.67% of the total exports), followed by SITC 0 ($180.969m and 33.32%). These two were responsible for 75.99% of all exports, whereas in Ukraine they accounted for 25.3%. The total value of exports and imports was $543.057m and $652.576m. However, these figures were only 7.36% and 5.85% of Ukraine's.

Moldova's trade was unquestionably IT: the highest percentage was calculated in SITC 7 (39.811%). Ukraine and Poland also had it as their leading one, but Moldova's value was 19.023% less and 7.310% more respectively. The main export and profit industry (SITC 1) only had a value of 2.854%. Concerning largest exports and profits, this value was the lowest of any of the countries; however, the poorest value belonged to SITC 3 (0.047%). SITC 0 was Moldova's leading RCA industry, with an IIT figure of

17.210%. Moldova's overall IIT was 13.512%, or 8.449% less than Ukraine's. Only Poland's overall IIT percentage was poorer in 1996.

1.1 IIT Results in 2001

Table 5.07 illustrates that Ukraine's negative trade balance with the CIS further increased by 10.46% in 2001 to $4,161.229m.

Table 5.07:Ukraine-CIS Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	631.796	13.63	183.134	2.08	448.662	22.923
SITC 1	82.334	1.78	57.436	0.65	24.898	78.696
SITC 2	353.959	7.64	282.781	3.22	71.178	19.526
SITC 3	128.706	2.78	5,992.621	68.14	-5,863.915	3.532
SITC 4	87.717	1.89	0.479	0.01<	87.238	1.089
SITC 5	348.706	7.53	272.160	3.09	76.546	52.486
SITC 6	1,627.566	35.12	840.073	9.55	787.493	47.930
SITC 7	1,224.105	26.42	1,069.375	12.16	154.730	59.065
SITC 8	148.004	3.19	89.686	1.02	58.318	64.953
SITC 9	1.056	0.02	7.433	0.09	-6.377	24.879
Total	4,633.949	100	8,795.178	100	-4,161.229	27.239

Source: own calculations based on UN Comtrade three-digit data, 2001.

The industry with the greatest surplus changed to SITC 6 ($787.493m) from SITC 0, now in second place having fallen by 72.75% ($1,198.051m). Having been the second most profitable industry, SITC 6 experienced a decrease of 45.15% ($648.124m). Its margin of profit was 52.18% less ($859.220m) than the previous leading profit industry (SITC 0). The majority of the deficit stayed in SITC 3 ($5,863.915m), but this also represented a decrease of 23.79% ($1,830.128m). This industry constituted 68.14% of total imports (+2.13%), and was 40.92% greater than the total deficit. In 1996, it was 104.24% greater than the total deficit. Main exports remained in SITC 6 ($1,627.566m and 35.12% of total exports). This was an increase in total export shares by 2.28%, but in monetary terms it marked a decline of 32.83% ($795.550m). 2001 data illustrated something very unique: Ukraine's overall exports decreased by 37.2% to $4,633.949m,

and for imports by 21.09% to $8,795.178m. This was the first example of any country experiencing contracting exports and imports.

The number of industries exhibiting IIT doubled to four, with the inclusion of SITC 1 (78.696%) and SITC 5 (52.486%) to SITC 7 (59.065%) and SITC 8 (64.953%). However, SITC 1 & 8 had low export and import volumes. Only two industries experienced decreasing percentages (SITC 2 & 4). Ukraine's leading export and profitable industry (SITC 6) experienced significant growth by 12.549% to 47.930%. An even greater increase of 72.425% was calculated in SITC 1. Although it registered less than 0.01% of total imports, SITC 4 witnessed a decline of 6.065% to finish with the lowest percentage at 1.089%. The leading RCA industry remained SITC 0, which increased its figure to 22.923% (+19.921%). Notwithstanding significant contractions in overall imports and exports, Ukraine's overall IIT grew by 5.278% to 27.239%.

Whereas Ukraine's negative balance further increased, Russia managed not only to maintain a positive one ($5,049.499m), as illustrated in Table 5.08, but also experienced an increase of 290.82% ($3,757.485m).

Table 5.08: Russia-CIS Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT
SITC 0	376.001	2.35	969.533	8.88	-593.532	40.367
SITC 1	61.261	0.39	397.812	3.64	-336.551	15.853
SITC 2	245.878	1.54	1,334.305	12.22	-1088.427	16.288
SITC 3	5,781.516	36.20	715.657	6.55	5,065.859	21.777
SITC 4	30.071	0.20	68.681	0.64	-38.610	52.842
SITC 5	558.939	3.50	323.561	2.96	235.378	58.156
SITC 6	1,358.077	8.50	1,763.728	16.15	-405.651	63.295
SITC 7	2,047.084	12.82	1,197.448	10.97	849.636	63.296
SITC 8	260.943	1.63	185.808	1.70	75.135	63.824
SITC 9	5,249.262	32.87	3,963.000	36.29	1,286.262	86.038
Total	15,969.032	100	10,919.533	100	5,049.499	56.137

Source: own calculations based on UN Comtrade three-digit data, 2001.

The industry with the greatest surplus remained SITC 3 ($5,065.859m), a modest increase of 2.58%. This industry was merely one-third of a percent greater than the total positive balance, compared with 282.24% earlier. The industry with the largest deficit

switched from SITC 0 to SITC 2 ($1,088.427m and 12.22% of total imports). However, SITC 9 retained its position as the leading import industry at 36.29% (+15.81%). In deficit, SITC 2 increased by 78.55% ($478.821m) and its share of imports by 3.69%, whereas SITC 0 decreased by 72.26% ($1,545.770m) and its share of overall imports by 9.02%. Main exports remained in SITC 3 ($5,781.516m and 36.20% of total exports). However, this was a decrease of 6.03% ($370.833m) and 3.51% in export shares. The value of overall exports increased by 3.08% to $15,969.032m, but for imports it decreased by 23.1% to $10,919.533m. In contrast, Ukraine's CIS imports and exports shrank. The decline in Russia's imports was 2.01% greater.

Russia had six IIT industries (SITC 4, 5, 6, 7, 8 & 9) and its trade was predominantly IIT. However, six industries experienced declining percentages (SITC 2, 3, 5, 7, 8 & 9), the largest of which was SITC 5 falling by 13.009% to 58.156%. Similar IIT declines were also observed in SITC 7 & 8. SITC 5 was tied with SITC 2, as the leading RCA industry, with the latter experiencing a similar IIT decline (-10.971%). The fact that SITC 5 was tied for the leading RCA industry and was IIT provided only the second example of such a combination in this study. The only other example of a leading RCA industry characterised by IIT was for SITC 0 in Poland-EU trade in 2006. The highest percentage remained in SITC 9 at 86.038% (-6.786%), as export and import overall shares grew by more than 10%. Furthermore, the value for the largest export and profit industry (SITC 3) decreased by 7.546% to 21.777%. SITC 1 repeated as the lowest industry at 15.853% (+5.794%). Despite numerous examples of declining values, a marginal increase of 1.073% was observed in Russia's overall IIT value to 56.137%. This figure was 28.898% more than Ukraine's.

Table 5.09: Poland-CIS Trade Developments, 2001						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	392.213	15.63	86.082	1.64	306.131	13.232
SITC 1	17.500	0.70	1.375	0.03	16.125	14.570
SITC 2	17.218	0.68	334.724	6.38	-317.506	4.930
SITC 3	49.288	1.96	4,081.704	77.84	-4,032.416	2.384
SITC 4	10.535	0.41	2.937	0.06	7.598	43.602
SITC 5	339.059	13.51	299.865	5.72	39.194	10.830
SITC 6	669.098	26.66	319.685	6.10	349.413	21.940
SITC 7	475.279	18.94	74.689	1.42	400.590	17.892
SITC 8	419.628	16.72	13.047	0.25	406.581	5.556
SITC 9	120.229	4.79	29.437	0.56	90.792	39.337
Total	2,510.047	100	5,243.545	100	-2,733.498	8.450

Source: own calculations based on UN Comtrade three-digit data, 2001.

Table 5.09 shows Poland's trade deficit at $2,733.498m. As was the case with Ukraine, Poland experienced a growing deficit, but at a substantial rate of 613.63% ($2,350.455m). In comparison, Ukraine's deficit increased by 10.46%. Moreover, Poland's deficit was 65.69% of Ukraine's, whereas the previous figure was 10.17%. The most profitable industry moved from SITC 0, which fell by 58.7% ($435.126m), to SITC 8 at $406.581m, ironically also a decrease of 29.29% ($168.408m). SITC 8 was followed closely by SITC 7 at $400.590m, an increase of 102.52% ($202.792m). SITC 7 & 8 were not as profitable in Ukraine's trade, despite positive balances, and Polish trade here was IT in contrast. Poland's largest industry in deficit, like Ukraine's, remained SITC 3 at $4,032.416m and 77.84% of all imports, growth of 111.34% ($2,124.433m) and 14.71%. It was also greater than the amount of overall deficit by 47.52% ($1,298.918m). However, Ukraine's SITC 3 dependency decreased in 2001 by 23.79% ($1,830.128m) and 2.13% in overall imports. Main exports changed from SITC 0 to SITC 6 ($669.098m and 26.66% of total exports), representing an increase of 64.93% ($263.404m) and 12.94%. It was also Ukraine's best for exports, with figures $958.468m and 8.46% higher. Total exports stood at $2,510.047m (-15.13%), and imports grew by 56.96% to $5,243.545m. This import growth was the highest in 2001. Poland's decrease in exports was 21.89% less than Ukraine's, whereas Poland experienced import growth rather than decline, like Ukraine and Russia.

Poland's CIS trade remained unquestionably IT. Formerly the industry with the highest percentage, SITC 7 fell by 14.609% to 17.892%. Conversely, SITC 4 gained 29.599% to become the highest at 43.602%. The leading export industry (SITC 6) and the leading industry in profit (SITC 8) had low values of 21.940% and 5.556%. In contrast, Ukraine's leading export and profit industry (SITC 6) had a stronger value of 47.930%, as did Russia's leading export and profit industry (SITC 3) with 21.777%. As the industry with the lowest figure (2.384%), SITC 3 replaced SITC 8. SITC 0 remained the leading RCA industry, increasing its IIT value by 6.140%. In total, six industries experienced higher percentages (SITC 0, 1, 4, 6, 8 & 9), but the overall IIT figure declined to 8.450% (-0.746%). This again qualified as the lowest such value, a figure which was 18.789% less than Ukraine's.

Table 5.10: Lithuania-CIS Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	155.720	17.23	50.957	2.73	104.763	18.457
SITC 1	4.612	0.51	3.432	0.18	1.180	4.201
SITC 2	13.621	1.51	124.688	6.68	-111.067	14.587
SITC 3	96.640	10.70	1,267.589	67.88	-1,170.949	8.229
SITC 4	4.580	0.50	1.578	0.08	3.002	51.253
SITC 5	73.913	8.18	94.652	5.07	-20.739	33.859
SITC 6	109.078	12.07	161.829	8.67	-52.751	54.545
SITC 7	388.544	43.00	143.267	7.67	245.277	23.556
SITC 8	51.405	5.69	19.162	1.03	32.243	44.193
SITC 9	5.470	0.61	0.106	0.01<	5.364	3.813
Total	903.583	100	1,867.260	100	-963.677	19.330

Source: own calculations based on UN Comtrade three-digit data, 2001.

As shown in Table 5.10, Lithuania's balance remained negative ($963.677m), representing a considerable increase of 3,587.3%. This development resembled the growing deficits of Ukraine (10.46%) and Poland (613.63%). It is ironic, however, that EU trade in 2001 illustrated contracting deficits; Lithuania's amounted to 23.16%, as compared to 0.7% previously. SITC 7 retained the greatest surplus at $245.277m, but this was a decrease of 10.01% ($27.297m). Likewise, SITC 3 had the largest deficit at $1,170.949m and accounted for 67.88% of all imports. These figures grew by 177.36%

($748.772m) and 21.16%. As was the case with Poland and Ukraine, SITC 3 was greater than the overall deficit: the amount was 21.51% for Lithuania, whereas for Poland and Ukraine the figures were 47.52% and 40.92% correspondingly. Main exports remained in SITC 7 at $388.544m and 43% of total exports. This represented a decline of 0.23% ($0.903m), but its share of overall exports rose by 17.47%. Exports decreased by 40.76% to $903.583m, but imports increased by 24.55% to $1,867.260m. Ukraine and Lithuania experienced similar contractions in export values, with Lithuania's 3.65% higher, but import growth did not occur in Ukraine.

Lithuania had two industries achieve IIT: SITC 4 (51.253%) & SITC 6 (54.545%). The latter had the highest percentage (+4.586%), whereas the former leading industry (SITC 1) fell by 57.928% to 4.201%. A total of seven experienced declining percentages (SITC 0, 1, 2, 3, 4, 5 & 7). Despite increasing its total export share, SITC 7, the leading profit industry, experienced a decline of 11.021% to an overall figure of 23.556%. By contrast, Ukraine's SITC 7 was characterised by IIT (59.065%). SITC 9 repeated the poorest value at 3.813% (+2.533%). No change was recorded in the leading RCA industry (SITC 0); however, its IIT value fell by 6.263%. Given the large amount of industries witnessing a decline in percentages, it is not surprising that Lithuania's overall level of IIT fell appreciably by 11.351% to 19.330%. This value was 7.909% less than Ukraine's value.

Table 5.11: Belarus-CIS Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT
SITC 0	484.407	10.78	465.833	8.04	18.574	29.616
SITC 1	18.931	0.42	110.250	1.90	-91.319	29.300
SITC 2	148.392	3.30	261.881	4.52	-113.489	19.443
SITC 3	246.150	5.48	2,178.323	37.58	-1,932.173	7.740
SITC 4	4.761	0.11	68.361	1.17	-63.600	12.849
SITC 5	373.446	8.31	503.820	8.69	-130.374	49.178
SITC 6	1,037.345	23.09	1,206.960	20.82	-169.615	51.008
SITC 7	1,608.363	35.79	763.227	13.17	845.136	44.709
SITC 8	529.897	11.79	196.857	3.40	333.040	49.696
SITC 9	41.839	0.93	41.214	0.71	0.625	99.148
Total	4,493.531	100	5,796.726	100	-1,303.195	35.724

Source: own calculations based on UN Comtrade three-digit data, 2001.

Table 5.11 provides data for Belarus', where the balance likewise remained negative at $1,303.195m (+90.28%), reflecting the overall trend of increasing deficit. Belarus' deficit was 31.32% of Ukraine's, whereas the previous figure was 18.18%. As was the case with Lithuania, Belarus' greatest surplus was in SITC 7 at $845.136m, a figure 244.56% ($599.859m) higher. Having increased its positive balance by 1,068.59% ($772.815m), SITC 7 showed significant growth. Belarus' greatest deficit was also found in SITC 3 at $1,932.173m and 37.58% of overall imports. In comparison with Ukraine, these figures were 203.49% less ($3,931.742m) and 30.56% less in import shares. Formerly the most profitable industry, SITC 3 experienced a significant increase in deficit ($2,010.495m) and in import growth (37.41%). Moreover, the deficit in SITC 3 was 48.26% greater than the overall deficit, compared with its contribution of 40.92% higher than Ukraine's deficit. Belarus also shared its main export industry with Lithuania: SITC 7 at $1,608.363m and 35.79% of overall exports, figures which rose by 642.56% ($1,391.767m) and 29.57%. Compared with Lithuania, these figures were 313.95% ($1,219.819m) more, but 7.21% less of total export shares. Overall exports were $4,493.531m (+28.98%) and total imports were $5,796.726m (+39.05%). Belarus experienced the greatest export growth in 2001. These developments contrasted Ukraine's trade, which experienced deteriorating export and import figures. In fact, Belarus was the only country in 2001 to experience export and import growth.

In terms of IIT the previous leading industry (SITC 9) rose by 6.321% to 99.148%. However, SITC 9 went from having greater than 80% of total imports and exports to less than 1% of both, effectively becoming insignificant. Russia also had the same leading industry, but with a value 13.110% less. Belarus' only other IIT industry was SITC 6, having increased its value to 51.008% (+14.435). However, like Ukraine, only two industries experienced declining percentage (SITC 3 & 7). The leading industry in exports and profits (SITC 7) had a value of 44.709% (-2.867%). However, this was 21.153% greater than Lithuania's SITC 7, also its leading industry in exports and profits. Having declined by 2.049% to 7.740%, SITC 3 replaced SITC 4 to become the industry with the lowest percentage. It was also the poorest for Poland, and its value was 5.356% less. SITC 7 & 8 tied as the leading RCA industries and both were IT (44.709% & 49.696% respectively). Despite the fact eight industries had increasing percentages,

Belarus' overall level of IIT declined drastically by 45.881% to 35.724%. This figure was 8.485% more than Ukraine's. The majority of Belarus' trade subsequently became IT, notwithstanding having the highest export growth.

Table 5.12: Moldova-CIS Trade Developments, 2001

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	64.570	18.65	12.111	3.56	52.459	17.927
SITC 1	192.990	55.73	5.094	1.50	187.896	2.616
SITC 2	22.137	6.39	11.799	3.47	10.338	39.672
SITC 3	0.005	0.01<	190.515	56.01	-190.510	0.005
SITC 4	3.797	1.10	0.127	0.03	3.670	3.606
SITC 5	5.816	1.68	30.670	9.02	-24.854	27.922
SITC 6	21.129	6.10	45.999	13.52	-24.870	20.283
SITC 7	27.820	8.03	36.890	10.85	-9.070	53.326
SITC 8	8.010	2.31	6.815	2.00	1.195	31.150
SITC 9	0.000	0.00	0.130	0.04	-0.130	0.000
Total	346.274	100	340.150	100	6.124	13.909

Source: own calculations based on UN Comtrade three-digit data, 2001.

As illustrated in Table 5.12, Moldova's balance became positive ($6.124m). In 2001, only Moldova experienced an increase ($115.643m) in its balance to become positive. However, this positive balance was merely 0.12% of Russia's. The greatest surplus stayed in SITC 1 ($187.896m), but this marked a decline of 17.71% ($40.444m). This value was 2,968.19% greater ($181.772m) than the positive balance. SITC 3 remained the leading industry in deficit at $190.510m, a figure which decreased by almost half ($183.125m) and represented 56.01% of all imports. Such figures in Ukraine were 2,978% ($5,673.405m) and 12.13% higher respectively. Moldova's main exports remained in SITC 1, totalling $192.990m and 55.73% of export shares, a decline of 16.7% ($38.704m) yet an increase of 13.06% in total exports. Overall exports and imports were $346.274m and $340.150m. These figures fell by 36.24% and 47.88%. Thus, Moldova's positive balance was largely the result of a significant contraction in imports rather than the result of export growth. Ukraine and Moldova experienced similar decreases in exports, with Ukraine's decline a marginal 0.78% greater, but Moldova's

import decline was significant at 26.79% greater. Only Ukraine and Moldova experienced diminishing exports and imports.

Outside of SITC 7 which retained its leading position and had an IIT value of 53.326% (+13.515%), Moldova's trade very much remained IT. The main export and profit industry (SITC 1) had an insignificant percentage of 2.616% (-0.238%). Growth was observed in three industries (SITC 0, 2 & 7). The greatest decline was in SITC 4 from 15.200% to 3.606%. However, the industry with the lowest value was SITC 3 (0.005%). Although it witnessed a decline of 0.042%, it totalled less than 0.01% of all exports. SITC 3 was also the poorest performing industry in Poland and Belarus, with corresponding values of 2.384% and 7.740%. The leading RCA industry remained SITC 0 and only increased its IIT value by 0.717%. Moldova's overall IIT was merely 13.909% (+0.397%), and 13.330% less than Ukraine's.

1.2 IIT Results in 2006

Ukraine-CIS trade in 2006, the first full year after the removal of VAT on Russian exports of oil and gas (SITC 3), witnessed significant increases in the monetary values, as shown in Table 5.13. This was in direct contrast to the preceding period which experienced considerable decline.

Table 5.13: Ukraine-CIS Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	1,054.163	8.32	475.807	2.36	578.356	44.359
SITC 1	419.058	3.31	185.914	0.92	233.144	59.748
SITC 2	600.860	4.75	428.040	2.12	172.819	22.601
SITC 3	404.335	3.19	11,955.230	59.23	-11,550.895	4.372
SITC 4	152.756	1.21	0.339	0.01<	152.417	0.443
SITC 5	797.323	6.29	1,017.731	5.04	-220.408	52.680
SITC 6	4,918.623	38.83	2,742.959	13.59	2,175.664	47.858
SITC 7	3,771.597	29.78	2,967.551	14.70	804.047	53.847
SITC 8	449.526	3.55	310.480	1.54	139.045	65.206
SITC 9	97.286	0.77	100.828	0.50	-3.542	98.212
Total	12,665.527	100	20,184.879	100	-75,19.352	32.741

Source: own calculations based on UN Comtrade three-digit data, 2006.

Ukraine's trade deficit increased again: it grew by 80.7% to $7,519.352m, whereas it previously was 10.46%. There were no changes in the greatest profit, deficit, export and import industries. The leading profit industry was SITC 6 at $2,175.664m, which grew appreciably by 176.28% ($1,388.171m). The leading industry in deficit remained SITC 3 at $11,550.895m, a rise of 96.98% ($5,686.980m), which accounted for 59.23% of total imports (-8.91%). This marked a reversal of this industry's declining deficit, but it continued to constitute a greater amount than the overall deficit by 53.61%, compared with 40.92% in 2001 and 104.24% in 1996. Main exports continued in SITC 6 ($4,918.623m), a significant increase of 202.21% ($3,291.057m), accounting for 38.83% of overall exports. This substantial increase in monetary terms was not repeated in export market growth, as SITC 6 rose only 3.71%. Overall exports grew by 173.32% to $12,665.527m and overall imports totalled $20,184.879m (+129.5%). This growth was in contrast to 2001, when overall exports and imports contracted by 37.2% and 21.09%.

The number of IIT industries increased to five. In addition to the same industries from 2001 (SITC 1, 5, 7 & 8), the leading industry was now SITC 9 (98.212%). Its value grew by 73.333%, but it remained insignificant in exports and imports, with less than 1% overall. Six industries witnessed growth (SITC 0, 2, 3, 5, 8 & 9). The leading export and profit industry (SITC 6) experienced a marginal decrease of 0.072% to 47.858%. With a further decrease of 0.646% to 0.443%, SITC 4 remained the poorest industry. SITC 0 not only remained the leading RCA industry, but it further experienced an increase of 21.436% to have an overall IIT value of 44.359%. This value was superior to that calculated for its leading RCA industry in EU trade, in which SITC 2 had an IIT value of 16.023%. Ukraine's total IIT increased again to 32.741% (+5.502%).

Table 5.14: Russia-CIS Trade Developments, 2006						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	1,514.106	3.58	1,690.361	7.56	-176.255	39.224
SITC 1	419.536	0.99	501.459	2.24	-81.923	42.626
SITC 2	880.142	2.08	2,348.525	10.50	-1,468.383	14.743
SITC 3	9,001.474	21.27	1,133.057	5.07	7,868.417	22.113
SITC 4	53.977	0.12	86.101	0.37	-32.124	76.354
SITC 5	1,809.378	4.28	809.553	3.62	999.825	45.560
SITC 6	5,543.980	13.10	4,657.189	20.82	886.791	63.342
SITC 7	5,700.000	13.47	3,542.283	15.84	2,157.717	59.952
SITC 8	815.305	1.93	440.347	1.97	374.958	60.304
SITC 9	16,577.328	39.18	7,158.960	32.01	9,418.368	60.321
Total	42,315.226	100	22,367.835	100	19,947.391	50.623

Source: own calculations based on UN Comtrade three-digit data, 2006.

Table 5.14 illustrates Russia's trade data. Its balance remained positive for the third time, rising in a comparable manner to 2001 (+290.82%). In 2006, its balance improved by 295.04% to $19,947.391m. Unlike Russia-EU trade in 2006, this cannot fully be attributed to increased prices and volumes for exports of SITC 3 commodities; the industry's share of overall exports fell by 14.93% to 21.27% and no longer remained the most profitable one, as profits rose by 55.32% ($2,802.558m). SITC 9 replaced it as the industry with the greatest trade surplus at $9,418.368m, an increase of 632.23% ($8,132.106m). Despite such growth, SITC 9 only accounted for 47.22% of the positive balance. SITC 2 remained the industry with the largest deficit at $1,468.383m and 10.5% of imports. This was an increase of 34.91% ($379.956m), yet a decrease of 1.72% in imports. The country's main export industry changed from SITC 3 to SITC 9 at $16,577.328m and 39.18% of overall exports. This represented substantial monetary growth of 215.8% ($11,328.066m), but only 6.31% greater export shares. Russia's overall exports increased by 164.98% to $42,315.226m, and its imports rose by 104.84% to $22,367.835m. Export and import increases were 8.34% and 24.66% lower than Ukraine's.

The trade of commodities across half of the industries was IIT (SITC 4, 6, 7, 8 & 9), and four experienced an increase in their percentage (SITC 1, 3, 4 & 6). SITC 4 became the industry with the greatest value at 76.354% (+23.512%). The industry with

the greatest exports and profits (SITC 9) had 60.321% (-25.717%), which further caused it to lose its position as the leading industry. The poorest changed from SITC 1 to SITC 2 (14.743%). Formerly with the lowest percentage, SITC 1 grew by 26.773% to 42.626%. SITC 2 remained the country's leading RCA industry in EU and CIS trade, although the IIT value in the latter was greater by 7.355%. Russia was unique in this regard. For the second time, Russia's overall IIT declined to 50.623% (-5.514%). However, this value was still 17.882% greater than Ukraine's.

Table 5.15: Poland-CIS Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	991.863	9.57	147.249	0.95	844.614	16.408
SITC 1	29.092	0.28	9.105	0.05	19.987	18.948
SITC 2	72.074	0.70	712.433	4.58	-640.359	8.927
SITC 3	167.270	1.61	9,965.300	64.07	-9,798.030	0.512
SITC 4	17.773	0.17	43.064	0.28	-25.291	2.796
SITC 5	1,595.899	15.40	678.634	4.36	917.265	18.244
SITC 6	2,891.008	27.90	1,371.310	8.82	1,519.698	22.101
SITC 7	3,308.199	31.93	190.545	1.23	3,117.654	10.676
SITC 8	1,286.686	12.42	49.536	0.32	1,237.150	6.956
SITC 9	1.838	0.02	2,386.443	15.34	-2,384.605	0.008
Total	10,361.702	100	15,553.619	100	-5,191.917	8.263

Source: own calculations based on UN Comtrade three-digit data, 2006.

As evident in Table 5.15, Poland's balance remained negative ($5,191.917m). This represented an increase of 89.94%, similar to the growth in Ukraine's deficit (80.7%). Formerly the most profitable, SITC 8 was replaced by SITC 7 at $3,117.654m, a rise of 678.27% ($2,717.064m). The industry with the leading deficit remained SITC 3 at $9,798.030m, a figure which grew by 142.98% ($5,765.614m). This industry accounted for 64.07% of overall imports (-13.77%), and was 88.72% greater than the overall deficit. In comparison, Ukraine's SITC 3 was 53.61% greater than its deficit and had a similar percentage of imports (59.23%), but its deficit was 17.89% higher than Poland's. Main exports switched from SITC 6 to SITC 7 which accounted for $3,308.199m and 31.93% of total exports, corresponding growth of 596.05% ($2,832.920m) and 12.99%. Overall exports were calculated at $10,361.702m (+312.81%), and imports at $15,553.619m

(+196.62%). Poland's export growth was the highest in 2006. The expansion in exports was 139.49% greater than what Ukraine experienced, and for imports this figure was 67.12% higher.

However, significant growth in overall exports and imports did not translate into improvements in IIT percentages. Poland never recorded a single IIT industry in CIS trade. Despite having six industries show improvements (SITC 0, 1, 2, 5, 6 & 8), as was the case with Ukraine, Poland's highest value was only 22.101% for SITC 6 (+0.161%). SITC 4 previously had the highest value (43.602%), yet this collapsed to only 2.796% in 2006. The industry with the lowest percentage changed for the third time: SITC 9 had 0.008% (-39.329%). Even the leading profit industry (SITC 7) contracted from 17.892% to 10.676%. SITC 0 remained the leading RCA industry, increasing its IIT value by 3.176%. In comparison, it was also the leading RCA industry in EU trade; however, its IIT value was 55.473% in what is only the second example of where a leading RCA industry also enjoyed IIT. Poland's overall IIT value remained the poorest at 8.263% (-0.187%). This figure was 24.478% lower than Ukraine's.

Table 5.16: Lithuania-CIS Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	507.022	16.84	103.550	1.92	403.472	25.353
SITC 1	28.969	0.96	11.940	0.23	17.029	17.964
SITC 2	42.548	1.41	252.965	4.69	-210.417	8.655
SITC 3	181.730	6.04	4,118.854	76.31	-3,937.124	8.069
SITC 4	2.994	0.10	24.486	0.45	-21.492	8.019
SITC 5	261.980	8.70	267.236	4.95	-5.256	25.040
SITC 6	353.107	11.73	354.122	6.56	-1.015	40.873
SITC 7	1,401.974	46.57	188.244	3.49	1,213.730	16.287
SITC 8	229.739	7.63	56.894	1.05	172.846	34.392
SITC 9	0.498	0.02	18.957	0.35	-18.459	0.000
Total	3,010.561	100	5,397.248	100	-2,386.687	15.653

Source: own calculations based on UN Comtrade three-digit data, 2006.

As illustrated in Table 5.16, Lithuania's negative balance was $2,386.687m. Although this represented growth of 147.66%, it was not as significant as the previous increase (3,587.3%). Lithuania's deficit was 31.74% of Ukraine's, whereas it was

previously 23.16%. For the third time SITC 7 remained the industry with the greatest surplus at $1,213.730, a value 394.84% higher ($968.453m). SITC 7 was also Poland's most profitable, but its value was 156.87% greater ($1,903.924m). There was no change in deficit: SITC 3 experienced growth of 236.23% ($2,766.175m) to $3,937.124m. This accounted for 76.31% of all imports (+8.43%), and the negative balance was greater than the total deficit by 64.96%, compared with 21.51% previously. Although Ukraine had 59.23% of its imports from SITC 3 and Lithuania had 76.31%, Ukraine's level of deficit here was 193.38% higher ($7,613.771m). SITC 7 remained the leading export industry, having grown to $1,401.974m and 46.57% of all exports. This represented a rise of 260.83% ($1,013.430m) and 3.57% in export shares. Poland also had the same leading profit industry; however, it was 135.97% greater ($1,906.225m), and had 14.64% less share of overall exports. Lithuania witnessed an increase of 233.18% and 189.05% in its total exports and imports to $3,010.561m and $5,397.248m. This growth was correspondingly 59.86% and 59.55% greater than Ukraine's.

Lithuania for the third time experienced a decline of IIT industries. As was the case with Poland, it had no IIT industry: its former leading one (SITC 6) declined from 54.545% to 40.873% and SITC 4 fell from 51.253% to 8.019%. Nevertheless, SITC 6 retained its position as the leading industry. This was also SITC 6 for Poland, but at 18.772% less. Such was the magnitude of decline that only two industries (SITC 0 & 1) managed to increase their percentages. SITC 0 continued as the leading RCA industry, although its IIT value was 4.015% less than the leading one in EU trade (SITC 2). No country had fewer improving industries. Poland and Lithuania shared the same low IIT industry: SITC 9 registered 0% in comparison to 3.813% earlier, although it must be kept in mind that on both occasions total exports and imports were less than 1%. Even Lithuania's leading export and profit industry (SITC 7) witnessed a decrease to 16.287% (-7.269%). Poland also had the same one designated as such, but its value was 5.611% less. The country's overall IIT value also decreased to 15.653% (-3.677%), which was 17.088% less than Ukraine's.

Table 5.17: Belarus-CIS Trade Developments, 2006						
Industry	(x_i)	**%**	(m_i)	**%**	$(x_i - m_i)$	**IIT %**
SITC 0	1,304.183	15.14	617.306	4.26	686.877	21.539
SITC 1	5.317	0.05	172.798	1.19	-167.481	5.970
SITC 2	160.485	1.86	600.944	4.15	-440.459	13.873
SITC 3	542.499	6.30	7,266.767	50.13	-6,724.268	12.681
SITC 4	5.882	0.07	93.102	0.64	-87.220	4.644
SITC 5	488.480	5.67	960.580	6.63	-472.100	50.335
SITC 6	1,838.978	21.35	2,467.887	17.02	-628.909	47.107
SITC 7	3,163.827	36.73	1,524.254	10.51	1,639.573	45.919
SITC 8	849.932	9.87	326.549	2.25	523.383	49.177
SITC 9	255.275	2.96	466.590	3.22	-211.315	70.727
Total	8,614.858	100	14,496.777	100	-5,881.919	32.600

Source: own calculations based on UN Comtrade three-digit data, 2006.

Data for Belarus, as shown in Table 5.17, illustrates a deficit of $5,881.919m (+351.35%). This was 78.22% of Ukraine's, a growing trend of convergence which followed a similar figure of 31.32%. As was the case with Poland and Lithuania, Belarus' greatest profits were in SITC 7 at $1,639.573m, an increase of 94% ($794.437m). This figure was 47.41% less ($1,478.081m) than Poland's value; however, it was 35.09% more ($425.843m) than Lithuania's SITC 7 profits. Furthermore, like Poland and Lithuania, the largest amount of Belarusian exports were in SITC 7 at $3,163.827m and 36.73% of overall exports, a rise of 96.71% ($1,555.464m) and 0.94%. In comparison, Belarus' SITC 7 had 4.8% more total exports than Poland's, but 9.84% less than Lithuania's. The largest deficit remained in SITC 3 at $6,724.268m (+248.02%). It also represented the largest deficit for Ukraine and Poland, yet the Belarusian deficit was 58.21% and 68.63% of each. However, Belarus' deficit here was 70.79% greater than Lithuania's. It is worth noting again that SITC 3 was Belarus' most profitable industry in 1996; nonetheless, subsequent change illustrated a growing dependency on this industry, as its percentage of overall imports further grew to 50.13% from 37.58% and only 0.17% in 2001 and 1996. In 2006, it accounted for 14.32% more than the overall deficit, compared with 48.26% in 2001. In Ukraine it was 53.61% greater than the total deficit. With total exports valued at $8,614.858m and imports at $14,496.777m, each grew by 91.71% and 150.09%. Only Belarus had its CIS imports increase faster than its exports.

Compared with Ukraine, export growth was 81.61% less, but import growth was 20.59% higher.

SITC 5 & 9 were the only IIT industries, although SITC 6, 7 & 8 were very close. The leading figure belonged to SITC 9 again at 70.727% (-28.421%). This distinction also applied to Ukraine, but its value was greater by 27.485%. However, this may be explained by growth in exports and imports which amounted to approximately 3% of overall totals. Only three industries illustrated growing percentages (SITC 3, 5 & 7). The leading one in exports and profits (SITC 7) had a value of 45.919% (+1.210%). As SITC 7 was also the leading export and profit industry for Poland and Lithuania, the value calculated for Belarus was greater by 35.243% and 29.632% correspondingly. The lowest value was calculated at 4.644% in SITC 4. Ukraine shared this as its poorest (0.443%). Moreover, SITC 4 also had the lowest percentage in 1996 for Belarus (1.423%). SITC 8 remained the leading RCA industry, with a more substantial IIT figure (49.177%) than the leading RCA industry in EU trade (SITC 2 at 9.299%). All three core CIS economies had better IIT percentages recorded for their leading RCA industry in CIS trade. Belarus' overall IIT percentage declined for a third time: it was only 32.600% (-3.124%). This value was 0.141% less than Ukraine's.

Table 5.18: Moldova-CIS Trade Developments, 2006

Industry	(x_i)	%	(m_i)	%	$(x_i - m_i)$	IIT %
SITC 0	80.011	18.86	78.302	7.67	1.709	20.725
SITC 1	150.806	35.56	54.376	5.33	96.430	9.644
SITC 2	24.436	5.76	31.977	3.13	-7.541	12.938
SITC 3	0.057	0.01	455.865	44.66	-455.808	0.025
SITC 4	8.377	1.98	0.747	0.07	7.630	7.771
SITC 5	16.661	3.93	62.056	6.08	-45.395	38.015
SITC 6	75.400	17.78	189.093	18.52	-113.693	24.891
SITC 7	41.259	9.73	102.832	10.07	-61.573	40.584
SITC 8	27.120	6.39	45.066	4.41	-17.946	56.583
SITC 9	0.000	0.00	0.467	0.06	-0.467	0.000
Total	424.127	100	1,020.781	100	-596.654	17.704

Source: own calculations based on UN Comtrade three-digit data, 2006.

As Table 5.18 illustrates, Moldova's balance returned to being negative at $596.654m, 7.93% of Ukraine's deficit. Its main surplus remained in SITC 1 ($96.430m). However, this represented a declining trend: in 2006 this figure decreased by 48.68% ($91.466m) and in 2001 by 17.71% ($40.444m). No other country experienced continual declines in the value of its most profitable industry. Moreover, SITC 0 witnessed a further decline ($1.709m), a figure which fell by 96.74% ($50.750m). The industry of largest deficit remained SITC 3 at $455.808m, an increase of 139.25% ($265.298m), which accounted for 76.39% of the total deficit. It accounted for 44.66% of all imports (-11.35%). The discrepancy in SITC 3 was significantly smaller than the deficit calculated for the other five countries, and only 3.95% of Ukraine's. Main exports remained in SITC 1 at $150.806m with 35.56% of total exports. Once again the monetary value shrank by 21.86% ($42.184m), with a significant decrease of 20.17% of total export shares. Overall exports rose by 22.48% to $424.127m, whereas imports grew by 200.1% to $1,020.781m. This represented the lowest increase in exports, yet the highest import growth in 2006. Export growth was 150.84% less than Ukraine's, but import growth was 70.6% higher.

SITC 7, the only IIT industry in 2001, fell by 12.742% to 40.584%. Moldova's only IIT industry was SITC 8 at 56.583% (+25.433%). The main export and profit industry (SITC 1) had 9.644% (+7.028%). The lowest one for the third time was SITC 3, the leading industry in deficit, with only 0.025%. The leading RCA industry remained SITC 0, which experienced an IIT increase of only 2.798%. This was still greater than the IIT percentage achieved by the leading RCA industry in EU trade (SITC 8 at 14.354%). Moldova had the highest number of percentage increases across its industries with a total of seven (SITC 0, 1, 2, 4, 5, 6 & 8), and its overall IIT percentage grew by 3.795% to 17.704%. Nonetheless, this figure was 15.037% less than Ukraine's overall level.

2. An Assessment of CIS Trade Developments

With the salient points of export and import growth outlined alongside developments in trade balances, Table 5.19 illustrates fundamental data on changes in IIT percentages and shall be referenced throughout, based on an individual examination of each one-digit SITC industry. This table is identical in presentation and applicability to

Table 4.19; however, the data is pertinent only to CIS trade. Likewise, subsequent percentages are referenced to this table, unless noted otherwise.

Table 5.19: Changes in IIT Percentages in SITC Industries (CIS Trade), 1996-2006

SITC	Ukraine	Russia	Poland	Lithuania	Belarus	Moldova
0 Food & live animals	+41.357%	+14.428%	+9.225%	+0.633%	+8.008%	+3.515%
1 Beverages & tobacco	+53.477%	+32.567%	+15.566%	-44.165%	-3.788%	+6.790%
2 Crude materials	-0.231%	-12.516%	+3.911%	-14.961%	+4.175%	-13.933%
3 Mineral fuels	-1.077%	-7.210%	-3.338%	-11.457%	+2.892%	-0.022%
4 Animal & vegetable oil	-6.711%	+35.538%	-11.207%	-47.967%	+3.221%	-7.429%
5 Chemicals & related	+8.295%	-25.605%	+5.827%	-33.028%	+13.850%	+5.180%
6 Manufactured goods	+12.477%	+4.251%	+0.956%	-9.086%	+10.534%	-1.143%
7 Machinery/Transport	-4.987%	-13.401%	-21.825%	-18.290%	-1.657%	+0.773%
8 Misc. manufactured prd	+9.489%	-15.009%	+3.597%	+14.602%	+19.439%	+20.300%
9 Not classified	+84.352%	-32.503%	+0.008%	-1.280%	-22.100%	N/A
Main Export Industry	6→6	3→9	0→7	7→7	9→7	1→1
Main Import Industry	3→3	9→9	3→3	3→3	9→3	3→3
Most Profitable Industry	0→6	3→9	0→7	7→7	3→7	1→1
Least Profitable Industry	3→3	0→2	3→3	3→3	9→3	3→3
Leading Industry by IIT	7→9	9→4	7→6	1→6	9→9	7→8
Poorest Industry by IIT	0→4	1→2	8→9	9→9	4→4	3→3

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

In terms of each country's main export industry, there was less change than in EU trade: Ukraine (SITC 6), Lithuania (SITC 7) and Moldova (SITC 1) maintained the same one-digit industry throughout. Poland and Belarus experienced changes to SITC 7 from SITC 0 & 9 respectively. This meant that SITC 7 was the main export industry for Poland, Lithuania and Belarus. Russia's changed from SITC 3 to SITC 9. In comparison with the EU, only Ukraine and Poland had the exact same leading export industries (SITC 6 & 7) in 2006. For the exception of Belarus, the main import industry illustrated no change, with SITC 3 remaining constant in Ukraine, Poland, Lithuania and Moldova and SITC 9 in Russia. The main import industry held constant in EU trade; however, it was SITC 7 in contrast. The most profitable industry remained identical to the main export industry in Russia, Poland, Lithuania and Moldova. In Ukraine and Belarus it was the same as the leading export industry by 2006. Ukraine was the only country to have its most profitable industry identical in its EU and CIS trade (SITC 6). What was initially Belarus' most profitable industry in CIS trade became its most profitable in EU trade

(SITC 3). The least profitable industry again mirrored the results of the leading import industry. The sole exception was Russia where SITC 0 was replaced by SITC 2. Neither industry was ever the main import one.

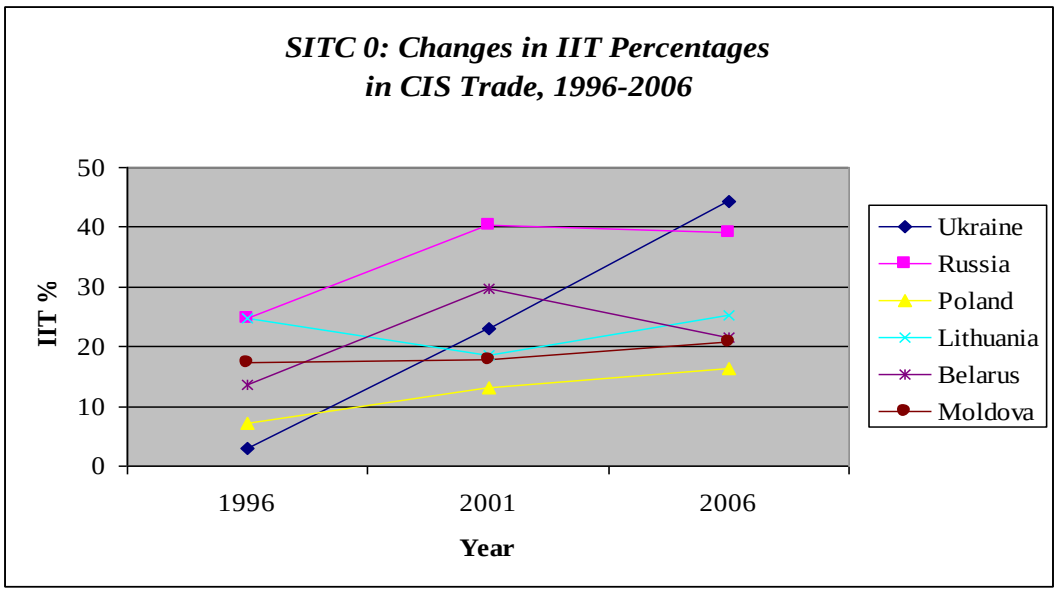
As was the case with EU trade, the leading IIT industry did not exhibit the same consistency as the main RCA industry in CIS trade (SITC 0). The leading IIT industry was initially SITC 7 in three countries (Ukraine, Poland and Moldova), but did not become the leading IIT industry elsewhere. SITC 9 was the leading IIT industry in Russia and Belarus; however, it remained so only in the latter. No given industry illustrated dominance, although SITC 7 & 9 were more prominent, and each country experienced change in its leading IIT industry, except Belarus. Greater stability was observed in the poorest IIT industry, as no change occurred in Lithuania, Belarus and Moldova. This was not the case in EU trade. Concerning each country's initial leading industries according to IIT, exports of SITC 9 in Belarus and SITC 7 in Moldova contracted, whereas SITC 7 in Poland experienced the country's greatest increase (see Table 3.01). In terms of changes in SITC industries as a percentage of overall exports, the initial leading IIT industry in each country, except Belarus, experienced an increase in representation. In fact, three countries saw their initial leading IIT industry the same one that recorded the highest growth as a percentage of overall exports, the largest of which was recorded at 20.29% in SITC 7 in Poland (see Table 3.02). These developments did not occur in EU trade, where decreases in representation were more common to each country, except Poland. In two cases this increase came at the expense of the new leading IIT industry (Russia and Lithuania), yet in three others it did not (Ukraine, Poland and Moldova). A similar development was observed in EU trade. An examination of the initial poorest industry by IIT illustrated that its representation in total exports declined in Ukraine and Poland, yet increased in Russia. This characteristic was also present in EU trade. The new industry to have the poorest IIT value did not record the largest, or even moderate, growth in total exports, as it did in EU trade. In fact, it either experienced no change or a minute decrease. In those countries where no change in the poorest IIT industry was observed, SITC 9 fell in Lithuania (-0.02%), SITC 4 rose in Belarus (0.07%) and no change was calculated for SITC 3 in Moldova.

A comparison of the percentage changes in exports by SITC industries (Table 3.01) and changes in SITC industries as a percentage of overall exports (Table 3.02) with the greatest increase in IIT percentages (Table 5.19) revealed the following information. SITC 9 in Ukraine was an example of an industry with the leading growth in its IIT percentage experience the greatest percentage change in its exports; however, no such leading industry in any country managed to have the greatest increase its representation in total exports. In EU trade, no industry with the leading growth in its IIT percentage experienced the greatest percentage change in its exports either in percentage changes or representation in total exports. In terms of the industry which experienced the greatest increase in its IIT percentage, two industries had the leading values in a country's respective imports. This was shown by SITC 9 in Ukraine and SITC 1 in Poland (Table 3.03). No industry managed this in EU trade. Furthermore, there were no examples of an industry with the greatest increase in IIT percentage also experiencing either the largest increase or decrease as a percentage of overall imports (Table 3.04). This was also observed in EU trade. Nevertheless, there were some examples of some of these relationships in CIS trade, whereas EU trade did not illustrate any such relationships.

A comparison of the percentage changes in imports by SITC industries (Table 3.03) and changes in SITC industries as a percentage of overall imports (Table 3.04) with the greatest decrease in IIT percentages (Table 5.19) produced some further notable observations. The industry with the greatest decrease in its IIT percentage experienced the poorest change in its imports in Ukraine (SITC 4) and Belarus (SITC 9). This relationship existed with two industries in two countries in EU trade (SITC 9 in Ukraine and SICT 3 in Lithuania). There was no example of a relationship between the greatest decrease in an industry as a percentage of overall imports and the greatest decline in IIT percentage in EU trade; however, one such example existed in CIS trade (SITC 9 in Belarus). In terms of the industry which experienced the greatest decrease in its IIT percentage, SITC 4 (Lithuania) and SITC 9 (Belarus) had the poorest percentage changes in exports, whilst SITC 7 (Poland) and SITC 2 (Moldova) experienced the greatest growth in exports (see Table 3.01). In EU trade, there were two examples of the former (SITC 9 in Ukraine and Moldova), and no such example for the latter.

There was one example of an industry with the greatest decrease in its IIT percentage also recording the greatest decrease as a percentage of overall exports (Table 5.02). This was SITC 9 in Belarus. However, two industries with the greatest decrease in their IIT percentage experienced the greatest increase as a percentage of overall exports. This was observed in SITC 9 in Russia and SITC 7 in Poland. In EU trade, there were two examples of the former (SITC 9 in Ukraine and SITC 8 in Belarus), and one for the latter (SITC 3 in Lithuania).

Figure 5.01

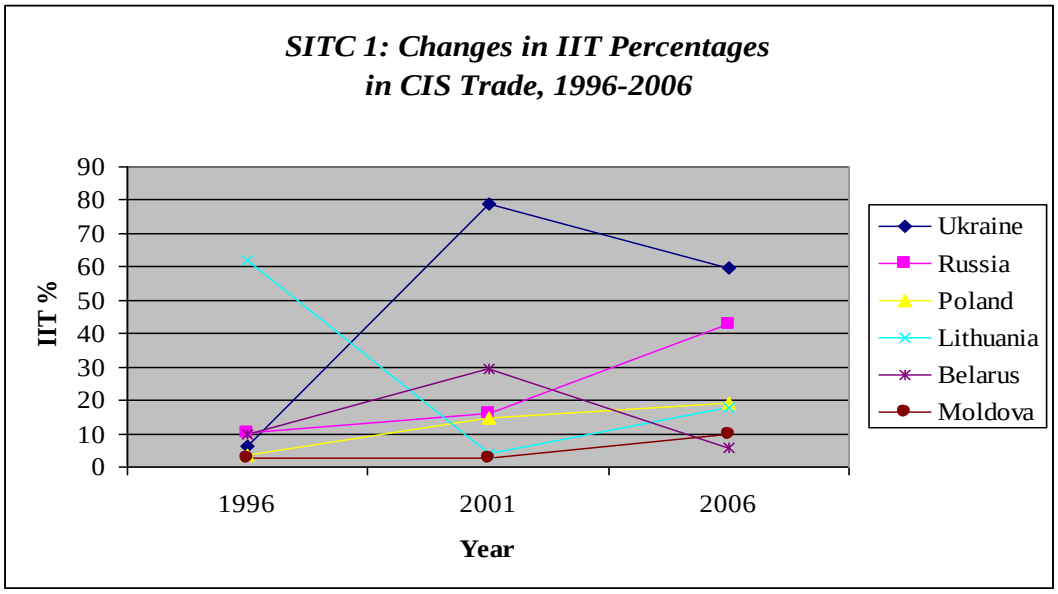


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 5.01 illustrates IIT developments concerning SITC 0 (food & live animals). Although no country attained IIT, unlike in EU trade with Poland and Lithuania, it was the only one in CIS trade for which no decreasing percentages were recorded: the lowest growth was 0.633% for Lithuania. The only industry to do likewise in EU trade was SITC 2. Three other countries also had single-digit percentage growth: Poland (9.225%), Belarus (8.008%) and Moldova (3.515%). However, Belarus' value actually contracted after 2001 and it was the only country to experience a decline in this industry's IIT percentage in EU trade. Russia had stronger growth (14.428%); however, Ukraine experienced the most significant (41.357%), enabling it to go from last place in

1996 at 3.002% to first at 44.359% (Tables 5.01 & 5.13). In doing so, SITC 0 no longer remained Ukraine's poorest IIT industry, but, it did not remain its most profitable one either. This industry further lost its position as the main export and most profitable one in Poland, but it no longer was the least profitable industry in Russia. It is ironic that Lithuania experienced the greatest IIT growth in its SITC 0 trade with the EU (39.038%), but the lowest in CIS trade. Only Belarus did not experience IIT growth here in EU and CIS trade. Furthermore, SITC 0 remained the leading RCA industry for Ukraine, Poland, Lithuania and Moldova. It was the leading one in EU trade only for Poland, and remained one of only two examples where the leading RCA industry was also IIT defined.

Figure 5.02

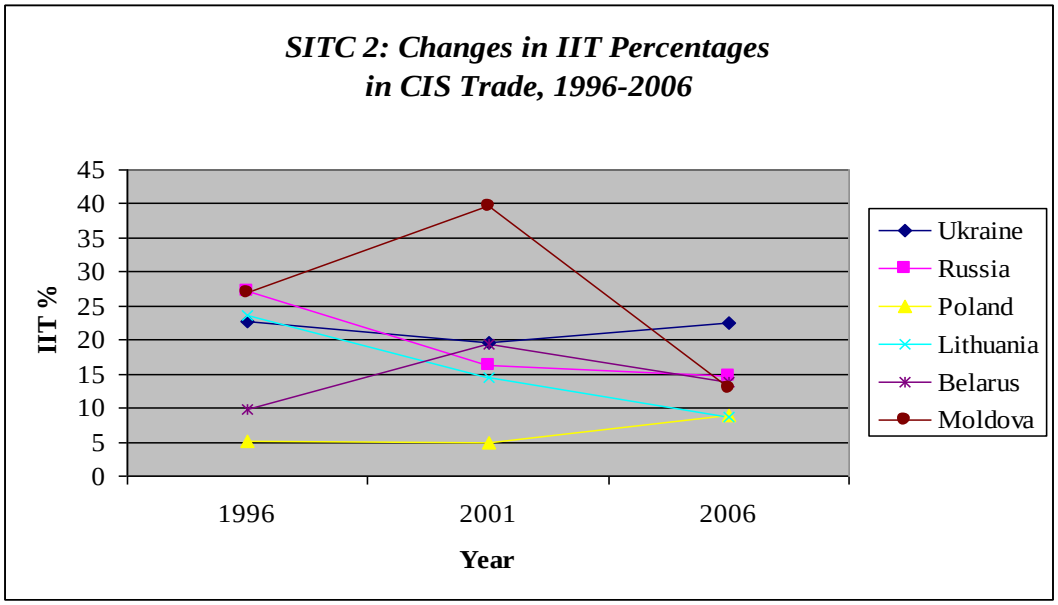


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As evident from Figure 5.02 which illustrates developments for SITC 1 (beverages & tobacco), Ukraine again experienced the single highest increase (53.477%). However, it was apparent that its 2001 value of 78.696% was greater than its 2006 value of 59.748% (Tables 5.07 & 5.13). Russia enjoyed the next highest growth (32.567%) to finish second. Poland recorded its highest percentage growth (15.566%), whereas Moldova had a moderate rise (6.790%). This was a disappointing result, given that SITC 1 constituted Moldova's main export and leading profit industry through the period.

Belarus saw its value decline by 3.788%, but Lithuania witnessed the greatest decrease (-44.165%). Consequently, this Lithuanian industry ceased to exhibit IIT, which is ironic because its IIT value in EU trade increased by 44.541%. Thus, it became IIT in EU trade, yet IT in CIS trade. In 1996, it was Russia's worst, but it was also Lithuania's best at 62.129% (Table 5.04). To compare with EU trade, SITC 1 was Belarus' poorest initially, whereas it became Moldova's best. Ukraine, Poland and Moldova experienced increased IIT values here in EU and CIS trade.

Figure 5.03

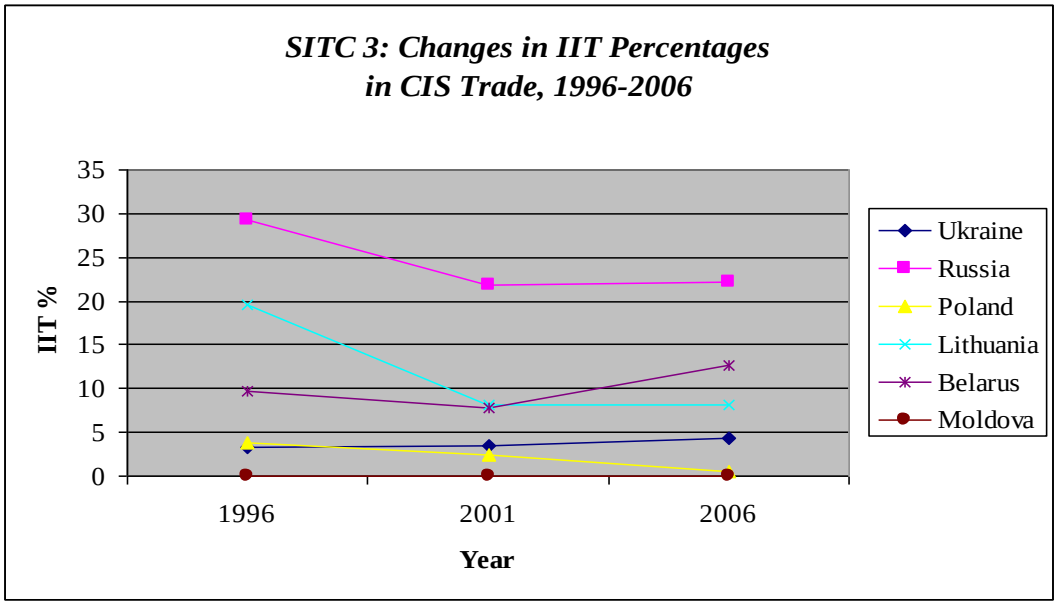


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 5.03 provides IIT data for SITC 2 (crude materials). Progress in this industry was virtually non-existent, for the exception of Belarus (+4.175%) and Poland (+3.911%). This contrasts with its developments in EU trade: it was the only industry in which no country recorded a declining percentage. The three countries with leading values all experienced various declines of: 14.961% (Lithuania), 13.933% (Moldova) and 12.515% (Russia). Moldova's depreciation was its single highest in CIS trade, and marked a fall to 12.938% in 2006 (Table 5.18). Having only experienced a contraction of 0.231%, Ukraine managed to have the highest value in 2006 at 22.601% (Table 5.13), although this was less than the 39.672% recorded for Moldova in 2001 (Table 5.12).

Furthermore, SITC 2 also became Russia's least profitable industry and the one with the lowest at 14.743% (Table 5.14). It was Ukraine's poorest initially in EU trade. SITC 2 was the only industry to enjoy universal IIT growth EU trade; however, only Poland and Belarus maintained such growth in CIS trade, with greater growth for the latter. SITC 2 was the leading RCA industry in EU trade for Ukraine, Russia, Lithuania and Belarus. However, in CIS trade it was only the leading RCA industry for Russia throughout and for Belarus initially.

Figure 5.04

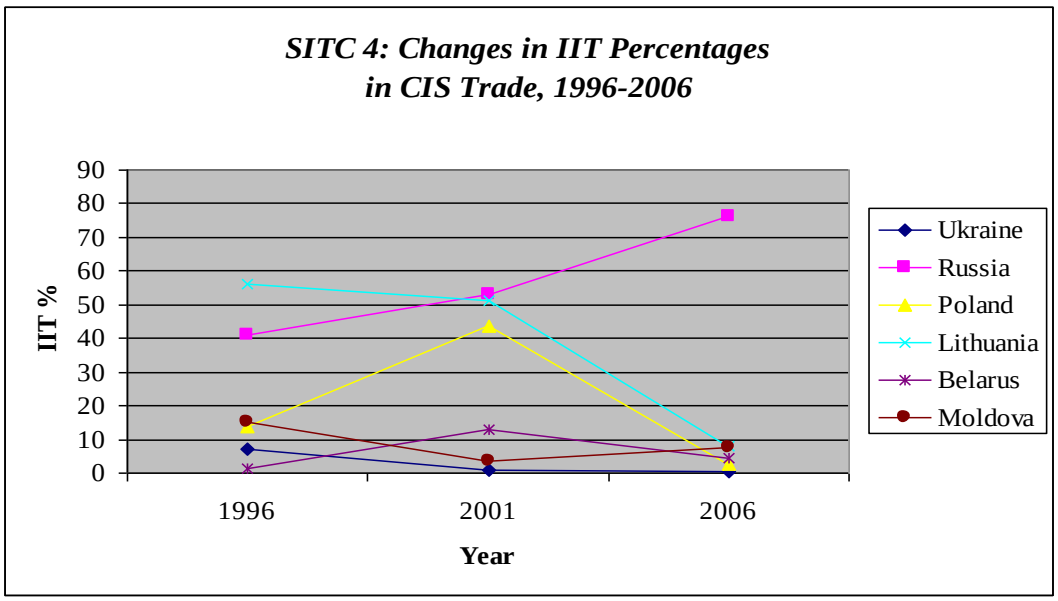


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 5.04 shows that only Belarus increased its IIT in SITC 3 (mineral fuels) by a marginal 2.892%. The other five countries all experienced varying decreases in their values: Lithuania (-11.457%); Russia (-7.210%); Poland (-3.338%); Ukraine (-1.077%); and, Moldova (-0.022%). Russia maintained the highest degree of IIT (22.113%), but the figure was less than the 29.323% calculated in 1996 (Tables 5.14 & 5.02). SITC 3 was the main import and least profitable industry throughout for Ukraine, Poland, Lithuania and Moldova. In Belarus it achieved these distinctions, having replaced SITC 9. In Russia's trade SITC 3 was the main export and profit industry initially, and it was Belarus' most profitable in 1996. Another important feature of SITC 3 was that it retained

the lowest level of IIT in Moldova. In fact, its IIT value was only 0.025% (Table 5.18). To contrast its position in EU trade, it was initially the poorest for Russia, Poland and Moldova, whilst becoming the weakest for Lithuania and Belarus. Conversely, it became the leading IIT industry in Ukraine and Russia. No country was able to increase its IIT in SITC 3 in EU and CIS trade. Declining values were calculated for Ukraine and Belarus in EU trade. Ukraine was the only country to experience shrinking values in its EU and CIS trade.

Figure 5.05

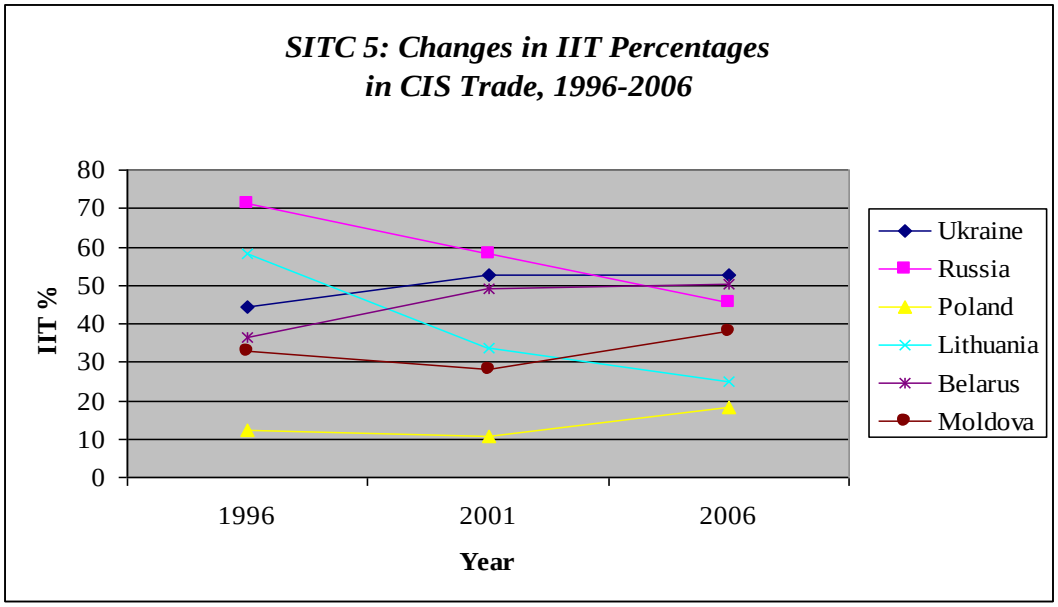


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 5.05 conveys IIT information for SITC 4 (animal & vegetable oil). Not only did Russia experience the greatest increase (35.538%), but it also recorded its single highest growth. Moreover, Russia finished with the leading percentage of 76.354% (Table 5.14). The only other country to record growth was Belarus (3.221%). Lithuania and Ukraine experienced their greatest declines in CIS trade at 47.967% and 6.711% and Poland and Moldova saw decreases of 11.207% and 7.429%. However, Poland's level fell sharply after 2001, whereas Moldova saw marginal growth thereafter. For Belarus, SITC 4 consistently had the lowest IIT value with only 4.644% in 2006 (Table 5.17). It also became Ukraine's poorest at 0.443% (Table 5.13). Conversely, it became Russia's

leading IIT industry. In EU trade it became the weakest in Ukraine and Poland. Russia and Belarus experienced growth in SITC 4 in EU and CIS trade, whereas Ukraine and Moldova witnessed a decrease. Poland and Lithuania saw significant IIT growth here in EU trade, but experienced the opposite in CIS trade.

Figure 5.06

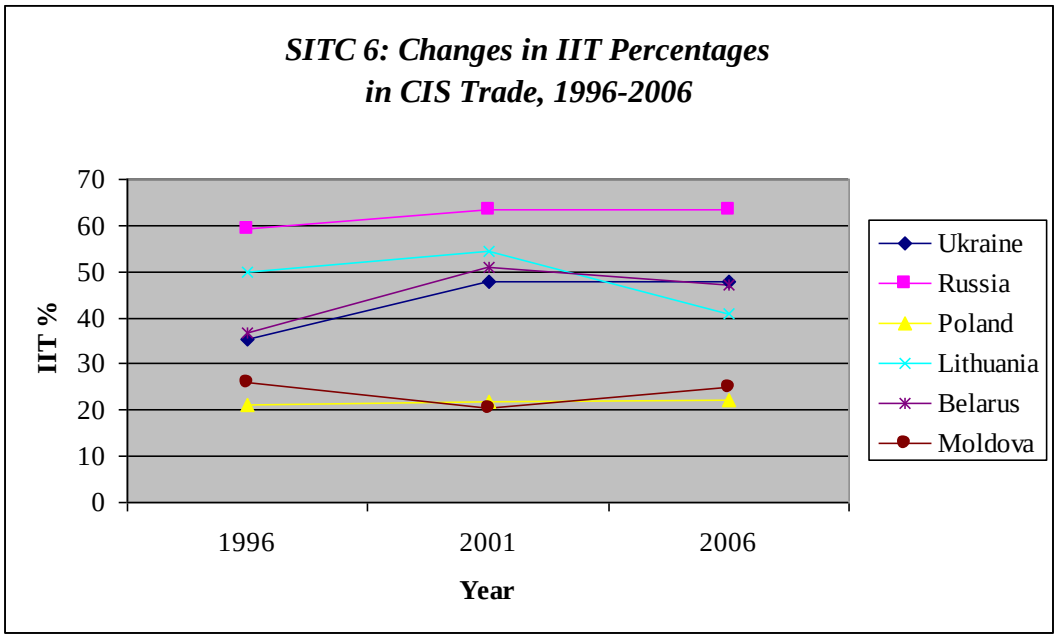


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Results for SITC 5 (chemicals & related products) are displayed in Figure 5.06. Belarus witnessed the greatest growth (13.850%), yet it did not achieve the highest percentage. This belonged to Ukraine with a value of 52.680% (Table 5.13), having experienced lesser growth of 8.295%. Poland and Moldova saw similar growth of 5.827% and 5.180%. However, Lithuania and Russia witnessed substantial decreases of 33.028% and 25.605%, causing each country's to become IT. The value of 71.165% achieved by Russia in 1996 (Table 5.02) was more significant than Ukraine's 2006 value. The lack of greater importance of this industry was emphasised by the fact that it did not even factor into any country's main exports or imports, main profitable industry or leading IIT industry. It did, however, constitute Moldova's poorest in 2006. Ukraine, Poland and Belarus saw IIT increase in EU and CIS trade, whereas Russia's percentage decreased on both accounts. Lithuania's IIT shrunk with the CIS, but in Moldova the opposite was true.

This industry was tied with SITC 2 as Russia's leading RCA industry in 2001. It was one of two examples where the leading RCA industry was further defined by IIT. The only other example was SITC 0 in Poland-EU trade in 2006.

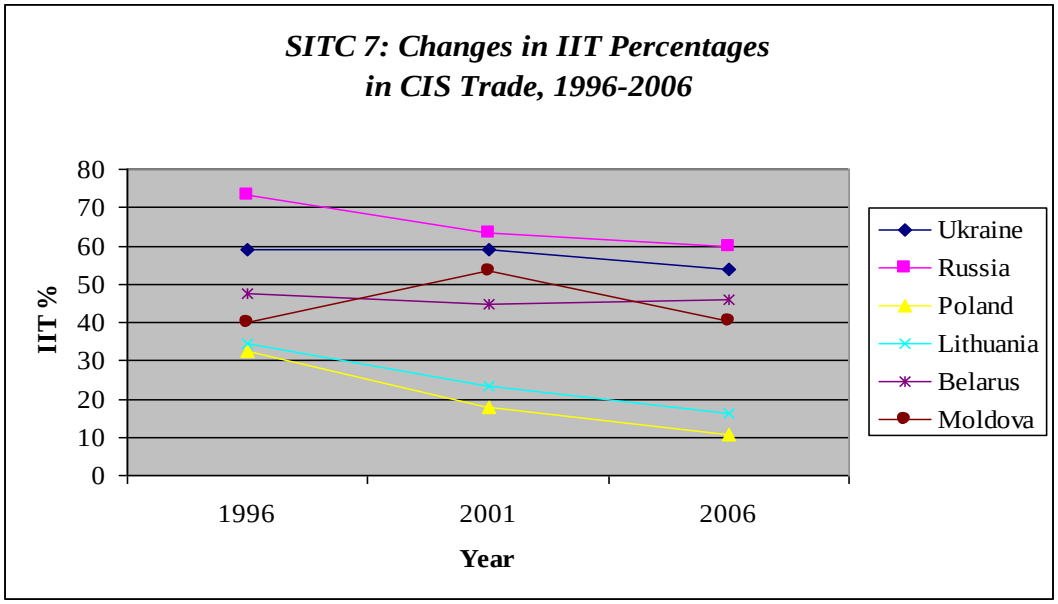
Figure 5.07



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

The values for SITC 6 (manufactured goods) are illustrated in Figure 5.07. Having only increased by 4.251%, Russia nonetheless maintained its leading position here and recorded the highest value at 63.342% (Table 5.14). Ukraine and Belarus had parallel developments, with similar increases of 12.477%, the highest growth, and 10.534%. Poland had the lowest degree of IIT and witnessed a mere rise of 0.956%. A decrease was calculated for Moldova (-1.143%), but Lithuania experienced the greatest decline (-9.086%). SITC 6 retained its position as Ukraine's main export industry and it also became its most profitable one. For Poland and Lithuania, SITC 6 became the leading industry at 22.101% and 40.873% (Tables 5.15 & 5.16). In Lithuania-EU trade it was initially its best. Russia and Poland witnessed increased IIT in SITC 6 in EU and CIS trade. IIT increased only in CIS trade for Ukraine and Belarus. The reverse was applicable to Lithuania and Moldova, which saw IIT increases here only in EU trade.

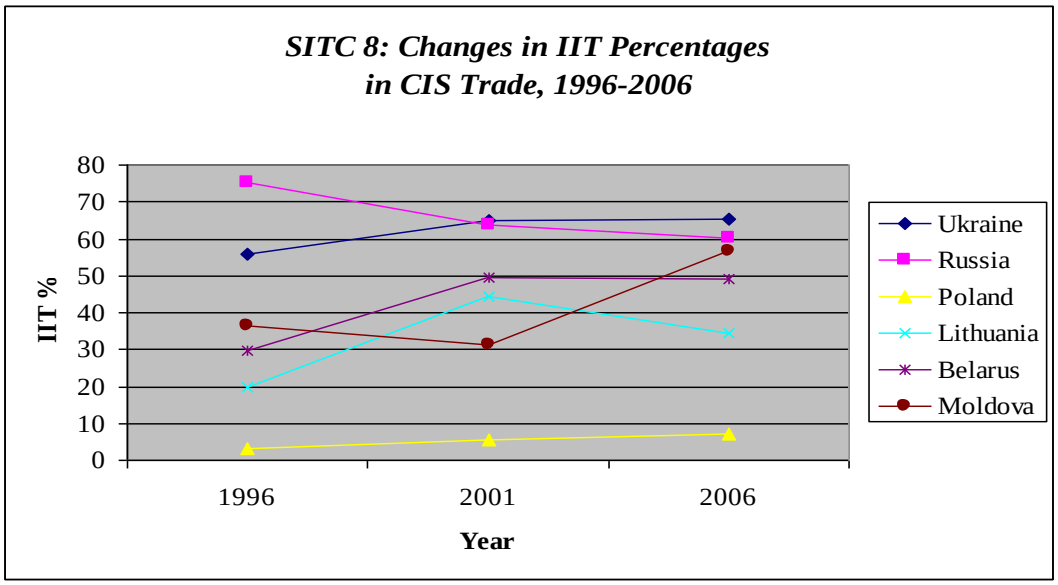
Figure 5.08



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As evident from Figure 5.08, a loss of IIT percentage was a common feature for SITC 7 (machinery & transport equipment). In fact, notwithstanding a significant decline from 2001 onwards, only Moldova was able to increase its degree of IIT, but at a minute rate of 0.773%. It was not capable of maintaining the growth experienced from 1996 to 2001, when it was the only country to do so. Ukraine and Belarus saw their values decrease by 4.987% and 1.657%. More significant parallel declines were observed in Lithuania (-18.290%) and Poland (-21.825%). Despite such, Russia maintained the highest IIT value at 59.952% (Table 5.14). For Poland, its decline was the greatest it experienced in CIS trade, but the irony is that SITC 7 actually became its main export and most profitable industry. The same was true for Belarus, whereas in Lithuania it maintained its leading position in exports and profits throughout. However, SITC 7 lost its position as the leading IIT industry in Ukraine, Poland and Moldova. Concerning EU and CIS trade, only Moldova recorded IIT growth here. Russia experienced declining values with both. Ukraine, Poland, Lithuania and Belarus recorded growth only in EU trade, but the IIT decline in SITC 7 was more pronounced in Poland and Lithuania. This industry was tied as the leading RCA industry for Belarus in 2001, when it had 44.709%.

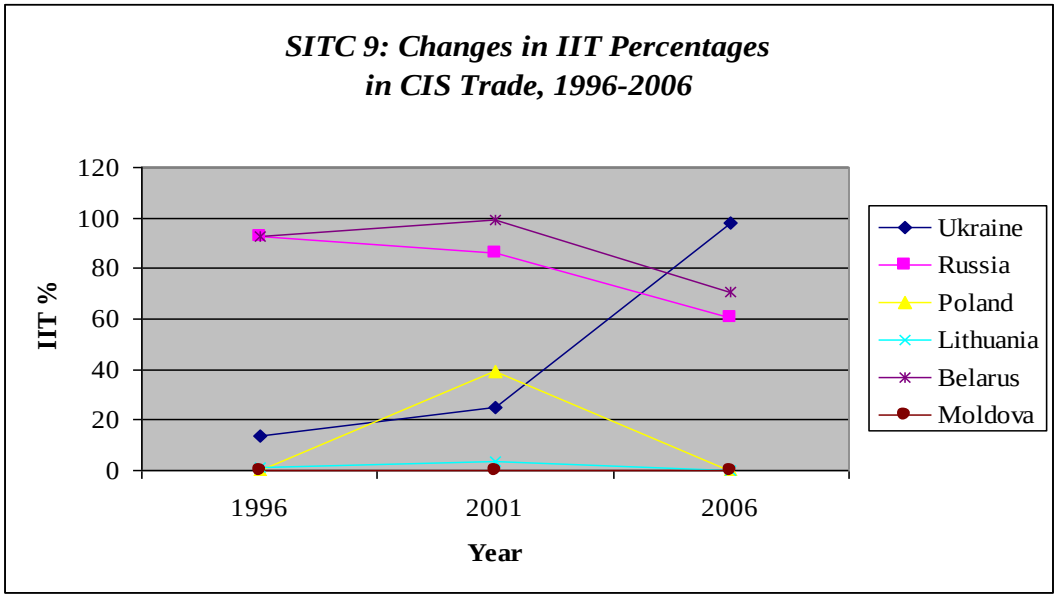
Figure 5.09



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Illustrated by Figure 5.09 concerning SITC 8 (miscellaneous manufactured articles), Poland consistently had the poorest percentage and had the least level of change (+3.597%). For three countries, the growth witnessed in this industry was the highest they experienced in CIS trade: Moldova (20.300%), Belarus (19.439%) and Lithuania (14.602%). However, the highest total value belonged to Ukraine at 65.206% (Table 5.13), having grown by 9.489%. Russia initially had the highest value at 75.313% (Table 5.02), but a decrease of 15.009% caused this industry to lose its leading position. SITC 8 was originally Poland's poorest IIT industry, but it became Moldova's highest with 56.583% in 2006 (Table 5.18). To contrast with EU trade, it was the leading IIT one for Russia and Belarus in 1996. Poland, Lithuania and Moldova recorded IIT increases in EU and CIS trade, whereas Russia was the only country to suffer a decline in both. Ukraine and Belarus saw increased IIT only in CIS trade. This became the leading RCA industry for Belarus in CIS trade and Moldova in EU trade. It achieved a greater percentage in Belarus' trade (49.177%) than in Moldova-EU trade (14.354%).

Figure 5.10

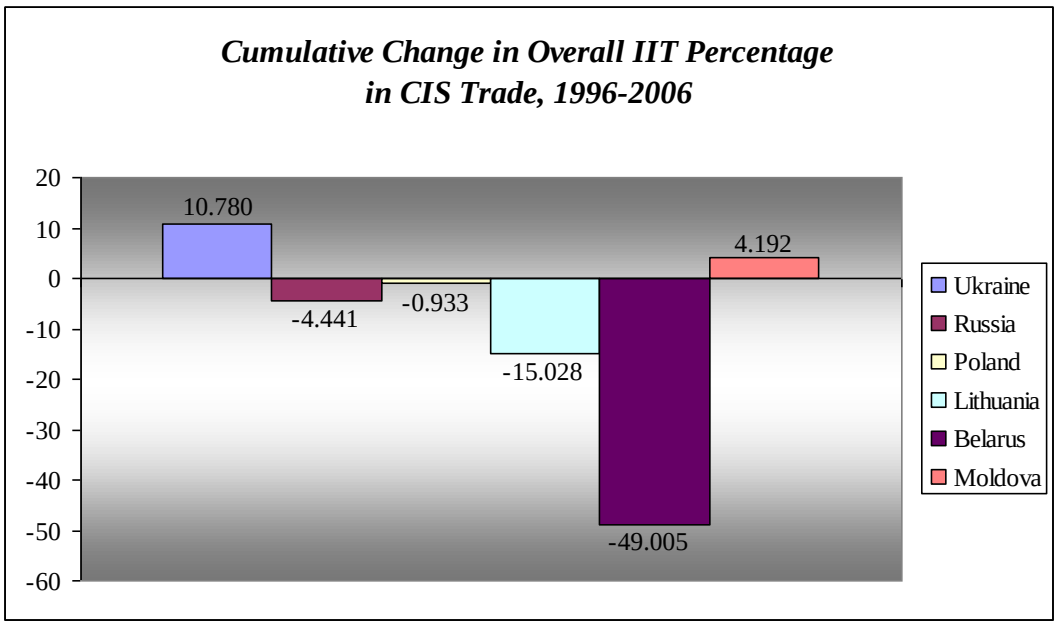


Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Figure 5.10 provides an overview of IIT developments for SITC 9 (commodities and transactions not classified elsewhere). For the first time a country recorded no change in a given industry: Moldova's remained 0% because no exports were ever recorded. With a decrease of 1.280%, Lithuania also experienced minimal change. Despite a significant, unsustainable rise in 2001, Poland also had low growth of 0.008%. The remaining three countries, however, experienced significant changes. For example, Belarus and Russia had almost parallel declines from 2001 and both recorded their highest decreases in CIS trade at 22.100% and 32.503%, although the industry did retain its IIT characteristics. Conversely, Ukraine experienced its greatest increase (84.352%) to have SITC 9 finish as its leading IIT industry at 98.212% (Table 5.13). This was, however, less than the 99.148% recorded for Belarus in 2001 (Table 5.11). For Belarus, it remained its leading IIT one: however, it lost its position as the main export and import industry, in addition to being the least profitable one initially. For Russia, SITC 9 retained its position as the leading import industry, and it became the main export and profit industry, but failed to remain the leading IIT one. However, in Lithuania it remained the least characterised by IIT throughout, and it became the poorest IIT one in Poland at 0.008% (Table 5.15). Regarding EU trade, this industry had the greatest percentage in

1996 for Ukraine and Moldova, and became the leading IIT industry for Lithuania and Belarus. It was consistent as the leading IIT industry for Poland, but became the poorest in Russia. Only Poland recorded growth here in EU and CIS trade. IIT growth in SITC 9 in CIS trade was applicable only to Ukraine, whereas Russia, Lithuania and Belarus witnessed growth here only in EU trade.

Figure 5.11



Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

Cumulative changes in overall IIT percentages are shown in Figure 5.11. Helpman and Krugman (1985) state that IT is more typical in countries with fewer similarities; however, this does not prove to be universal in this instance. Ukraine clearly exhibited the greatest improvement in IIT, having increased its percentage from 21.961% to 32.741%. This contrasts with an IIT decrease of 3.017% in EU trade. Not only was Ukraine's IIT percentage better with CIS members, but the extent of IIT increased. Pindyuk (2006) also observed the same developments, although the calculations herein do not support such higher growth in favour of CIS trade. Ukraine's IIT growth with the CIS, according to the calculations presented, are comparable to the 6.1% increase calculated by the WB (2005) between 1996 and 2002. The results herein do, however, support earlier findings that IIT growth with the CIS was greater than with the EU.

Furthermore, Ukraine experienced the greatest increase in IIT industries, as SITC 7 & 8 were joined by SITC 1, 5 & 9, and six industries saw growth (SITC 0, 1, 5, 6, 8 & 9). Much of this occurred in iron, steel, paper, paperboard and power generating machinery and equipment. The only other country capable of increasing its overall percentage with the CIS was Moldova at 17.704% (+13.512%). In fact, Moldova was the only country to experience IIT growth in CIS and EU trade (4.099%). It further gained one IIT industry (SITC 8) and saw growth in five (SITC 0, 1, 5, 7 & 8).

Having the lowest percentage of all, Poland experienced a marginal decrease from 9.169% to 8.263% and never managed to record an IIT industry, although seven increased (SITC 0, 1, 2, 5, 6, 8 & 9). The country's EU trade, however, witnessed the greatest IIT increase (23.098%). Russia's trade was largely IIT throughout, but its value shrank from 55.064% to 50.623%. A similar decrease was calculated in EU trade (4.566%). Nevertheless, four industries retained IIT (SITC 6, 7, 8 & 9), whilst SITC 5 was replaced by SITC 4. Only four industries experienced growth (SITC 0, 1, 4 & 6). Lithuania began with 30.681%, yet this value decreased to 15.653%. Its decline in CIS trade was similar to its IIT growth in EU trade (18.073%). Consequently, it lost all three of its IIT industries (SITC 1, 4 & 5), further experiencing the lowest number of increases with only two (SITC 0 & 8). Belarus had the most profound decline, having lost 49.005% when its overall value fell from 81.605% to 32.600%, but it gained another IIT industry (SITC 5) to join SITC 9. In addition, growth was calculated in seven industries (SITC 0, 2, 3, 4, 5, 6 & 8). Nonetheless, there must be some concern for Belarus regarding IIT; it also witnessed the greatest decline in EU trade (9.232%). In comparison with changes in IIT percentages with the EU, the fact remains that IIT growth in CIS trade, for the exception of Ukraine, was poor. The need for greater trade with more developed economies must remain a consideration.

3. Main Exports and Imports with the CIS in 2006

Ukraine's exports to the CIS (see Table 5.13) were concentrated in just two industries: SITC 6 with 38.83% of total export shares and SITC 7 with 29.78%. They accounted for 68.61% of all exports, combined for 11 of the top 15 exports and had positive balances. SITC 0 was the third largest export industry with 8.32% export shares,

but its influence on the leading exports was limited to one commodity (SITC 073). SITC 6 was also the leading export industry in EU trade (38.06%). As the leading export industry, SITC 6 had the greatest amount of more profitable industries with six (SITC 641, 671, 673, 675, 676 & 679). It further accounted for six of the most profitable industries in EU trade, four of which were also included in CIS trade (SITC 671, 673, 676 & 679). Ukraine's high dependency on energy and fuel imports meant that SITC 3 commodities constituted 59.23% of all imports, and were the single most important factor in the deficit. This industry was directly responsible for the top four imports in monetary value (SITC 321, 333, 334 & 343). The other two industries responsible for high import volumes were SITC 7 (14.70%) and SITC 6 (13.59%). These three industries combined for 87.52% of all imports and 14 leading imports. With five goods each, SITC 6 & 7 not only had more commodities than SITC 3 in the leading imports, but they also had positive trade balances, because of their high export activity. Table 5.20 illustrates the dominance of SITC 6 & 7 in Ukraine's upper fifteen exports and imports with the CIS.

Table 5.20: The Dominance of SITC 6 & 7 Industries in Ukraine-CIS Trade, 2006

Ukraine's Top 15 Exports		Ukraine's Top 15 Imports	
679 IRON/STEEL TUBES/PIPES, ETC	C	343 NATURAL GAS	P
791 RAILWAY VEHICLES, EQP.	T	333 PETROLEUM OILS, CRUDE	P
676 IRON/STEEL BARS/RODS ETC.	C	334 PETROLEUM PRODUCTS	P
673 FLAT-ROLLED IRON ETC.	C	321 COAL,NOT AGGLOMERATED	P
675 FLAT-ROLLED, ALLOY STEEL	C	718 OTH.POWR.GENRTNG.MACHN.	T
641 PAPER AND PAPERBOARD*	C	784 PARTS,TRACTORS,MOTOR VEH*	C
285 ALUMINIUM ORE,CONCTR.ETC	P	781 PASS.MOTOR VEHCLS.EX.BUS	C
112 ALCOHOLIC BEVERAGES	P	782 GOODS/SERVICE VEHICHLES	C
781 PASSENGER CARS ETC.*	C	671 PIG IRON,SPIEGELEISN,ETC	R
073 CHOCOLATE/COCOA PREP.	P	562 FERTILISER,EXCEPT GRP272	T
671 PIG IRON,SPIEGELEISN,ETC*	R	641 PAPER & PAPERBOARD	C
714 ENGINES,MOTORS NON-ELECT	T	682 COPPER	R
771 ELECT POWER MACHNY.PARTS	T	672 INGOTS ETC.IRON OR STEEL	C
743 PUMPS NES,CENTRIFUGS ETC	T	676 IRON/STEEL BARS/RODS ETC.	C
334 PETROLEUM PRODUCTS	P	791 RAILWAY VEHICLES.EQP.	C

Source: own calculations based on UN Comtrade three-digit data, 2006.

P: Primary products; R: Natural resource-intensive; L: Labour-intensive; T: Technology-intensive; C: Human capital-intensive

SITC 6 & 7 combined for a total of 21 positions within the top exports and imports, three higher than in EU trade. This was the greatest amount of commodities for these two industries of any country in either EU or CIS trade. In addition, five exports (SITC 334, 671, 673, 676 & 679) and four imports (SITC 334, 641, 781, & 784) were the same in Ukraine-EU and Ukraine-CIS trade. However, the cast iron and steel sectors are based on outdated technical assets and technologies that can only be sustained providing global steel prices are high, thus allowing Ukraine to retain its RCAs here. Given the sector's high energy and material intensity and low labour productivity, future competitiveness is questionable without greater global integration. This is also true for the ferrous metal sector, a key contributor to recent economic growth, whose share of overall exports is expected to decrease. In terms of exports, four commodities were defined as primary products and one was a natural resource-intensive good. There was no representation from labour-intensive products. However, 10 items were human capital- and technology-intensive goods, compared with only six such commodities in EU trade. Therefore, exports to the CIS had a greater element of medium- to high-technology products, like electrical equipment, engines, motor and railway vehicles and machinery. This can partly be explained by the continued existence of Soviet production linkages, the lack of competitiveness of such products in the EU and protectionist measures. Only one commodity (SITC 073) originated from the leading RCA industry and there was no commodity from the leading IIT industry (SITC 9). In CIS trade the medium- to high-technology sector is slowly expanding and developing. The breakdown of imports by intensity was rather similar: six goods were either primary products or natural resource-intensive ones, whereas nine were either human capital- or technology-intensive goods. Likewise, labour-intensive commodities were absent in the leading imports, as was the case with Ukraine-EU trade. No country imported leading labour-intensive goods and each one had fewer technology-intensive imports originate from CIS members than from EU ones. In general, most countries also exported more technology-intensive goods to CIS markets. In overall CIS trade, Ukraine had the second highest amount of commodities to feature in its leading exports and imports with a total of six. These commodities were as follows:

SITC 334	Petroleum products	15.970%
SITC 641	Paper and paperboard	73.527%
SITC 671	Pig iron, spiegeleisn, etc…	83.516%
SITC 676	Iron/steel bars/rods etc…	35.469%
SITC 781	Passenger motor vehicles, excluding buses	86.921%
SITC 791	Railway vehicles, equipment	29.439 %

As evident, three industries experienced IIT (SITC 641, 671 & 781). Petroleum products (SITC 334) also featured in common leading exports and imports with the EU. Likewise, it was defined as IT (37.457%). Furthermore, two exports had high RCA values (SITC 285 & 679), yet insignificant IIT percentages (0.201% and 9.484% respectively). Four of the leading commodities had IIT, compared with only one in EU trade. However, three of these leading goods recorded a negative RCA (SITC 671, 781 & 784).

The structure of trade with the CIS has less to do with RCA as it does with the perseverance of traditional links. In sum, Ukraine largely exported primary products, labour- and natural resource-intensive commodities to the EU and technology- and human capital-commodities to the CIS. The reverse was true concerning imports: products of the latter intensity were imported from the EU and those of the former from the CIS. This trade pattern is mirrored in each country's leading exports and imports, with regard to differences in EU and CIS trade characteristics. Some positive developments were recorded in the export of certain medium- and high-technology products (SITC 7) with the CIS. Moreover, it is noteworthy that vertical integration has developed IIT. However, the expansion of Ukrainian exports westwards was primarily driven by traditional primary goods, natural resource- and labour-intensive industries. This was in direct contrast to Soviet Ukrainian trade which was dominated by human capital-intensive goods. The strengthening of labour-intensive operations conforms to H-O theory on production and specialisation; developments in production and increased output were concentrated on the country's existing factor endowments, explaining Ukraine's lack of technological imports. In addition, it enjoyed an abundance of labour with a lower capital-labour ratio than most of its trading partners. There was also a connection between the nature of some industries (wood and furniture, textiles and

clothing) and the limitations on technology. For the exception of growth in SITC 6 exports to the EU and the decline of SITC 0 in exports to the CIS, little change in export composition was observed in the growth of Ukraine's trade, as illustrated by the IIT results. Dominant Ukrainian exports originated from agricultural products, iron and steel products, petroleum products, aluminium, ore, clothing, wooden items and leather.

Russia-CIS trade (Table 5.14) had an IIT value of 50.623%, with IIT observed in SITC 4, 6, 7, 8 & 9. Russia was unique because the leading export industry was SITC 9 with 39.18% (SITC 931: special transactions, non-classified). It alone was ranked third in profit. SITC 3 was the second leading export industry (21.27%), yet had only three placements (SITC 321, 333 & 334). Despite lower representation, the combined exports were 60.45%. Greater representation was found in SITC 6 & 7 which had five goods apiece, despite these profitable industries only accounting for 13.10% and 13.47% of total exports. SITC 9 again had the largest share of imports at 32.01%. Responsible for 20.82% of overall imports, SITC 6 had the largest representation with five goods (SITC 641, 673, 675, 676 & 679). SITC 7 had 15.84% of total imports, although only two commodities were classified as leading imports (SITC 781 & 791). In total, these three industries accounted for 68.67% of all imports. Table 5.21 illustrates the dominance of SITC 6 & 7 in Russia's exports and imports. Russia had the highest number of leading exports in common with Ukraine at six (SITC 334, 641, 676, 679, 781 & 791), and an equal number of common imports (SITC 321, 333, 641, 676, 781 & 791). It had five common exports and 11 imports with Ukraine in EU trade. In EU and CIS trade only one export was found to be in common (SITC 334) and two imports (SITC 641 & 781). However, all other countries, except Poland, had more common exports with Ukraine in EU trade rather than CIS trade. For the exception of Belarus and Lithuania, the same was true concerning imports from the EU. Hence, the trade pattern illustrated greater similarities and competitiveness in EU trade.

Table 5.21: The Dominance of SITC 6 & 7 in Russia-CIS Trade, 2006

Russia's Top 15 Exports		Russia's Top 15 Imports	
333 PETROLEUM OILS, CRUDE	P	931 SPECIAL TRANS., NON-CLASSIFIED*	
334 PETROLEUM PRODUCTS	P	679 IRON/STEEL TUBES/PIPES ETC…*	C
931 SPECIAL TRANS., NON-CLASSIFIED*		285 ALUMINIUM ORE, CONCTR.	P
782 MOTOR VEHIC. FOR TRANSPORT	C	791 RAILWAY VEHIC. & ASS. EQP.*	C
679 IRON/STEEL TUBES/PIPES ETC…*	C	781 PASSENGER CARS ETC…*	C
676 IRON/STELL BARS/RODS ETC…*	C	057 FRUIT & NUTS, FRESH/DRIED	P
781 PASSENGER CARS ETC…*	C	673 IRON/STEEL BARS/RODS SHAPES*	C
321 COAL, NOT AGGLOMERATED*	P	676 IRON/STELL BARS/RODS ETC…*	C
784 PARTS & ACC. FOR 722, 781, 782, 783	C	333 PETROLEUM OILS, CRUDE	P
791 RAILWAY VEHIC. & ASS. EQP.*	C	281 IRON ORE & CONCENTRATES	P
718 OTH. PWR-GENR MACH. & EQP.	T	675 FLAT-ROLLED, ALLOY STEEL*	C
248 WOOD, SIMPLY WORKED	P	112 ALCOHOLIC BEVERAGES*	P
625 RUBBER TYRES/CASES	C	321 COAL, NOT AGGLOMERATED*	P
641 PAPER & PAPERBOARD*	C	054 VEGETABLES FRESH/CHILLED	P
661 LIME, CEMT & CONSTR. MAT.	N	641 PAPER & PAPERBOARD*	C

Source: own calculations based on UN Comtrade three-digit data, 2006.

In Russia-CIS trade SITC 6 & 7 combined for 17 positions, which was four less than in Ukraine-CIS trade and one less than Russia-EU trade. Four commodities were common to Russia's exports to the EU and CIS (SITC 248, 321, 333 & 334), but only one import (SITC 781). Ukraine likewise had strong representation from SITC 781 in imports from the EU and CIS. Four exports were primary products and one was a natural resource-intensive good. There was no representation from labour-intensive products. These three intensities were identical to Ukraine's leading exports. Eight commodities were human capital-intensive goods, the highest of any country, and one was technology-intensive, in contrast to only three classifications based on both intensities in Russia's EU exports. Exports to the CIS had a much greater element of human capital-intensive products. This further confirms that the human capital- and technology-intensive sectors are slowly expanding and developing within the CIS. In Russia's imports, however, seven were primary products and seven were human capital-intensive goods. Russia, like Ukraine, had 14 leading imports from the EU attributed to technology- and capital-intensive goods. However, only Russia did not have technology-intensive goods in its leading imports from the CIS. With no representation here from the leading IIT industry (SITC 4), Russia had three goods in its leading exports and imports from its leading RCA industry (SITC 248, 281 & 285). SITC 248 also featured as a leading RCA industry in

EU trade. Russia had the highest amount of identical commodities to be represented in its leading CIS exports and imports with eight, in contrast to no identical commodities in EU trade. They were:

SITC 321	Coal, not agglomerated	86.342%
SITC 333	Petroleum oils, crude	16.925%
SITC 641	Paper and paperboard	86.590%
SITC 676	Iron/steel bars/rods etc…	97.501%
SITC 679	Iron/steel tubes/pipes etc…	73.082%
SITC 781	Passenger motor vehicles, excluding buses	88.814%
SITC 791	Railway vehicles, equipment	70.744%
SITC 931	Special transactions, non-classified	60.321%

The only industry not to experience IIT was SITC 333. It is interesting to note that four of these commodities were common to Ukraine-CIS trade (SITC 641, 676, 781 & 791). In each case the IIT percentage was greater in Russia's favour. For SITC 676 & 791, IIT was present in Russian trade, whereas these commodities could only be classified as IT in Ukrainian trade. Only SITC 248 & 334 had significant RCA percentages, as was the case in EU trade. Once again significant RCA values did not correspond with IIT. However, ten of these leading exports and imports had IIT, six of which also had a negative RCA, compared with only one in EU trade. SITC 641 featured in EU and CIS trade, as an import in the former and an export in the latter.

With regard to Poland-CIS trade (Table 5.15), the total IIT value was 8.263% and no industry recorded IIT. SITC 7 accounted for 31.93% of overall exports, followed by SITC 6 with 27.90% and SITC 5 with 15.40%. All three had positive balances, and accounted for slightly more than three-quarters of all exports. As was the case with Ukraine, only Poland had it as its main export one in EU and CIS trade, with SITC 7 accounting for 40.27% of exports to the EU. Furthermore, it had the most entries in leading exports with six (SITC 728, 741, 775, 778, 781 & 784) and had seven in its leading exports to the EU, four of which were common to both (SITC 775, 778, 781 & 784). Where imports were concerned, SITC 3 had 64.07% of the overall share, with five

of its commodities represented (SITC 321, 333, 334, 342 & 344). The second and third ranked import industries were SITC 9 & 6 with 15.34% and 8.82% of total imports correspondingly. These three industries were responsible for 88.23% of all imports, with significant deficits recorded in SITC 3 & 9. Despite a much lower percentage of total imports, SITC 6 had the same amount of commodities as SITC 3 with five (SITC 671, 672, 673, 676 & 684). Table 5.22 illustrates the dominance of SITC 5, 6 & 7 in Poland's exports and imports. As was the case with EU trade, Poland and Ukraine had one of the lowest number of common leading exports with only two (SITC 641 & 781), but they shared seven common imports (SITC 321, 333, 334, 562, 671, 672 & 676). In EU trade they shared two exports and nine imports; however, only one import (SITC 334) was common in EU and CIS trade.

Table 5.22: The Dominance of SITC 5, 6 & 7 in Poland-CIS Trade, 2006

Poland's Top 15 Exports		**Poland's Top 15 Imports**	
781 PASSENGER CARS ETC,	C	333 PETROLEUM OILS, CRUDE	P
784 PARTS,TRACTORS,MOTOR VEH	C	931 SPECIAL TRANS., NON-CLASSIFIED	
553 PERFUMERY, COSMETICS, ETC.	C	334 PETROLEUM PRODUCTS	P
642 PAPER,PAPERBOARD,CUT ETC	C	344 PETROLEUM GASES, NES	P
775 DOM. ELECTRICAL, NON-ELEC. EQP.	T	281 IRON ORE & CONCENTRATES	P
893 ARTICLES OF MATERIALS (DIV 58)	T	673 FLAT-ROLLED IRON ETC.	C
641 PAPER AND PAPERBOARD	C	342 LIQUEFIED PROPANE, BUTANE	P
699 MANUFACTURES OF BASE METALS, NES	C	672 INGOTS ETC.IRON OR STEEL	C
821 FURNITURE & PARTS THEREOF	L	321 COAL, NOT AGGLOMERATED	P
542 MEDICAMENTS	T	684 ALUMINIUM*	R
634 VENEERS, PLYWOOD, IMP/REC.	R	562 FERTILISER,EXCEPT GRP272	T
533 PIGMENTS, PAINT ETC…	C	511 HYDROCARBONS, NES, DERIVTS	T
778 ELEC. MACHINERY & APP, NES	T	671 PIG IRON,SPIEGELEISN,ETC	R
728 SPECIAL INDUSTRIAL MACH.	T	522 INORGANIC CHEMICAL ELEMENTS	T
741 INDUS. HEATNG/COOLNG EQP.	T	676 IRON/STEEL BARS/RODS ETC.*	C

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 only combined for 15 positions in Poland-CIS trade, six less than Ukraine and five less than Poland-EU trade. Furthermore, six exports (SITC 699, 775, 778, 781, 784 & 893) and three imports (SITC 334, 684 & 931) were the same in Poland's EU and CIS trade. Ukraine and Poland had an import dependency on SITC 334 in both. Concerning exports, one was a natural resource- and one was a labour-intensive product. Poland was the only country not to have a primary good. Thirteen commodities

were either human capital- or technology-intensive goods, which was four greater than its EU trade. Regarding Poland's imports, however, six were primary products, two were natural resource-intensive ones and three each were attributed to human capital- and technology-intensive goods, compared with six each for both factor intensities in imports from the EU. Unlike Ukraine and Russia, Poland did not have any identical commodities. In contrast, it had seven in EU trade. Furthermore, Poland was the only country again not to have any goods from its leading RCA industry (SITC 0) to feature in its top exports and imports. Only two commodities experienced IIT, compared with 15 in EU trade, but both also had a negative RCA. However, Poland had the greatest amount of products from its leading IIT industry with nine. Three of the top exports did not have significant RCA values (SITC 634, 778 & 821). With IIT values ranging from 0.205% (SITC 781) to 9.641% (SITC 553), none of Poland's leading exports with significant RCA values could be identified as IIT.

The overall IIT value in Lithuania-CIS trade (Table 5.16) was 15.653%, and no industry enjoyed IIT. SITC 7 had 46.57% of total exports and was responsible for two-thirds of the leading exports (SITC 721, 741, 743, 764, 775, 778, 781, 782, 784 & 786). SITC 0 accounted for 16.84% of total exports, followed by SITC 6 with 11.73%. Only SITC 6 had a negative balance and no commodities valued in the top exports. In total, these industries accounted for 75.14% of all exports. The largest concentration of imports was likewise found in SITC 3 (76.31%). This industry had one-third of the leading imports (SITC 333, 334, 342, 343 & 351), including the same top three in monetary values as Ukraine. With a significantly lower share of overall imports (6.56%), SITC 6 had three goods (SITC 673, 676 & 679), as did the third leading import industry, SITC 5, with 4.95% (SITC 522, 562 & 571). These industries were responsible for 87.82% of all imports. Table 5.23 illustrates the dominance of SITC 7 in Lithuania's exports and the importance of SITC 3, 5 & 6 in its imports. In comparison with Ukraine, Lithuania had three common leading exports (SITC 334, 743 & 781), in addition to six common imports (SITC 333, 334, 343, 562, 676 & 791). In EU trade both had five shared exports and the same number of imports. However, SITC 334 was the only common export to EU and CIS trade. The same commodity was also a common import for Ukraine and Poland in EU and CIS trade.

Table 5.23: The Importance of SITC 3, 6 & 7 in Lithuania-CIS Trade, 2006

Lithuania's Top 15 Exports		**Lithuania's Top 15 Imports**	
781 PASSENGER CARS ETC,	C	333 PETROLEUM OILS, CRUDE	P
334 PETROLEUM PRODUCTS*	P	343 NATURAL GAS	P
057 FRUIT & NUTS, FRESH/DRIED	P	334 PETROLEUM PRODUCTS*	P
024 CHEESE & CURD	P	248 WOOD, SIMPLY WORKED	P
782 GOODS/SERVICE VEHICHLES	C	522 INORGANIC CHEMICAL ELEMENTS	T
741 INDUS. HEATNG/COOLNG EQP.	T	562 FERTILISER,EXCEPT GRP272	T
775 DOM. ELECTRICAL, NON-ELEC. EQP.	T	676 IRON/STELL BARS/RODS ETC…	C
778 ELEC. MACHINERY & APP, NES	T	272 FERTILISERS, CRUDE	P
786 TRAILERS & OTHER VEHICLES	C	342 LIQUEFIED PROPANE, BUTANE	P
533 PIGMENTS, PAINT ETC…	C	351 ELECTRIC CURRENT*	P
054 VEGETABLES FRESH/CHILLED	P	679 IRON/STEEL TUBES/PIPES , ETC	C
764 TELECOMM. EQUIPMENT, NES,	C	571 POLYMERS OF ETHYLENE*	T
743 PUMPS NES,CENTRIFUGS ETC	T	722 TRACTORS WITH POWER TAKE-OFFS*	T
784 MOTOR VEHICLES PARTS/ACC.*	C	673 FLAT-ROLLED IRON ETC…	C
721 AGRICULTURE MACHINES	T	791 RAILWAY VEHIC. & ASS. EQP.	C

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 combined for half of the leading commodities in Lithuania's CIS trade, as was the case with Poland's. This was one greater than in Lithuania-EU trade. Only one commodity was common to Lithuania's exports to the EU and CIS (SITC 334), whereas no common import existed. Ukraine also had the same product feature in its exports to both. Concerning exports and imports, there was no representation from either natural resource- or labour-intensive goods. The same was true for Lithuania's imports from the EU. Four of the leading exports were primary products. Moreover, human capital- or technology-intensive goods were responsible for 11 placements, which was five more than in Lithuania-EU trade. Thus, such intensity goods were more competitive in CIS markets, despite Lithuania's EU membership. Seven imports were primary products, with four each connected with human capital- and technology-intensive goods. Unlike Poland, however, Lithuania had one identical commodity in its leading exports and imports, compared with two in EU trade. This was petroleum products (SITC 334) which had a strong IIT value of 97.375%. Ukraine also had this commodity in its leading exports and imports; however, it was calculated as IT (15.970%). With three goods each, Lithuania had equal representation from its leading RCA and IIT industries (SITC 0 & 6). Six leading exports had significant RCA (SITC 024, 764, 775, 781, 782 & 786); however, their IIT was poor, ranging from 0.815% (SITC 781) to 6.279% (SITC 775). Five leading

commodities had IIT, only SITC 334 & 784 had RCA, compared with nine in EU trade. No goods were common to both.

Concerning Belarus-CIS trade (Table 5.17), the IIT value was 32.600% and IIT was calculated in SITC 5 & 9. SITC 7 was responsible for 36.73% of total exports, followed by SITC 6 (21.35%) and SITC 0 (15.14%). These leading industries accounted for 73.22% of all exports. SITC 7 had the most leading exports with six (SITC 722, 723, 775, 782, 783 & 784). SITC 3 had 50.13% of import shares, with four commodities represented (SITC 333, 334, 343 & 351). The second and third ranked import industries were SITC 6 & 7 with 17.02% and 10.51% of total imports. The combined percentage in imports was 77.66%, with significant deficits recorded in SITC 3 & 6. Although the latter had a lower percentage of total imports, it accounted for seven leading ones (SITC 641, 673, 675, 676, 679, 682 & 684). Table 5.24 shows the dominance of SITC 6 & 7 in Belarus' exports and imports. In common with Ukraine, Belarus had two leading exports (SITC 334 & 676) and, like Poland, seven leading imports (SITC 333, 334, 343, 641, 676, 682 & 791). Contrasting this with EU trade, both shared six leading exports and seven leading imports. SITC 676 was a common export in EU and CIS trade, as was SITC 334 & 676 for imports.

Table 5.24: The Dominance of SITC 6 & 7 in Belarus-CIS Trade, 2006

Belarus' Top 15 Exports		**Belarus' Top 15 Imports**	
782 GOODS/SERVICE VEHICHLES	C	333 PETROLEUM OILS, CRUDE	P
334 PETROLEUM PRODUCTS*	P	343 NATURAL GAS	P
722 TRACTORS WITH POWER TAKE-OFFS	T	931 SPECIAL TRANS., NON-CLASSIFIED*	
775 DOM. ELECTRICAL, NON-ELEC. EQP.	T	334 PETROLEUM PRODUCTS*	P
022 MILK & CREAM	P	673 IRON/STEEL BARS/RODS SHAPES	C
783 ROAD MOTOR VEHICLES, NES	C	282 FERROUS WASTE & SCRAP	P
931 SPECIAL TRANS., NON-CLASSIFIED*		676 IRON/STELL BARS/RODS ETC…*	C
821 FURNITURE & PARTS THEREOF	L	679 IRON/STEEL TUBES/PIPES , ETC	C
024 CHEESE & CURD	P	713 INT. COMB. PISTON ENGINES & PARTS	T
784 PARTS,TRACTORS,MOTOR VEH*	C	682 COPPER	R
676 IRON/STELL BARS/RODS ETC…*	C	675 FLAT-ROLLED, ALLOY STEEL	C
625 RUBBER TYRES/CASES	C	641 PAPER & PAPERBOARD*	C
011 MEAT, EDIBLE MEAT OFFAL FRESH	P	791 RAILWAY VEHIC. & ASS. EQP.	C
893 ARTICLES OF MATERIALS (DIV 58)*	T	684 ALUMINIUM	R
723 CIVIL ENGINEERING PLANTS/PARTS*	T	351 ELECTRIC CURRENT	P

Source: own calculations based on UN Comtrade three-digit data, 2006.

Accounting for 17 commodities in Belarus-CIS trade, SITC 6 & 7 had four placements less than in Ukraine's trade. An identical amount was calculated in Belarus-EU trade. Belarus had three commodities common to exports destined to the EU and CIS (SITC 676, 722 & 821), but no common imports. Ukraine exported SITC 676 to the EU and CIS. There were no leading natural resource-intensive exports, but there were four primary products and one labour-intensive commodity. The highest representation was five goods designated as human capital-intensive, followed by four technology-intensive ones. There were only two more commodities represented in the latter two classifications in Belarus' CIS trade than in EU trade. Belarusian imports were comprised of five primary products, two natural resource-intensive ones, one technology-intensive good and six human capital-intensive commodities. Belarus had three identical commodities feature in its leading exports and imports in CIS trade, but none with the EU. All three were characterised by IIT. They were:

SITC 334	Petroleum products	99.917%
SITC 676	Iron/steel bars/rods etc…	87.202%
SITC 931	Special transactions, non-classified	70.727%

SITC 334 & 676 also appeared in Ukraine's leading exports and imports. However, neither enjoyed IIT, as they did in Belarus-CIS trade. The leading RCA industry (SITC 0) had two goods in the country's leading exports and imports, with one from its leading IIT industry (SITC 9). Furthermore, two leading exports had significant RCA (SITC 024 & 722), but insignificant IIT values (8.114% and 3.906% respectively). Seven of the leading exports and imports had IIT, although three had a negative RCA (SITC 641, 676 & 931). No leading commodities had IIT in EU trade.

The IIT value in Moldova-CIS trade (Table 5.18) was 17.704% and IIT was only calculated in SITC 8. SITC 1 had the greater share of overall exports with 35.56%, followed by SITC 0 (18.86%) & SITC 6 (17.78%). SITC 0 & 1 had positive balances and all three combined for 72.20% of exports. Despite being the largest export industry, SITC 1 had only one commodity represented (SITC 112), although it was the leading one in monetary terms. SITC 0 had three (SITC 056, 057 & 061), whereas SITC 6 had four

(SITC 641, 659, 665 & 699). SITC 3 had 44.66% of the overall import share with five commodities represented (SITC 321, 334, 342, 343 & 351). The second and third ranked import industries were SITC 6 & 7 with 18.52% and 10.07% of overall imports. They totalled 73.25% of all imports and each was in deficit. Despite a lower percentage of total imports, SITC 6 had four leading commodities (SITC 641, 661, 676 & 679). Table 5.25 illustrates the greater amount of mixed industries in Moldova's exports and imports. Moldova and Ukraine had two common leading exports (SITC 112 & 641), but had more in common concerning imports with five (SITC 321, 334, 343, 641 & 676). In EU trade these figures were five and six. No leading exports or imports were held in common.

Table 5.25: The Variance of SITC Industries in Moldova-CIS Trade, 2006

Moldova's Top 15 Exports		**Moldova's Top 15 Imports**	
112 ALCOHOLIC BEVERAGES	P	343 NATURAL GAS	P
057 FRUIT & NUTS, FRESH/DRIED	P	334 PETROLEUM PRODUCTS	P
699 MANUFACTURES OF BASE METALS, NES	C	351 ELECTRIC CURRENT	P
056 VEG. ROOTS/TUBERS PREPRD/PRESRV.	P	122 TOBACCO MANUFACTURED	P
273 STONE, SAND & GRAVEL	P	676 IRON/STEEL BARS/RODS ETC.	C
665 GLASSWARE	L	342 LIQUEFIED PROPANE, BUTANE	P
659 FLOOR COVERINGS ETC…	L	679 IRON/STEEL TUBES/PIPES , ETC	C
821 FURNITURE & PARTS THEREOF*	L	661 LIME, CEMT & CONSTR. MAT.	R
641 PAPER & PAPERBOARD*	C	641 PAPER & PAPERBOARD*	C
542 MEDICAMENTS*	T	248 WOOD, SIMPLY WORKED	P
061 SUGAR & HONEY	P	773 ELECTRICAL DISTRIB. EQP,NES	T
421 FIXED VEG.FAT,OILS, SOFT	P	893 ARTICLES OF MATERIALS (DIV 58)	T
742 PUMPS FOR LIQUIDS, LIFTS & PARTS	T	098 EDIBLE PRODUCTS & PREPARATIONS	P
222 OILSEED (SFT.FIX VEG.OIL)	P	321 COAL,NOT AGGLOMERATED	P
874 MEASRNG, CHCKNG, ANLYSNG INSTS.	T	775 DOM. ELECTRICAL, NON-ELEC. EQP.	T

Source: own calculations based on UN Comtrade three-digit data, 2006.

SITC 6 & 7 had the lowest representation in Moldova's trade; they accounted for only 11 commodities, or 10 less than Ukraine's. Both had 12 placements in Moldova-EU trade. Four exports were common to EU and CIS trade (SITC 057, 112, 222 & 421), but the same was only true for one import (SITC 893). None of these commodities applied to Ukrainian trade. In exports no commodity was a natural resource-intensive one, as was the case in exports to the EU. Labour-intensive products were represented by three goods, whereas primary products totalled seven again. Only five commodities were either human capital- or technology-intensive goods; however, this was four greater than in EU trade.

Eight imports were primary products, the highest of any country, one was natural resource-intensive and three each were attributed to human capital- and technology-intensive goods. Moldova did not have any primary products from the EU. This illustrates that it had the highest dependency on primary products in imports and exports in CIS trade. One commodity, however, was common to its exports and imports: paper and paperboard (SITC 641) with an IIT value of 72.501%. Ukraine also shared this commodity, which had a similar value (73.527%). EU trade did not include any common export or import. Moldova did, nonetheless, have the highest representation again from its leading RCA industry (SITC 0) with four, followed by three goods from its leading IIT industry (SITC 8). It further had significant RCA in SITC 222, 421 & 659, yet poor IIT values in the range of 6.848% (SITC 659) to 7.928% (SITC 421). Three leading exports had IIT, although SITC 542 & 641 had a negative RCA, compared with two in EU trade. None of the goods were common to both.

In sum, SITC 6 & 7 accounted for the majority of leading exports and imports in CIS trade for each country, except Moldova. As was the case with EU trade, Ukraine was the only country to have SITC 6 as its leading industry in exports and profits. However, SITC 7 was the leader industry in these aspects for Poland, Lithuania and Belarus. Somewhat ironic is the fact that it was the leading import industry in EU trade and the leading deficit industry for all, except Poland. This is a clear example of the difference in quality of such products between the EU and CIS. Despite the importance of SITC 6 & 7, Russia was the only country in which both achieved IIT. Poland managed the same in EU trade. Ukraine was the only country where SITC 7 could also be designated as IIT. In contrast to the IIT developments of these industries in EU trade, however, SITC 6 lost IIT in Lithuania and Belarus from 2001 to 2006, with the same applicable to SITC 7 in Moldova. It would be reasonable to expect that SITC 6 could soon be defined as IIT in Ukraine's trade, given its value was 47.858% in 2006. The same was also true of Lithuania-EU trade in this industry. SITC 6 could also reacquire IIT in Belarus, where the value fell to 47.107%. Moreover, SITC 7 could also soon be defined as IIT in Belarus, as its value was 45.919%. The number of identical commodities to feature in each country's leading exports and imports was low. Russia had the greatest amount with eight, followed by Ukraine (6), Belarus (3) and Lithuania and Moldova (1). Although Poland had the

highest amount of similarities in EU trade, it was the only country to have none in CIS trade.

Tables 5.26 and 5.27 illustrate the leading exports and imports in CIS trade, as defined by factor intensity.

Table 5.26: Top 15 Exports to the CIS by Factor Intensity, 2006

	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
Primary products	4	4	0	4	4	7
Natural resource-intensive	1	1	1	0	0	0
Labour-intensive	0	0	1	0	1	3
Technology-intensive	4	1	6	5	4	3
Human capital-intensive	6	8	7	6	5	2
In Common with Ukraine	n/a	6	2	3	2	2

Source: own calculations based on UN Comtrade three-digit data, 2006.

The majority of exports were dominated by human capital- and technology-intensive goods, Moldova being the sole exception here. This is contrary to exports to the EU which were dominated by primary products, natural resource- and labour-intensive ones. In this case Poland was the exception, the only country to have its leading exports dominated by human capital- and technology-intensive goods, with such classifications accounting for nine positions in EU trade and 13 in CIS trade. The importance of resource- and labour-intensive goods was much less for all, particularly Lithuania. Similarities with Ukraine's exports were less in CIS trade: only Russia had one-third or more common exports. This was one greater than in EU trade. Ukraine and Poland again had only two common exports.

Table 5.27: Top 15 Imports from the CIS by Factor Intensity, 2006

	Ukraine	**Russia**	**Poland**	**Lithuania**	**Belarus**	**Moldova**
Primary products	4	7	6	7	5	8
Natural resource-intensive	2	0	2	0	2	1
Labour-intensive	0	0	0	0	0	0
Technology-intensive	2	0	3	4	1	3
Human capital-intensive	7	7	3	4	6	3
In Common with Ukraine	n/a	6	7	6	7	5

Source: own calculations based on UN Comtrade three-digit data, 2006.

Although imports deemed human capital- and technology-intensive remained high, in no country were they as important as in EU trade. In fact, they constituted the majority only in Ukraine and Lithuania. In Poland and Moldova the bulk of imports consisted of primary products and resource-intensive goods. As in imports from the EU, labour-intensive goods were non-existent (only Moldova had such goods in its EU imports). The number of common import goods with Ukraine and the other countries was also greater than those in exports in each case, except for Russia. Poland and Belarus had the highest amount with seven, followed by Russia and Lithuania with six. These figures were less than in EU trade, for the exception of Lithuania and Belarus which had the same amount of common imports in EU and CIS trade. Russia's trade showed the least variance, as seven commodities each were attributed to either primary products or human capital-intensive ones.

Table 5.28 illustrates the IIT percentages between the leading RCA industry and the leading IIT industry.

Table 5.28: IIT Percentages for the Leading RCA & IIT Industries in CIS Trade, 1996-2006

	1996				2001				2006			
	RCA	**IIT %**	**IIT**	**IIT %**	**RCA**	**IIT %**	**IIT**	**IIT %**	**RCA**	**IIT %**	**IIT**	**IIT %**
Ukraine	0	3.00	7	58.83	0	22.92	1	78.70	0	44.36	9	98.21
Russia	2	27.26	9	92.82	2/5	16.29/58.16	9	86.04	2	14.74	4	76.35
Poland	0	7.18	7	32.50	0	13.23	4	43.60	0	16.41	6	22.10
Lithuania	0	24.72	1	62.13	0	18.46	6	54.55	0	25.35	6	40.87
Belarus	2	9.70	9	92.83	7/8	44.71/49.70	9	99.15	8	49.18	9	70.73
Moldova	0	17.21	7	39.81	0	17.93	7	53.33	0	20.73	8	56.58

Source: own calculations based on UN Comtrade three-digit data, 1996-2006.

As was the case with EU trade, the leading RCA industry was never the same as the leading IIT industry. SITC 0 remained the leading RCA industry throughout in Ukraine, Poland, Lithuania and Moldova. SITC 2 retained this position only in Russia, whereas it was the leading one for most countries in EU trade. Belarus was the only country to experience a change in its leading RCA industry, which became SITC 8 from SITC 2. The IIT percentages for the leading RCA industry increased by small amounts in Poland, Lithuania and Moldova, with greater growth calculated for Ukraine and Belarus. Russia's SITC 2 was the only example where a leading RCA industry experienced a declining IIT percentage in either EU or CIS trade. Nevertheless, this percentage was still greater in CIS trade than in EU trade. Unlike in EU trade, the leading RCA industry was always characterised as IT. However, the leading RCA industry in Ukraine (SITC 0) and Belarus (SITC 8) was close to achieving IIT. Thus, it can be said again that those industries operating from RCA were identified as IT, despite increasing values in general. Similar to developments in EU trade, no leading commodity with a significant RCA percentage attained a high IIT percentage. The highest value of such goods in CIS trade was 9.641%, compared with 9.582% in EU trade. This illustrates once more a weak relationship between significant RCA and IIT: leading exports and imports with IIT did not have a significant RCA and some actually exhibited a negative RCA. In CIS trade Russia had the greatest amount of IIT leading goods with ten, but only two goods with RCA.

Conversely, Poland had two with IIT and 12 with RCA. The relationship of which country had the highest amount of leading goods with IIT and the lowest RCA and vice-versa was reversed in EU trade.

4. Conclusion

In IIT the leading industry initially was SITC 7 in Ukraine, Poland and Moldova. However, this changed to SITC 9 (Ukraine), SITC 6 (Poland) and SITC 8 (Moldova). Despite losing this distinction in Poland, SITC 7 became the main export industry and most profitable one. Russia and Belarus had SITC 9 as the leading IIT industry, but this changed to SITC 4 in Russia. SITC 9 remained the leading import industry in Russia. Belarus not only maintained SITC 9 as its leading IIT industry, but it was also initially its main export, import and profitable one. In Lithuania the change was from SITC 1 to SITC 6. Thus, only Belarus maintained the same leading IIT industry. The industry with the lowest IIT percentage showed less change, and stayed the same in Lithuania (SITC 9), Belarus (SITC 4) and Moldova (SITC 3). It changed in Ukraine (SITC 0 to SITC 4), Russia (SITC 1 to SITC 2) and Poland (SITC 8 to SITC 9). No country experienced IIT growth throughout all 10 one-digit SITC industries, like in EU trade. The highest cumulative growth in overall IIT percentage belonged to Ukraine. Again Moldova was the only other country to increase its cumulative percentage. However, neither country experienced IIT, despite Ukraine and Moldova having five and one IIT industries respectively. Only Moldova increased its level of IIT in both EU and CIS trade. Poland witnessed a minute decline in percentage, and never recorded one IIT industry. Despite a small decline, Russia managed to retain overall IIT, with five such industries. Lithuania's percentage decline was more than half and it lost its three IIT industries. The most significant decline, however, was experienced by Belarus, although it finished with two IIT industries. Belarus also had the most pronounced decline in EU IIT, but the figure was far greater in CIS trade. For the exception of Ukraine, IIT growth in CIS trade was poor.

SITC 6 & 7 commodities were also the majority of leading exports and imports in CIS trade, with Moldova the exception. SITC 7 was the leading export and profit industry in Poland, Lithuania and Belarus in CIS trade, yet it was also the leading import and

deficit industry for all in EU trade, except Poland. Only Russia achieved IIT in both, whereas only Poland did likewise in EU trade. Ukraine experienced IIT in SITC 7 in CIS trade. The number of identical commodities in these leading exports and imports was also low, with only Russia having a significant amount (8). The majority of exports by factor intensity were human capital- and technology-intensive goods, except for Moldova. This contrasted EU trade where the majority were primary products, natural resource- and labour-intensive ones, except for Poland. The role of resource- and labour-intensive goods was less important for all. Ukraine had fewer similarities with its exports in CIS trade, thus indicating lesser competition. Human capital- and technology-intensive imports remained significant, but not to the extent they were in EU trade. In CIS trade they constituted the majority of imports only in Ukraine and Lithuania, whereas the bulk was primary products and resource-intensive goods in Poland and Moldova. Labour-intensive imports were not recorded in any country. Common imports with Ukraine were greater, especially with Poland and Belarus, than in exports, except Russia. As was the case with EU trade, the relationship between the leading RCA industry and IIT one was insignificant, as the leading RCA ones remained IT, for the exception of Russia in 2001. However, the leading RCA industry was close to achieving IIT in Belarus-CIS trade in 2001 and 2006, and in Ukraine-CIS trade in 2006. The highest overall IIT percentage was calculated in Russia, whereas the worst was in Poland. This was the opposite of overall IIT in EU trade.

The examination of industries' IIT percentages against export and import figures produced some interesting observations. For instance, the initial leading IIT industry in Poland (SITC 7) increased its exports; however, in Belarus and Moldova the initial leading IIT industries (SITC 9 & 7 respectively) saw their exports contract. In terms of overall exports, the initial leading IIT industry in each country, except Belarus, experienced an increase, whereas in EU trade a decrease was applicable to all, except Poland. This increase was at the expense of the new leading IIT industry in two countries (Russia and Lithuania), but not in three others (Ukraine, Poland and Moldova). A similar development was observed in EU trade. The initial poorest IIT industry also saw exports decline in some countries (Ukraine and Poland), yet increase in one other (Russia). This also proved to be a characteristic of EU trade. Moreover, the new industry with the

poorest IIT percentage experienced either a minute increase or no change in its export growth. This contrasted with EU trade where significant growth in total exports was observed. In those countries with no change in their poorest IIT industry, there was either no change at all or a minute increase or decrease. In a comparison of the percentage changes in exports by SITC industries and changes in SITC industries as a percentage of overall exports with the greatest increase in IIT percentages, a very weak relationship existed with the former and there was no such relationship with the latter. Neither relationship was found in EU trade. However, a comparison of the percentage changes in imports by SITC industries and changes in SITC industries as a percentage of overall imports with the greatest decrease in IIT percentages illustrated a very weak relationship with the former, and no such relationship with the latter. This was also applicable to developments in EU trade. With the considerations of RCA and IIT completed, the next section presents a final conclusion of the work.

CONCLUSION

This thesis has sought to ascertain the extent and nature of post-Soviet economic restructuring and development through the analyses of Ukraine's foreign trade flows with the EU and CIS on a comparative basis between 1996 and 2006. These prominent organisations were selected because they are the two largest economic trading blocs in Europe, with the CIS replacing the CMEA as the most important such organisation in the former USSR. In order to contextualise these results, five additional countries (Russia, Poland, Lithuania, Belarus and Moldova) which shared the Soviet economic model and are at the crossroads of where the EU and CIS meet were selected for comparative analyses. The analyses were examined through the simple composition of exports, RCA and IIT, using the Balassa and Grubel-Lloyd indices which are empirically proven and widely accepted. The RCA and IIT trade theories and models are considered complementary to each other, rather than substitutes, in the analyses herein.

The trade performances of these countries were largely mixed. Empirical results were different not only between countries, but also trading blocs. The origin of these differences is found in country determinants, the degree of economic integration, economic size, factor endowments and the market demand patterns, trade policies and the extent of trade organisation integration in both blocs. An examination of exports in EU and CIS trade provided a good illustration of some of the changes occurring in each country. This was initially done through looking at more simple indicators, such as changes in total exports, percentage changes in exports by SITC industries and changes in SITC industries as a percentage of overall exports. Perhaps one of the most surprising findings was that Belarus experienced the greatest percentage increase in its exports to the EU, a value more than double that of second-placed Lithuania. However, Belarus is the only country herein not to envisage WTO membership or participate in closer EU partnerships: it does not have a PCA, nor does it share the ENP with Ukraine or Moldova. Trade policy normally opens markets; however, in the case of Belarus its fastest growing export industry with significant RCA (SITC 3) did so. In addition, Belarus had the best average in: GDP growth; industry, value-added, as a percentage of GDP; and, exports of goods and services as a percentage of GDP. Much of this was the result of favourable re-export and re-import terms with Russia, as trade between the two was not considered

strictly foreign. For Poland and Lithuania, accession to the EU was crucial to initiate economic restructuring: it involved the elimination of customs duties, trade liberalisation and the participation in greater free trade and an eventual customs union in May 2004, signalling the end of independent trade policies and the adoption of EU ones. This largely explains the changes in their respective trade structures, and both secured WTO membership earlier.

To ascertain where export growth was the most prominent, a closer examination of percentage changes in the ten SITC industries illustrated that SITC 4 led in three countries (Ukraine, Russia and Lithuania), and SITC 3 experienced the greatest growth in Belarus and Moldova. In Poland, the leading growth was found in SITC 9. However, this industry clearly had the most erratic development in each country. With the exception of SITC 3 in Belarus, none of these industries were significantly export-oriented. This highlighted a problem common to each technique employed: the relative values of different commodities did not define the relative importance of these products in a country's economy and overall trade. When export growth was measured against changes as a percentage of overall exports, the results mostly differed. For example, only in Belarus did the same industry (SITC 3) contribute significantly to growth in terms of overall exports. Given the results of both initial measurements, there was little doubt that this industry drove Belarusian exports to the EU. In fact, it recorded the greatest increase of this definition for any country in either EU or CIS trade. According to growth in overall exports, it was also apparent that a significant increase was calculated in SITC 3 for Lithuania's exports, although the growth was not as considerable. The leading results varied elsewhere: SITC 6 (Ukraine); SITC 9 (Russia); SITC 7 (Poland); and, SITC 8 (Moldova). In contrast, these were major export industries, except for SITC 9 in Russia. SITC 3 in Belarus and Russia and SITC 8 in Moldova accounted for more than 50% of total exports in 2006. No industry managed to attain such high export volumes in CIS trade. It is worth noting that EU trade policy in Ukraine, Russia and Moldova has been dominated by the PCA, EUUAP (Ukraine), CES (Russia) and EUMAP (Moldova). The PCA liberalised trade in key areas like textiles and clothing (SITC 6 & 8), and the GSP benefited exports to the EU but not in 'sensitive' commodities like steel, iron, fertilisers and several agricultural products (SITC 0, 5 & 6). The fact particular commodities in

SITC 6 were either liberalised or faced with restrictions illustrated the problem concerning industry definition. Moreover, the EU employs steel import quotas and anti-dumping duties against chemical and metallurgical products which are strong in CIS trade. These specific trade policies affected commodities from the aforementioned SITC industries, partly explaining the latter's absence amongst the leading export industries. However, it was clear that Moldova, in particular, and Ukraine, to a lesser extent, benefitted directly from them. Had WTO membership been secured earlier, Ukraine would have greatly benefitted from a cessation of quantitative quotas concerning its commodity advantages.

The two aforementioned forms of measurement for export changes illustrated an insignificant relationship, given the lack of similarities between the leading figures from each, partly explained by the actual size of the specified industries. In 1996, each one identified as having the leading percentage change in exports was classified as a small industry. Only SITC 3 experienced a degree of growth significant enough to establish it as a leading export industry. Moreover, growth in the value of a given commodity's exports did not automatically translate into a greater share of overall exports, thus illustrating many inconsistencies. Although the aforementioned measurements revealed increases and decreases, only the percentage of overall exports had upper and lower limits that were better suited for comparative purposes.

In the leading export industry to the EU only Russia's remained constant (SITC 3). This development, however, was the only example in EU trade where the main export industry did not change, and was not replaced by one experiencing the greatest increase as a percentage of overall exports. In fact, it was the only example where a main export industry decreased, albeit by a minute value, in terms of overall exports. Nevertheless, the significant weight of this industry concerning exports, combined with the fact these commodities enjoyed high market demand in the EU and CIS, meant it retained its overall RCA. Kravis' 'availability' theory and Dutch Disease, both of which indicate a strong, continuing reliability on existing resources, clearly remain important issues for Russian trade. Elsewhere the main export industry in each country not only changed, but experienced double-digit growth. Therefore, there was precedence for industries having the leading growth in exports as a percentage of overall exports also to have the

distinction of becoming the main export industry. Lithuania and Belarus acquired the same leading industry as Russia, mainly because of imports to improved local refinery sites, despite the fact that they had low levels of national production in this commodity. In fact, only Moldova's production here was less than Lithuania's. In a clear illustration of the Ricardian theory, SITC 8 replaced SITC 0 in Moldova. Given EU protectionism in agriculture, this development was not unexpected. The only country to have the same leading RCA and export industry was Moldova. This was largely because of the heavy emphasis on this industry and demand for its commodities in the EU, in addition to the fact that Moldova suffered from the most limited variety of commodities for export, WTO membership notwithstanding.

To illustrate how different CIS trade was in comparison, Poland experienced the greatest percentage increase in exports, although the figure was appreciably less than its export growth in EU trade and even that of last placed Moldova-EU trade. This clearly suggested the lesser importance of the CIS markets. The lesser importance of the these markets was further emphasised by the fact that the CIS operates free trade, but this tends to be intra-bloc and largely formulated by bilateral trade agreements amidst a proliferation of regional trading blocs, like SES, GUAM, EurAsEC and the Russia-Belarus Union. Such provide specified protectionism and are unable to resolve trade disputes or formulate a competition policy. This particularly affected Moldova and Ukraine. Great uncertainty exists about market access, because of defensive measures in intra-bloc trade and the fact customs regulations and real widespread acceptance of national standards does not exist. All of these factors negatively affected CIS trade, helping to explain why it experienced lower export growth figures, volumes and degrees of restructuring. It is interesting to note that, a stated preference for greater CIS integration notwithstanding, Belarus' export growth in CIS trade was substantially less because its main export commodity, acquired from Russian imports, found a greater advantage in the EU. Furthermore, the only contraction was calculated in Moldova, which ironically had a strong showing in average percentages in exports of goods and services as a percentage of GDP.

In order to determine the industries that illustrated greater export growth in CIS trade, the aforementioned measurements applied to exports to the EU were also used. It

was apparent that export growth not only varied by comparison, but was found in industries that were not as significant in EU trade. This clearly illustrated a different market with interests in different commodities, and illustrated the divide between both markets in terms of the intensive nature of the leading commodities for trade. The only industry to record the highest value in more than one country was SITC 7 in Poland and Lithuania. The only one to have a leading percentage in EU and CIS trade was SITC 9 in Poland and Ukraine respectively. The other leading industries were: SITC 1 (Russia); SITC 0 (Belarus); and, SITC 2 (Moldova). Only SITC 7 in Poland and Lithuania were major export industries. The examination of export growth against changes as a percentage of overall exports yielded different results yet again. However, whereas SITC 3 in Belarus managed to illustrate a very strong relationship between the two in EU trade, SITC 7 managed to do likewise in Poland and Lithuania concerning CIS trade. Moreover, all three experienced substantial growth and were major export industries in 2006. The leading values elsewhere largely reflected minor export industries. Once again this positive relationship indicated that SITC 7 drove Polish and Lithuanian exports to the CIS. In accordance with EU trade, the results again varied elsewhere: SITC 7 (Ukraine); SITC 9 (Russia); SITC 7 (Belarus); and, SITC 6 (Moldova). A partial explanation for this is that CIS trade has featured below-average world prices for energy, metal, agriculture, chemical and wood-based commodities, many of which face EU restrictions. Moreover, the question of VAT application in Russia-CIS trade remained a point of contention, because it was largely considered by other CIS members to favour Russian exports and imports. As identified in EU trade, the industries represented in the leading increases as a percentage of overall exports were major export industries, compared with those identified as having the leading figures in export growth. This again highlighted the problem of the inability to measure relative values. A few exceptions aside, this relationship also held true for imports in EU and CIS trade. If one compares exports to the EU and CIS strictly on percentage changes by SITC industries, it is clear that no country had the same industry with the leading value for each. However, this proved not to be the case when considering changes in SITC industries as a percentage of overall exports. It was clear that Russia (SITC 9) and Poland (SITC 7) experienced their greatest growth in overall exports in the same industries in EU and CIS trade, indicating that both

were more focused in their respective export specialisation. However, Poland's trade structures were largely affected by EU policies, whereas Russia's remained constant, despite non-ratification of the EEnC.

The precedence in EU trade for industries experiencing the leading growth in total exports to become the main export industry also proved relevant in CIS trade, although there was one less example. Ukraine's main export industry remained SITC 6, the only country to have the same one as with EU trade. This industry was strongly affected by EU quantitative quotas. This illustrated a strong reliance on such commodities for export purposes, exemplified by Ukraine's position as the second leading country in exports of goods and services as a percentage of GDP. However, the industry which increased the most regarding overall exports from Ukraine was SITC 7. Two other countries saw no change: Lithuania (SITC 7) and Moldova SITC 1. The latter, like Ukraine, did not experience its most significant growth in its leading export industry. This was in SITC 6. Moreover, its main export industry contracted, as did Russia's in EU trade. The significant share of overall exports enjoyed by SITC 6 in Ukraine and SITC 1 in Moldova allowed these industries to maintain the leading positions, the higher growth values of other industries notwithstanding. Poland and Belarus saw changes from SITC 0 & 9 correspondingly to SITC 7, whereas for Russia the change was to SITC 9 from SITC 3. Poland was the only country to have the same leading export industry (SITC 7) for both blocs. As was the case with the main RCA industry, less change in CIS trade was observed, indicating less restructuring.

It is not always possible to term industries simply as competitive. Part of the RCA analysis revealed the persistence of traditional Soviet and even pre-Soviet industries, and the types of factor endowments characterising them. Nevertheless, some key points about the model's applicability require attention. For example, the CIS states are mainly importing advanced technical goods from the EU and the majority of their own exports are primary and natural resource products; hence, Balassa's index reveals such products are competitive in EU or CIS trade accordingly. Balassa's observance of the difficulties in measuring comparative advantage proposed that it could be 'revealed', provided that observed trade patterns employing non-observable, pre-trade relative prices were used. In other words, the inference of comparative data from observed data produces RCA,

without the influence of identifying variables. The index is very useful in the identification of stronger industries with the potential for further development. As the index has been set as a percentage value with upper and lower limits, it is optimal for comparative purposes. In addition, it facilitates an assessment of change in each industry, according to increases and decreases, which defines whether or not an industry enjoys RCA. The same properties also apply to IIT, thus making comparisons between the two easier.

However, the model cannot measure efficiency levels or the working conditions under which such commodities are produced. It may produce hasty estimates on convergence levels, and it could be argued that it would better perform under IIT conditions because greater information is known about product type and quality. Import statistics were included to recognise the possibility of IIT and avoid possible misinterpretation of it as an aggregation bias. The observed patterns produced by the index can also be distorted by interventions, import restrictions, export subsidies and other forms of protectionism. In large countries with a greater level of diversity in exports, RCA values tend to be less than in a smaller country concentrating on a smaller set of exports, although it may have comparable competitive strengths. Moreover, it is not clear that a given value implies the same extent of RCA in a different country.

Nonetheless, it was possible to produce a more accurate picture of each country's industrial focus and developmental path: the broad nature of their respective RCAs in EU and CIS trade has been ascertained and the more competitive branches of industry have been identified. There is conclusive proof, however, that various factor endowments exist in different proportions across these countries, with the 'availability' theory existing in concurrence with this aspect of the H-O theorem. Balassa's index has herein been proven to present a more accurate analysis of RCA than the scrutiny of the composition exports. This is because the chosen Balassa index not only considers exports, but also imports. Therefore, it avoids providing implausible information, because it measures the true value of a given commodity's export strength by calculating its corresponding imports. Hence, it is a preferable method to determine RCA.

Regarding RCA in EU trade, the main industry remained SITC 2 in Ukraine, Russia, Lithuania and Belarus, despite the fact each country experienced a decline in the

number of commodities represented, and the latter two lost a significant amount of RCA value in this industry. Although Poland and Moldova initially shared this as their main RCA industry, it became SITC 0 in the former and SITC 8 in the latter. Although the significant increase in overall export shares experienced by SITC 8 in Moldova could have suggested strong RCA, the same could not be said about SITC 0 in Poland, which did not exhibit RCA in 1996. Such changes are attributed to specific EU policies: the Single European Market which promoted Poland's agricultural sector, and the Outward Processing Trade which advanced Moldova's textile industries. According to the H-O theorem, these changes are ascribed to diverse factor endowments created by income-level disparities, something illustrated by the comparison of GDP per capita and GNI per capita PPP between the two. However, they had the two lowest values for industry, value added, as a percentage of GDP. Moldova was the only country to have its leading export industry the same as its leading RCA industry. Both countries also enhanced their overall IIT in EU trade.

A closer examination of the Balassa indices and the percentage values revealed additional important data, such as the number of RCA industries. This was an important development because it allowed for a measurement which better indicated the exact extent of change in RCA. Poland not only had the most number of such industries in EU trade with six, but three of them had acquired RCA by 2006. Although Moldova lost one RCA industry, it finished with five. Ukraine, Russia and Belarus each had four, but Ukraine was the only country not to gain an RCA industry. Lithuania had the lowest amount with three, but this included one new industry. With the exception of Moldova, each country saw RCA growth in five or more industries. The index also made it possible to determine which industries enjoyed the greatest increase in RCA in a given country, and this provided interesting comparisons with the industries that experienced the greatest percentage changes in exports and the greatest changes as a percentage of overall exports. The only industry to experience the greatest increase in its RCA percentage in more than one country was SITC 3 in Lithuania and Belarus. This industry not only witnessed the greatest increase in exports as a percentage of overall exports in both countries, but it also became the main export industry. However, it only managed to have the leading percentage in exports in Belarus. The only other industry that had the leading RCA

percentage increase and the best growth in exports was SITC 4 in Ukraine, but its contribution to total exports was negligible. In Russia and Moldova, the industries experiencing the greatest increase in RCA were SITC 9 & 8 respectively, both of which were also the leaders in growth as a percentage of overall exports. The greatest increase in RCA for a given industry in Poland was calculated in SITC 1, yet this industry failed to attain either the leading change in exports or the leading growth as a percentage of overall exports. With the second best figure in export growth, it was a small industry which gained RCA. The growth of exports combined with far greater growth in imports in SITC 9 and a loss of RCA overshadowed developments in SITC 1, which had a positive trade balance. Four of the leading industries in percentage growth gained RCA (SITC 4 in Ukraine and SITC 8 in Moldova already enjoyed RCA). There were two leading RCA industries that had the leading percentage change in exports and four leading ones that had the greatest growth as a percentage of overall exports. Therefore, there was no definite relationship between either the leading RCA growth industry with that of the leading growth in exports and the greatest increase as a percentage of overall exports. The most valued export commodity with significant RCA always originated from an RCA industry, reflecting traditional exports that faced lesser competition. The greater liberalisation and leading positions in FDI inflows and GNI per capita PPP experienced by Poland and Lithuania facilitated increased competitiveness and the adjustment to new capacities and production techniques. It further illustrated that the ACs began to undertake more diverse product specialisation. The higher amount of shared RCA goods highlighted that competition in EU trade was significant, with many of these countries competing to various degrees in the same products.

RCA in CIS trade proved quite different: SITC 0 remained the leading industry in each country, except in Belarus where it changed from SITC 2 to SITC 8. SITC 2 retained predominance in Russia, which showed strong growth through nine industries. Conversely, Moldova only improved in one. No country had its leading export industry the same as its leading RCA one. It was not surprising that Ukraine, Poland, Lithuania and Moldova experienced continuing RCA in an ‘obligatory’ industry (energy, raw materials and foodstuffs). However, representation and RCA percentage declined significantly in Ukraine and Moldova, countries which were the leaders in agriculture,

value-added, as a percentage of GDP, and they suffered from high labour migration and frequent trade disputes. This industry was more significant in these countries than elsewhere. Therefore, Ukraine and Moldova were the most directly affected countries by various EU and CIS trade policies, with Poland's agricultural sector more directly affected by EU policies. Belarus and Lithuania had greater representation from SITC 0, which became an RCA industry in the former. In 2006, only Poland and Russia had the same leading RCA industry in their respective EU and CIS trade. Despite both having the lowest GDP figures in the export of goods and services, this illustrated a greater priority on specific export-oriented industries. Changes and increases in RCA were less evident in CIS trade. Thus, there was again less evidence of restructuring.

Following RCA in EU trade, a closer examination of Balassa's indices revealed some interesting developments that helped define whether or not a particular industry enjoyed RCA. Ukraine had the most number of RCA industries with eight, representing an increase of one. Two new RCA industries meant that Russia gained the most to have a total of six. Poland also had the same number of industries, but this represented a loss of two. With the most significant loss of RCA industries at three, Lithuania had a total of four. Belarus and Moldova had three, and each lost one over the period in question. EU trade saw most countries acquire more RCA industries (only Moldova experienced a decrease), but this was not applicable to CIS trade, where only Ukraine and Russia managed to do likewise. Ukraine, Russia and Belarus had RCA growth in five or more industries, but in EU trade only Moldova witnessed growth in less than half of its industries. Thus, RCA was not increasing with the same vigour in CIS trade. Clearly the leader in CIS trade, Russia was the only country to gain more RCA industries with both blocs, whilst Moldova was the only one to lose with both. Although each country was highly specialised in particular commodities, there was a vast difference in the importance of these goods and where it was most profitable and easier to export, because of respective trade policies and market demands. The industries experiencing the greatest growth in RCA were also identified, and this provided interesting comparisons with those experiencing the greatest percentage changes in exports and the greatest changes as a percentage of overall exports. Only one industry had the leading growth in its RCA percentage in more than one country. This was SITC 7 in Poland and Lithuania, an

industry already defined as having RCA and one that was the leading export industry. In Ukraine and Belarus, the leading RCA growth belonged to SITC 9 & 0 respectively, and these industries gained RCA. However, in Russia and Moldova, the leading industries were SITC 1 & 2, both of which did not exhibit RCA. This was a unique development, because no industry with the greatest increase in its RCA percentage failed to attain RCA in EU trade. This illustrated the extent to which these particular industries were initially import-oriented. Another aspect of CIS trade concerning RCA was that every industry to achieve the best RCA growth also had the leading percentage increase in exports, only two of which (SITC 7 in Poland and Lithuania) also experienced the leading growth as a percentage of overall exports. Outside of these two examples, no industry with a leading percentage figure in exports constituted a country's main export industry. In five examples, the industry with the leading percentage increase in exports experienced a decrease in the industry's share of overall imports (SITC 9 in Ukraine was the sole exception). This also applied to the two leading industries regarding export growth in EU trade. Another factor distinguishing CIS trade was the connection between the leading RCA industries: it was stronger with percentage changes in exports than it was with growth as a percentage of overall exports, because of differences with respective imports. Common to EU and CIS trade was the fact that the industry with the leading RCA growth rate increased its volume as a percentage of overall exports; however, decreases in imports as a percentage of total imports were more common in CIS trade than EU trade.

Despite Russia's clear dominance in energy commodities and the significant lower production levels of the other states herein, the only industry for which increasing RCA percentages were universally recorded in EU trade was SITC 3. SITC 2 maintained RCA in all countries, and no particular industry experienced decline in every country. Fewer commodities with significant RCA percentages were common in CIS trade; hence, competition was not as intense. This is illustrated by the fact that Ukraine shared a total of seven commodities with Poland and Moldova in 2006, eight less than with Lithuania and Russia in EU trade. Ukraine's shared commodities increased with Russia and decreased with Moldova in EU and CIS trade. As was the case with Poland-EU trade, Russia experienced RCA growth in all but one industry (SITC 2). Ukraine and Belarus saw growth in half of their one-digit industries. Conversely, Moldova did likewise in only

one (SITC 2). Poland was the only country to have the same worst performing RCA industry in EU and CIS trade (SITC 9). In addition, Belarus and Moldova witnessed their highest increases in EU trade become their worst in CIS trade (SITC 3 & 8 respectively) which reflected a clear reorientation of such commodities to the EU. Universal increases across all countries were not calculated, nor were such decreases.

Although international trade literature suggests that RCA helps to explain trade patterns between different countries in different products, it cannot sufficiently explain other location and trade patterns in Europe which generally have similar factor endowments. This is most important where IIT is concerned, given its growing relevance in European trade. The study of IIT is invaluable to developed and transition economies, because it would seem to be fundamental to the successful development of higher value-added activities. It is, therefore, essential to study how IIT intensifies, in order to acquire a full understanding of the nature of trade relations in not only the EU, but also the CIS. Hence, it was not only necessary, but appropriate to use an approach that favoured these two complementary analyses. However, the calculated levels of IIT herein were generally low. Therefore, there was no need to separate HIIT from VIIT in the empirical analyses, as this would be more appropriate for the advanced EU states. Given the, there is a positive correlation between VIIT and IT, the driving forces behind IIT and the nature of trade in both blocs indicated that the level and nature of IIT could be predicted to a certain extent. As the level of economic integration differs, so should the levels of IIT. In addition, simultaneous growth in export and import volumes increases IIT. This is particularly evident in Poland-EU, Lithuania-EU and Russia-CIS trade. For example, Poland and Lithuania experienced RCA increases in nine and seven industries respectively, and IIT growth in all ten one-digit industries. Russia saw RCA growth in nine industries and IIT increases in four. Nevertheless, significant differences in IIT values exist between the different countries not only in relation to one another, but also in both blocs.

Many of the benefits associated with the Balassa Index in this study are also applicable to the Grubel Lloyd Index. Although it is a widely accepted IIT measurement, a few considerations should be kept in mind. First, trade imbalances exist: all IIT models simply assume balanced trade. This necessitates correction, itself a subject of debate.

Second, it contains both IIT and IT which, in the absence of pure IT or IIT, poses problems for the interpretation of trade flows: IT relates to perfect competition, whereas IIT relates to imperfect competition. There is also the acknowledgement that VIIT and IT can simultaneously exist. Third, when aggregate commodities trade is unbalanced, a downward bias of IIT indices may occur. Fourth, there is a problem with data aggregation in geographical and industrial aspects. In the former, bilateral trade flows are preferable to multilateral ones to minimise biases; however, in the latter, a lower aggregation level is more suitable because IIT percentages rise with increased levels of aggregation because aggregated groups can contain commodities with different factor content. Finally, there is also the question of the definition of what constitutes an 'industry', and the fact that classification is often problematic. When one country has a clear competitive advantage, low GLI values imply an external impact of trade on production and employment; the existence of a negative trade balance can result in shifts of production to countries with an RCA in a given industry. In contrast, high GLI values indicate strong bilateral trade links in a given industry. In cases where a country's traditional sectors have increased, or maintained their competitiveness, there is usually less evidence of trade restructuring. There is a need to bear in mind the aforementioned weaknesses of the GLI and to interpret it with caution. No complete measure of IIT exists, but the GLI is, undoubtedly, the most common measurement and one suitably accurate for this study. The eventual biases that may be generated because of its weaknesses do not outweigh the benefits of using the index and analysing the results. Therefore, the GLI is the best measure for this paper.

The exchange of similar manufactured products, whereby firms specialise in similar commodities characterised by different varieties and increasingly reliant upon intermediate components and inputs produced by foreign suppliers, is an example of IIT, itself a product of the need to realise economies of scale. Several ACs, including those in this study, are increasingly showing this tendency. Consequently, IIT may be the product of significant exports in a particular industry driven by corresponding imports. The best example herein was SITC 7 in Poland-EU trade in 2006. The leading IIT industry for Ukraine, Poland and Moldova in EU trade was initially SITC 9; however, this remained the case only in Poland, as SITC 3 replaced it in Ukraine and SITC 1 did likewise in

Moldova. Ukraine was the second leading producer of gas and oil, yet its IIT percentage for SITC 3 declined. However, it increased significantly in Russia. Lithuania's leading IIT industry changed from SITC 6 to SITC 9, whereas in Belarus SITC 9 replaced SITC 8, which lost its position as the main export industry and leading IIT one. Russia's leading IIT industry changed from SITC 8 to SITC 3, also the main export industry and most profitable one, which was the leading import industry in Belarus and Lithuania. Combined with its significant RCA, Russia was the only country to have its leading IIT industry in such an advantageous position in 2006. Moreover, the high international prices for these commodities largely explained its positive trade balance, and how Belarus reversed its negative balance. Belarus was also the only other country to have its main export industry the same as its leading IIT one in 1996. It did likewise in CIS trade in the same year. The only industries significant here in terms of exports were SITC 3 in Russia, the country's leading export industry, and SITC 0 in Moldova, which averaged almost one-quarter of total exports.

Only Poland and Lithuania witnessed increases in their IIT percentages throughout all industries, and increased their RCAs in EU trade. They also experienced the highest overall IIT growth; however, only the former experienced overall IIT. What is apparent is that EU Accession helped facilitate such growth, allowing Poland to have eight IIT industries and Lithuania four. This contrasts with 1996 when only Poland had one such industry. Hence, this rapid IIT growth validates the findings of Grubel and Lloyd (1971, 1975) that regional trading agreements and customs unions promote such growth. Poland and Lithuania were also the leaders in GNI per capita PPP, GDP per capita and FDI inflows, with the latter also playing a leading role in exports. For Poland and Lithuania, earlier customs reform and tariff liberalisation facilitated comprehensive structural changes. The EA promoted trade liberalisation, but pre-accession restructuring was required in the 'sensitive' industries; the IA further advanced EU integration, market access and membership. Moldova saw IIT growth across seven industries, and it was the only other country to experience overall IIT growth, although it lost one such industry. FDI was also significant in exports as a percentage of GDP for Moldova. This was interesting because difference/similarities in GDP per capita should decide the nature of IIT. However, Moldova's success here highlights the fact that it remains unclear about

the size of differences in per capita GDP required to create VIIT. Thus, per capita GDP may not fully explain the nature of IIT, and may be an unsuitable proxy for factor endowments and demand patterns. The largest overall decline was calculated in Belarus, followed by Russia and Ukraine, which experienced the lowest number of IIT increases in its ten industries. FDI inflows as a percentage of exports were the poorest in these countries, and they suffered trade restrictions in many industries in which they had RCAs (e.g. steel, iron, fertilisers and agricultural products). Greater percentage decreases notwithstanding, Belarus and Russia acquired one IIT industry apiece, yet Ukraine lost two. Furthermore, SITC 2 was the only industry to exhibit growing IIT values throughout, whereas no industry experienced declining percentages in each country. There were no relationships between the industry with the leading IIT growth and that with the leading percentage increase in exports or the leading growth figure as a percentage of overall exports. Moreover, no relationships were observed between the industry with the leading IIT growth and those with the leading RCA growth.

In CIS trade the leading IIT industry in Ukraine, Poland and Moldova was initially SITC 7, but became SITC 9, 6 & 8 respectively. However, SITC 7 became the main export industry and the most profitable in Poland. Considering the traditional role of this industry in the USSR and CIS, this was an interesting development. Moreover, SITC 7 experienced significant decline in CIS trade, as similarities decreased. Russia and Belarus had SITC 9 as their leading IIT industry, but this changed to SITC 4 in the former. SITC 9 remained the leading import industry in Russia, and in Belarus it was also originally its main export, import and profit industry. The leading IIT industry changed from SITC 1 to SITC 6 in Lithuania. Therefore, Belarus was the only country to retain the same leading IIT industry in CIS trade. The industries identified as having leading IIT percentages tended to be more significant concerning exports than those in EU trade. For example, SITC 6 in Poland and Lithuania and SITC 9 in Belarus had total export shares greater than 12% on average. This illustrated a greater concentration. However, as in EU trade, developments in this category were highly erratic, compared with the leading RCA industries. This indicated the instability of IIT developments, and that these countries were more reliant on RCA.

No country experienced IIT growth throughout all ten one-digit SITC industries, like in EU trade. Increases across seven industries were calculated in Poland and Belarus. As was the case with SITC 2 in EU trade, SITC 0 was the only industry in which each country recorded IIT growth. Again a decrease in percentage values was not recorded in a given industry in each country. Ukraine recorded the highest cumulative growth in overall IIT percentage in CIS trade, with Moldova the only other country to witness an increase. This indicated some degree of convergence, but overall IIT was not experienced by either, despite Ukraine having five IIT industries. Only Moldova experienced overall IIT growth in both its EU and CIS trade. Although the number of commodities available for trade was the lowest in this study, such increases were interesting because it was also the country with the poorest rankings in: GNI per capita PPP; GDP growth, current and per capita; industry, value-added, as a percentage of GDP; and, FDI inflows. However, Moldova was the leader in FDI inflows as a percentage of exports and as a percentage of GDP. Poland witnessed a minute percentage decline from an already low level, and never recorded one IIT industry. This was the reverse of its position in EU trade. A small percentage decrease notwithstanding, Russia just managed to retain overall IIT with five such industries. Lithuania's IIT value fell by more than half, losing its three IIT industries in the process. Although it finished with two IIT industries, the greatest cumulative percentage decline in either EU or CIS trade was calculated in Belarus. Moreover, it was also the only country to lose overall IIT. For the exception of Ukraine, IIT growth in CIS trade was poor. This illustrated that convergence was not as great, thus similarities decreased. A relationship between the industry with the leading IIT growth and that with the leading percentage increase in exports was strictly limited to SITC 9 in Ukraine. This industry was also the same one to record Ukraine's leading increase in imports and leading RCA percentage in CIS trade. Despite the substantial percentage growth in exports and imports, it was rather insignificant regarding relative trade volumes, averaging less than 1% of imports and exports. There were no relationships involving the industry with the leading IIT growth and the leading growth figure as a percentage of overall exports: no industry with the leading IIT growth was significant in export terms.

This analysis has revealed that overall growth of IIT has been extraordinary in Poland and Lithuania concerning EU trade and, to a lesser extent, in Ukraine regarding

CIS trade, in addition to the modest growth calculated in Moldova's trade with both blocs. Increases in IIT illustrate that these countries were gradually trading in similar products with their respective trading blocs, albeit ones that are more commonly differentiated by product variety. This indicated that trade was being modernised in these countries, yet the evolution could not be said to be of an equal intensity in each country and the pace of progress herein has been shown to be uneven.

A problem common to all the techniques is relative values: they cannot define the importance of a given industry. In order to address this and investigate the changes in industries of greater importance, an examination of the leading exports and imports was provided. In EU trade, Ukraine, Russia, Poland and Belarus showed SITC 6 & 7 commodities to be in the majority. Only in Poland were these industries characterised by IIT. This reinforced the extent to which IIT was influential. The number of identical goods in a given country's leading exports and imports was low, with only Poland achieving a notable number. According to factor intensity, the majority of exports to the EU from each country were primary products, natural resource- and labour-intensive ones. With greater representation of human capital- and technology-intensive commodities, Poland again was the sole exception, whilst there was an equal split in Belarus. The trend suggests that Poland would be the first to initiate greater specialisation in more R&D and human capital- and technology-intensive industries (chemicals, telecommunications, medicinal and pharmaceutical products, electric machinery, medical and optical instruments). EU demand has not only reinforced such goods in CIS exports, but it may also help determine their future development paths. As was the case with Poland's RCA results in EU trade, this again indicated greater restructuring and signalled movement towards greater IIT. Except for Poland, significant similarities with Ukraine's exports were identified throughout, indicating heightened competition in EU trade which was also observed in RCA developments. In imports, however, the reverse was true: human capital- and technology-intensive goods dominated, and the number of imports between Ukraine and the other countries was universally greater than exports. In some instances such goods were imported for the purpose of installation and completion thus re-destined for export. There was a much greater dependency on goods of these factor intensities in imports than the dependency on primary products, labour- and natural

resource-intensive ones in exports. The relationship between the leading RCA and IIT industries was weak: RCA industries remained IT in all, except Poland in 2006 where SITC 0 also achieved IIT. As mentioned previously, a relationship between VIIT and IT does exist. The highest overall IIT percentage belonged to Poland, followed by Lithuania, Ukraine, Moldova and Belarus. The worst was calculated in Russia.

The majority of leading exports and imports in CIS trade also originated from SITC 6 & 7 commodities, with Moldova the sole exception. The leading export and profit industry in Poland, Lithuania and Belarus in CIS trade was SITC 7, which was also the leading import and deficit industry for all in EU trade, except Poland. Only Russia achieved IIT in SITC 6 & 7 in CIS trade, as Poland had done in EU trade. Ukraine experienced IIT in SITC 7. The number of identical commodities in leading exports and imports amongst the countries was also low, with only Russia having a noteworthy amount. The majority of exports to the CIS by factor intensity were human capital- and technology-intensive goods, except for Moldova. In fact, each country had a greater amount of such exports, including Poland and Moldova, which indicated the strength of demand for such products. This contrasted EU trade where the majority of exports were primary products, natural resource- and labour-intensive ones, except in Poland. The role of natural resource- and labour-intensive export commodities, however, was less important for all in CIS trade. In general, Ukraine had fewer similarities with its exports in CIS trade. The exception here was Russia with which Ukraine had a greater number of common exports. In terms of imports from the CIS, human capital- and technology-intensive imports remained important, but not to the extent they were in EU trade. Only in Ukraine and Lithuania did they constitute the majority of imports, whereas primary products and resource-intensive goods were stronger in Poland and Moldova. There was an even split in Russia and Belarus. No country recorded labour-intensive imports, and only Moldova did in EU trade. Common imports with Ukraine were greater than exports, especially in Poland and Belarus. Russia again proved the exception. As was the case in EU trade, the relationship between the leading RCA and IIT industries was weak: the leading RCA ones remained IT, except in Russia in 2001 (SITC 5). However, the leading RCA industry was close to achieving IIT in Belarus-CIS trade in 2001 (SITC 7 & 8) and 2006 (SITC 8), and in Ukraine-CIS trade in 2006 (SITC 0). This indicated a better chance

of a significant relationship between the two in CIS trade, where an even greater proportion is VIIT. The highest overall IIT percentage was calculated in Russia, followed by Ukraine, Belarus, Lithuania and Moldova, whereas the worst was in Poland. In overall IIT in EU trade, Poland had the highest value, whereas Russia had the lowest. This illustrated the importance of each to their respective blocs. The dominance of IT in both conforms to H-O theorem which states trade occurs in commodities that more intensively use abundant factors. It is also indicative of the differences in production structures between the individual countries and the EU and CIS.

Traditional CIS industries have persisted, as have their types of characteristic endowments. This is reinforced by the CIS prioritisation of 'obligatory' goods (energy, raw materials, foodstuffs) over 'indicative' ones (intermediate products and consumer goods). The bulk of CIS exports still largely resembled Soviet-era exports (primary products, natural resources). This indicated a continuation of past commodity specialisations, with the need for higher, value-added goods still originating from the West (Smith's 'productivity' theory). In accordance with the postulates of the H-O model and the theory underlining comparative advantage, the differences in factor endowments in these countries produced such dissimilarities. In general, CIS trade reflects Ricardo's theory and Kravis' 'availability' theory. Restructuring and the introduction of goods characterised by greater processing was not significant, nor was more intense competition.

To assess further such changes, with a view to long-term developments, an increased period of time for analyses would be optimal. Although the chosen period herein covered a significant proportion of time during transition, such restructuring can be quite difficult in larger economies. Moreover, the reliance on industries which enjoy RCA can be further strengthened during economic hardship. The significant growth in IIT results in Poland and Lithuania largely validate Grubel and Lloyd's theory, and there is little doubt that the EU and WTO were the major forces behind their restructuring and modernisation, albeit not of equal intensities. The incentive to do so was substantial, and they exhibit better economic potential for numerous reasons. Although Poland did experience a smaller degree of restructuring in CIS trade, Lithuania was less successful and showed a more difficult adjustment period in which IIT decreased. This was even

more exemplified in the CIS for the most part. Analysis beyond these countries into other transition economies would be useful to verify further such relationships and the existence of additional ones. It may be simplistic to assume an easy separation of IIT. Larger economies are notoriously difficult to change over a shorter period of time in comparison with smaller ones. Therefore, further analysis in comparative groups based purely on economic size (GDP size and similarity) is also feasible on a comparative basis. Another consideration would be to examine the trade data at different levels of aggregation to determine such relationships; however, the aforementioned concerns of doing so would need to be addressed. As the development paths of both blocs continue to diverge, additional analyses on trade developments would not only be well received, but fundamental to understanding and formulating policies for future economic development.

Appendix 1: Full List of Three-Digit SITC, Revision 3, Commodity Codes

001 Live animals other than animals in div. 03
011 Meat of bovine animals, fresh, chilled or frozen
012 Other meat & edible meat offal, fresh, chilled or frozen
016 Meat & edible meat offal, salted, in brine, dried or smoked; edible flours & meals of meat or meat offal
017 Meat & edible meat offal, prepared or preserved, n.e.s.
022 Milk & cream & milk products other than butter or cheese
023 Butter & other fats & oils derived from milk
024 Cheese & curd
025 Eggs
034 Fish, fresh (live or dead), chilled or frozen
035 Fish, dried, salted or in brine; smoked fish
036 Crustaceans & molluscs
037 Fish, crustaceans, molluscs & other aquatic invertebrates, prepared/preserved, n.e.s
041 Wheat (including spelt) & meslin, unmilled
042 Rice
043 Barley, unmilled
044 Maize (not including sweet corn), unmilled
045 Cereals, unmilled (other than wheat, rice, barley, & maize)
046 Meal & flour of wheat & flour of meslin
047 Other cereal meals & flours
048 Cereal preparations & preparations of flour or starch of fruits or vegetables
054 Vegetables, fresh, chilled, frozen or simply preserved; roots, tubers & other edible vegetable products, n.e.s., fresh or dried
056 Vegetables, roots & tubers, prepared or preserved, n.e.s.
057 Fruits & nuts (not including oil nuts), fresh or dried
058 Fruit, preserved, & fruit preparations
059 Fruit juices (incl. grape must) & vegetable juices, unfermented & without spirit, also including sugar or other sweetening matter
061 Sugars, molasses & honey
062 Sugar confectionery
071 Coffee & coffee substitutes
072 Cocoa
073 Chocolate & other food preparations containing cocoa, n.e.s.
074 Tea & mate
075 Spices
081 Feeding stuff for animals (not including unmilled cereals)
091 Margarine & shortening
098 Edible products & preparations, n.e.s.
111 Non-alcoholic beverages, n.e.s.
112 Alcoholic beverages
121 Tobacco, non-manufactured; tobacco refuse
122 Tobacco manufactured (whether or not including tobacco substitutes)

211 Hides & skins (except furskins), raw
212 Furskins, raw (including cuttings or pieces)
222 Oil seeds & oleaginous fruits used for the extraction of soft fixed vegetable oils
223 Oil seeds & oleaginous, whole or broken, used for the extraction of other fixed vegetable oils
231 Natural rubber, balata, gutta percha, guayule, chicle & similar natural gums, in primary forms or in plates, sheets or strip
232 Synthetic rubber; reclaimed rubber; waste, parings & scrap of unhardened rubber
244 Cork, natural, raw & waste
245 Fuel wood & wood charcoal
246 Wood in chips or particles & wood waste cbm.
247 Wood in the rough or roughly squared cbm.
248 Wood, simply worked, & railway sleepers of wood
251 Pulp & waste paper
261 Silk
263 Cotton
264 Jute & other textile fibres, n.e.s.
265 Vegetable textile fibres, raw or processed but not spun; waste of these fibres
266 Synthetic fibres suitable for spinning
267 Other man-made fibres suitable for spinning & waste of man-made fibres
268 Wool & other animal hair (incl. wool tops)
269 Worn clothing & other worn textile articles; rags
272 Fertilizers, crude, excl. those of division 56
273 Stone, s& & gravel
274 Sulphur & unroasted iron pyrites
277 Natural abrasives, n.e.s.; industrial diamonds
278 Other crude minerals
281 Iron ore & concentrates
282 Ferrous waste & scrap; remelting ingots of iron or steel
283 Copper ores & concentrates; copper mattes, cement copper
284 Nickel ores & concentrates; nickel mattes, nickel oxides, sinters & other intermediate products of nickel metallurgy
285 Aluminium ores & concentrates (including alumina)
286 Ores & concentrates of uranium or thorium
287 Ores & concentrates of base metals, n.e.s.
288 Non-ferrous base metal waste & scrap, n.e.s.
289 Ores & concentrates of precious metals; waste, scrap & sweepings of precious metals (other than gold)
291 Crude animal materials, n.e.s.
292 Crude vegetable materials, n.e.s.
321 Coal, whether or not pulverized, but not agglomerated
322 Briquettes, lignite & peat
325 Coke & semi-coke of coal, of lignite or peat whether or not agglomerated; retort carbon
333 Petroleum oils & oils obtained from bituminous minerals, crude
334 Petroleum oils & oils obtained from bituminous minerals, other than crude

335 Residual petroleum products, n.e.s. & related materials
342 Liquefied propane & butane
343 Natural gas, whether or not liquefied
344 Petroleum gases & other gaseous hydrocarbons, n.e.s.
345 Coal gas, water gas, producer gas & similar gases, other than petroleum gases & other gaseous hydrocarbons
351 Electric current mwh.
411 Animal oils & fats
421 Fixed vegetable fats & oils, soft crude, refined or fractionated
422 Fixed vegetable fats & oils, crude, refined or fractionated, other than "soft"
431 Animal & vegetable fats & oils, processed, waxes, & inedible mixtures or preparations of animal or vegetable fats or oils, n.e.s.
511 Hydrocarbons, n.e.s. & their halogenated sulphonated, nitrated or nitrosated derivative
512 Alcohols, phenols, phenol-alcohols, & their halogenated, sulfonated, nitrated or nitrosated derivatives
513 Carboxylic acids & derivatives thereof
514 Nitrogen-function compounds
515 Organo-inorganic compounds, heterocyclic compounds, nucleic acids & their salts
516 Other organic chemicals
522 Inorganic chemical elements, oxides & halogen salts
523 Metallic salts & peroxysalts, of inorganic acids
524 Other inorganic chemicals; organic & inorganic compounds of precious metals
525 Radio-active & associated materials
531 Synthetic organic colouring matter & colour lakes & preparations based thereof
532 Dying & tanning extracts, & synthetic tanning materials
533 Pigments, painting, varnishes & related. mat.
541 Medicinal & pharmaceutical products (excl. products in group 542)
542 Medicaments (incl. veterinary medicaments)
551 Essential oils, perfume & flavours materials
553 Perfumery, cosmetics or toilet preparations
554 Soap, cleansing & polishing preparations
562 Fertilizer (other than those of group 272)
571 Polymers of ethylen, in primary forms
572 Polymers of styrene, in primary forms
573 Polymers of vinyl chloride of other halogenated olefins, in primary forms
574 Polyacetals, other polyethers & epoxy resins in primary forms; polycarbonates,alkyd resins & other polyesthers, in primary forms
575 Other plastics, in primary forms
579 Waste, pairings & scrap, of plastics
581 Tubes, pipes & hoses of plastics
582 Plates, sheets, film, foil & strip, of plastics
583 Monofilament of which any cross-sectional dimension exceeds 1mm, rods, sticks & profile shapes, whether or not surface-worked but not otherwise worked, of plastics
591 Disinfectant products, rodenticides & plant regulators
592 Starches, insulin & wheat gluten; albuminoidal substances; glues

593 Explosives & pyrotechnic products
597 Prepared additives for mineral oils, & the like liquids for hydraulic transmission, anti-freezing & lubricating preparations
598 Miscellaneous chemical products, n.e.s.
611 Leather
612 Manufactures of leather or composition leather
613 Furskins tanned or dressed
621 Materials of rubber (pastes/sheets/tubes etc.)
625 Rubber tyres, interchangeable tyre treads, tyre flaps & inner tubes for wheels
629 Articles of rubber, n.e.s.
633 Cork manufactures
634 Veneers, plywood, particle board, & other wood, worked, n.e.s.
635 Wood manufactures, n.e.s.
641 Paper & paperboard
642 Paper/paperboard cut to size, articles thereof
651 Textile yarn
652 Cotton fabrics, woven
653 Fabrics, woven, of man-made textile materials
654 Other textile fabrics, woven
655 Knitted or crocheted fabrics, n.e.s.
656 Tulles, lace, embroidery, trimmings & other small wares
657 Special yarns, special fabrics & related products
658 Made-up articles, wholly or chiefly of textile materials, n.e.s.
659 Floor coverings
661 Lime, cement & fabricated construction materials
662 Clay construction materials
663 Mineral manufactures, n.e.s.
664 Glass
665 Glassware
666 Pottery
667 Pearls, precious & semi-precious stones, unworked or worked
671 Pig iron, spigeleisen, sponge iron, iron or steel granules & powders & ferro-alloys
672 Ingots & other primary forms, of iron or steel; semi-finished products of iron/steel
673 Flat-rolled products, of iron or non-alloy steel, not clad, plated or coated
674 Flat-rolled products of iron & steel, clad, plated or coated
675 Flat-rolled products of alloy steel
676 Iron & steel bars, rods, angles, shapes & sections (including sheet piling)
677 Rails & railway track construction material, of iron or steel
678 Wire of iron & steel
679 Tubes, pipes & hollow profiles, & tube or pipe fittings, of iron or steel
681 Silver, platinum & other metals of the platinum group
682 Copper
683 Nickel
684 Aluminium
685 Lead
686 Zinc

687 Tin
689 Miscellaneous non-ferrous base metals employed in metallurgy, & cermets
691 Structures & parts of structures of iron, steel or aluminium, n.e.s.
692 Metal containers for storage or transport
693 Wire products (excluding insulated electrical wiring) & fencing grills
694 Nails, screws, nuts, bolts, rivets & the like, of iron, steel, copper or aluminium
695 Tools for use in the h& or in machines
696 Cutlery
697 Household equipment of base metal, n.e.s.
699 Manufactures of base metal n.e.s.
711 Steam or other vapour generating boilers
712 Steam turbines & other vapour turbines
713 Internal combustion piston engines
714 Engines & motors, non-electric
716 Rotating electr. plant & parts thereof, n.e.s.
718 Other power generating machinery
721 Agricultural machinery (excl. tractors)
722 Tractors
723 Civil engineering & contractors, plant & equipment
724 Textile & leather machinery
725 Paper mill & pulp mill machinery
726 Printing & bookbinding machinery
727 Food-processing machines (incl. domestic)
728 Other machinery for particular industries
731 Machine-tools working by removing metal or other material
733 Machine-tools for working metal, sintered metal carbides or cermets, without removing material
735 Parts & accessories suitable for use principally with the machines in head. 731/733
737 Metalworking machinery & parts thereof, n.e.s.
741 Heating & cooling equipment, n.e.s.
742 Pumps for liquids, liquid elevators
743 Pumps (other than pumps for liquids), air or other gas compressors & fans
744 Mechanical hauling equipment, n.e.s.
745 Other non-electrical machinery, tools & mechanical apparatus, n.e.s.
746 Ball & roller bearings
747 Taps, cocks, valves & similar appliances, for pipes, boiler shells, tanks, vats
748 Transmission shafts & cranks; bearing housings & plain shafts bearings; gears & gearing; ball screws; gear boxes, etc
749 Non-electric parts & accessories of machinery, n.e.s.
751 Office machines
752 Automatic data processing machines
759 Parts & accessories suitable for use principally with machines in groups 751 & 752
761 Television receivers
762 Radio-broadcast receivers
763 Sound recorders or reproducers; television image & sound recorders or reproducers; prepared unrecorded media

764 Telecommunications equipment parts & accessories of apparatus within div. 76, n.e.s.
771 Electric power machinery & parts thereof
772 Electrical apparatus for switching or protecting electrical circuits or for making connections to or in electrical circuits
773 Equipment for distributing electricity
774 Electro-diagnostic apparatus for medical, dental or veterinary sciences
775 Household type, electrical & non-electrical equipment, n.e.s.
776 Thermionic, cold cathode or photo-cathode valves & tubes; diodes, transistors & similar semi-conductor devices
778 Electrical machinery & apparatus, n.e.s.
781 Motor cars for the transport of persons
782 Motor vehicles for the transport of goods
783 Road motor vehicles, n.e.s
784 Parts & accessories of the motor vehicles of groups 722, 781, 782 and 783
785 Motorcycles & cycles; invalid carriages
786 Trailers & semi-trailers; other vehicles, not mechanically propelled; specially designed & equipped transport containers
792 Aircraft & associated equipment; spacecraft; & parts thereof
793 Ships, boats & floating structures
811 Prefabricated buildings
812 Sanitary, plumbing & heat fixtures/fittings
813 Lighting fixtures & fittings, n.e.s.
821 Furniture & parts thereof
831 Trunks & suit-cases
841 Men's or boy's clothing, not knitted or crocheted
842 Women's & girl's clothing not knitted or crocheted
843 Men's or boy's clothing, knitted or crocheted
844 Women's & girl’s clothing, knitted or crocheted
845 Articles of apparel, of textile fabrics, whether or not knitted or crocheted, n.e.s.
846 Clothing accessories, of textile fabrics, whether or not knitted or crocheted (other than those for babies)
848 Articles of apparel & clothing accessories of other than textile fabrics
851 Footwear
871 Optical instruments & apparatus, n.e.s.
872 Instruments & appliances, n.e.s. for medical, surgical, dental or veterinary purposes
873 Meters & counters, n.e.s.
874 Measuring, checking, analysing & controlling instruments & apparatus, n.e.s.
88 Photographic app., equipment & supplies & optical goods, n.e.s.
881 Photographic apparatus & equipment, n.e.s.
882 Photographic & cinematographic supplies
883 Cinematograph film, exposed & developed, whether or not incorporating sound track or consisting only of sound track
884 Optical goods, n.e.s.
885 Watches & clocks
891 Arms & ammunition
892 Printed matter

893 Articles of plastics, n.e.s.
894 Baby carriages, toys, games & sporting goods
895 Office & stationery supplies, n.e.s.
896 Works of art, collectors' pieces & antiques
897 Jewellery, goldsmiths & silversmiths wares
898 Musical instruments & parts & accessories thereof; records, tapes etc.
899 Miscellaneous manufactured articles, n.e.s.
931 Special transactions & commodities not classified according to kind
961 Coin, not being legal tender
971 Gold, non-monetary

Appendix 2: Additional IIT Calculations for 2000 & 2004

	Overall IIT with the EU		Overall IIT with the CIS	
	2000	*2004*	*2000*	*2004*
Ukraine	32.050%	28.011%	23.503%	27.390%
Russia	11.755%	9.327%	60.356%	55.387%
Poland	51.128%	60.241%	6.524%	8.769%
Lithuania	27.940%	35.690%	21.689%	16.299%
Belarus	17.663%	14.190%	35.868%	35.509%
Moldova	6.702%	11.522%	11.006%	12.040%

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