FINANCIAL LIBERALIZATION AND INDUSTRY STRUCTURE NEXUS: AN INVESTIGATION USING DYNAMIC HETEROGENEOUS PANELS FROM MALAWIAN DATA

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Submitted in fulfilment of the requirements for the Degree of

Doctor of Philosophy in Economics

in the

Department of Economics
Faculty of Law, Business, and Social Science

at the
University of Glasgow

Glasgow December 2009

ABSTRACT

This thesis re-examines the relationship between finance and growth. Most previous studies that have dealt with different aspects of this relationship show that a well-developed financial system is important for economic growth. However, instead of concentrating on the aggregated perspectives of this relationship, this research investigates whether financial development influences the level of competition in the real sector, as one possible mechanism through which finance may influence growth. The study focuses on the changes in industrial structure and performance following a regime change in the financial system: from financial repression to financial liberalization. It has been suggested that financial liberalization may be a key policy to promote industrialisation as it removes the credit access constraints on firms, especially small and medium ones. Competition among financial institutions, which accompanies financial liberalization, leads to greater availability of finance and a reduction in the cost for firms of raising capital for investment. In turn, this encourages creation and entry of new firms and promotes industrial growth, particularly of those firms and sectors that are external finance dependent. The implications of financial liberalization on the real sector are investigated using industry-level panel data from Malawian manufacturing, a variety of econometric methods, and standard measures of industry structure and performance, as well as financial development indicators. The analysis aims to ascertain whether financial liberalization in Malawi has had any impact on the availability of credit for manufacturing firms and whether its effects, which are hypothesised to influence industry structure and performance, differ depending on characteristics such as the degree of external finance dependence of firms or firm size. The main empirical findings show that financial liberalization, even if it results in greater supply of credit and a larger number of lending institutions compared with the pre-reform period, does not remove financing constraints on firms, especially the small and medium ones. Instead, it is the large existing firms that benefit from a more liberal financial regime. Indeed the evidence is that financial reforms have mostly facilitated the expansion of existing establishments rather than the creation of new establishments, and have resulted in greater industry concentration. Further, profitability and output growth are disproportionately higher in large firms than in small ones. The implementation of financial liberalization in Malawi has been judged a success; nevertheless the evidence is that these reforms have been detrimental to competition in industry. What are the policy implications of these findings? This study shows that financial liberalization is not the key for the promotion of industrialisation. In the presence of pervasive market failures in financial resource allocation, as have been experienced in Malawi, the withdrawal of the state from credit allocation decisions is unlikely to result in industrial development.

Keywords: Financial liberalization, financial development, external finance dependence, industry structure, industry performance, Malawi.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF CHARTS AND FIGURES

ACKNOWLEGDEMENTS

I wish to thank my supervisors Dr Alberto Paloni and Dr Luis Angeles for their commitment to my doctoral work, by sharpening many of the ideas and insights found in this dissertation, through their patient reading and discussion of my numerous drafts; as well as demonstrating how to conduct economic research with intellectual rigor and clarity of expression. Their willingness to point out my more egregious lapses in writing style, as well as guide me through rigorous econometrics, is therefore greatly appreciated. I also thank my external examiner Professor John Struthers and internal examiner Dr Alexander Kovalenkov for their constructive comments in review of my thesis.

I thank colleagues at the Reserve Bank of Malawi and Malawi National Statistical Office of the Ministry of Economic Planning and Development for their assistance in providing me with necessary data and information pointers that facilitated the completion of this work. Efford Goneka, Director of Research and Statistics, and Chimwemwe Magalasi, Principal Economist-Financial Institutions, made important contributions by facilitating mobilisation of data from the Malawian financial sector. Jameson Ndawala, Assistant Commissioner of Census and Statistics, and Clement Mtengula, Senior Statistician-Industry, were also very helpful in the collection and processing of manufacturing industry statistics. Special thanks go to my employers, Reserve Bank of Malawi, for awarding me the scholarship for this study.

My wife, Catrina, and children Natasha, Mellisa, Nigel, and Sabrina, provided boundless support. Their sacrifices, devotion, emotional, and practical support carried me through many trying times. Nothing can be said that truly expresses my gratitude, appreciation, and love. I also owe a lot to my deceased parents – Peter Wilson and Lucy Felistas; their absence is part of my inspiration. Further, in loving memory and forever remembered, brothers Stephen, Jasper, Christopher, and sister Jillian.

And last, but not least, – the Lord was my Shepherd: He led me through storms of emotions and questions about life’s inequities, to the still waters of peace and acceptance.

DECLARATION

I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

LIST OF ABBREVIATIONS

ACP	African Caribbean and Pacific
ADMARC	Agricultural Development and Marketing Corporation
AES	Annual Economic Survey
AGOA	African Growth and Opportunity Act
ASAC	Agricultural Sector Adjustment Credit
BAT	British American Tobacco
BIS	Bank for International Settlement
BOP	Balance of Payments
COMESA	Common Market for Eastern and Southern Africa
CPI	Consumer Price Index
DEMATT	Development of Malawi Entrepreneurs Trust
DfID (UK)	Department for International Development (UK)
EBA	Everything But Arms
EDDRP	Entrepreneurship Development and Drought Recovery Program
EPZ	Export Processing Zones
ERP	Effective Rate of Protection
EU	European Union
FRDP	Fiscal Restructuring and Development Program
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
IDA	International Development Association
IMF	International Monetary Fund
IMEXCO	Import and Export Company
INDEBANK	Industrial Development Bank
INDISTAT	Industrial Statistics
ISIC	International Standard for Industrial Classification
ITPAC	Industrial and Trade Policy Adjustment Credit
LDC	Less Developed Countries
LRR	Liquidity Reserve Ratio
MDC	Malawi Development Corporation
MEDI	Malawi Enterprise Development Institute
MEPC	Malawi Export Promotion Council
MIPA	Malawi Investment Promotion Agency
MUSCCO	Malawi Union of Savings and Credit Cooperative
NBFI	Non-Bank Financial Institutions
NORAD	Norwegian Agency for Development
NSO	National Statistical Office
RBM	Reserve Bank of Malawi
SADC	Southern Africa Development Community
SAL	Structural Adjustment Loan
SAP	Structural Adjustment Program
SEDOM	Small Enterprise Development of Malawi
SME	Small and Medium Enterprises
SUCOMA	Sugar Corporation of Malawi
UNCTAD	United Nations Commission for Trade and Development
UNIDO	United Nations Industrial Development Organisation
USAID	United States Agency for International Development

CHAPTER 1.0: BACKGROUND AND JUSTIFICATION FOR THE STUDY.

1.1. INTRODUCTION.

Economic literature provides different perspectives on the theoretical link between financial development and economic growth. According to Schumpeter (1911), financial intermediaries provide essential services that are catalytical for innovation and growth. Thus, a well-developed financial system is able to channel financial resources to the most productive use. However, an alternative explanation by Robinson (1952) argues that finance has no causal effect on growth. Robinson contends that, instead, it is financial development that follows economic growth as a result of higher demand for services. According to this hypothesis, when an economy grows, more financial institutions, financial products and services emerge in the markets in response to higher demand for services.

The literature in this research is generally more in support of the hypothesis advanced by Schumpeter (1911), which is later conceptualized by McKinnon (1973) and Shaw (1973), and further formalized by Fry (1988) and Pagano (1993). According to McKinnon and Shaw, government restrictions on the operation of the financial system such as interest rate ceiling, directed credit policies, and high reserve requirements may hinder financial deepening. Consequently, this may affect the quality and quantity of investments, with a subsequent adverse impact on economic growth. Therefore, the McKinnon-Shaw financial repression paradigm implies that a poorly functioning financial system may retard economic growth[1]. However, some economists are not convinced about the suggested prominent role of the financial system in influencing the economic growth process. Lucas (1988) argues that economists tend to over-emphasize the role of financial factors in the process of growth. Singh (1997) also contends that development of financial markets may be an impediment to the economic growth process particularly when it induces volatility and discourages risk-averse investors from investing. Further, according to Mauro

[1] According to the endogenous growth literature, financial development has positive impact on growth (see, for example, Bencivenga and Smith, 1991; Bencivenga *et al*, 1995; and, Greenwood and Jovanovic, 1990)

(1995), the introduction of certain financial tools that allows individuals to hedge against risk may lead to a reduction in precautionary savings and hence lowers economic growth. These views have therefore excited further research on other possible avenues that justify the relationship between finance and growth.

However, until recently, lack of sufficient time series data, particularly for developing countries, has been a major constraint on research efforts regarding the relationship between finance and growth. As a result, cross-country studies have dominated the literature. Nonetheless, in recent years, empirical research on the finance-growth nexus has now increased with availability of new data compiled by international institutions such as the IMF, the United Nations institutions, and the World Bank[2]. Notwithstanding this development, most of these research studies have not attempted to establish the exact link between finance and growth; and, have instead taken for granted the views suggested by the McKinnon-Shaw hypothesis. Arguably, on *a priori* grounds there are different avenues through which finance and growth can be related. As such, theoretical underpinnings proposed under the McKinnon-Shaw view require extensive empirical investigation. Notably, whilst prior studies have made significant contribution to the literature and even attracted interest for further research on the finance and growth nexus, the results cannot be generalized across countries due to differences in the nature and operations of the financial institutions and policies pursued in each country.

1.2. MOTIVATION FOR THE STUDY.

This study is motivated by the need to provide a further perspective regarding the finance and economic growth debate. This is achieved by investigating further one possible avenue through which finance may relate with economic growth – its effect in influencing the level of competition in industry. Thus, rather than examining the broad correlation between financial development and economic growth, this study specifically investigates whether industries that are more dependent on external financing, are likely to become more competitive following financial liberalization.

[2] Such data has been employed by, for example, Beck *et al* (2000, 2004), Beck and Levine (2002), Levine *et al* (2000), and Demirguc-Kunt and Levine (2001)

Accordingly, within these industry groups, this study decomposes the impact of financial liberalisation and financial development on industry concentration and net firm entry; as well as industry price-cost margins and output growth. However, before outlining the study's research questions, the following sections briefly outline the conceptual issues, which guided formulation of the related research questions.

In a market economy, lack of competition, as signified by concentrated market structures, has direct effects on prices, profits and economic welfare. Research by such scholars as Edwards (1955), Weiss (1983), and Caswell (1987) is illustrative and has concluded that the impact of economic concentration is negative overall. To the extent that increased concentration leads to increased market power, thereby facilitating pricing above competitive levels, the degree of concentration is a potential public policy problem. Economic reforms that have recently characterized most countries in the world, such as the financial liberalization process, have been implemented with the objective of achieving equitable distribution of resources through market forces other than state intervention, thereby engendering competition and ensuring increased productivity as well as affordable prices, and, ultimately, improved consumer welfare. This framework therefore provides an opportunity to assess how the widely adopted financial reform efforts impact on competition levels. Arguably, results of this type of exercise may not be easily generalized across countries. Obviously, initial conditions in each country or within each group of countries may have a lasting influence on the outcome of the reforms. This study, therefore, investigates the relationship between financial liberalization, industry structure and industry performance in the manufacturing sector of a single sub-Saharan African country – Malawi. Justification for this approach is based on two main arguments.

First, there has been minimal empirical research on the relationship between the level of financial development and degrees of intra-industry dynamics in economies with relatively underdeveloped financial systems such as are found in sub-Saharan Africa. It is worth noting that economies in the sub-Saharan Africa region are continuously exposed to large, externally and policy-generated shocks as well as to high political instability, civil strife and natural calamities, such as droughts and floods, thereby rendering these economic environments to be highly uncertain and risky, than other parts of the world (see, Adam and O'Connell, 1997; Collier, 1998; Nissanke, 2001). Besides, several theoretical and empirical studies have suggested that the role of financial development in an economy may vary across countries because of differences in institutional and economic structures (see, La Porta *et al*, 1997, 1998; and Bell and Rouseau, 2001). As such, the role and effectiveness of financial intermediation in the economic growth process is expected to take a different perspective in sub-Saharan Africa than it does in other parts of the world. Results from cross-country studies could therefore be misleading. Moreover, to date, economic theory remains ambiguous on the issue of whether effectiveness of financial development in promoting economic growth depends on the structure or level of development of the economy. There are those who argue that, in a given economy, it is the sector with high economies of scale that benefit more from financial development (Kletzer and Bardhan, 1987; Beck, 2002), implying that financial development is much more effective in promoting economic growth in more industrialized economies than in less industrialized economies. On the other hand, there are those who contend that countries at their early stage of development benefit more from financial development (McKinnon, 1973; Fry, 1995). Further, and specifically related to empirical industrial organisation literature, this study approach is also motivated by Haber (1991) who, following a comparative study of industry concentration and capital markets for Brazil, Mexico, and the United States, concludes that,

"... [T]he forces giving rise to concentrated industrial structures in Latin America (and, most likely, in other parts of the less developed world) differed in both degree and kind from those operating in Western Europe and United States. Gerschenkron's model for Germany, for example, in which banks encouraged the formation of industrial cartels, does not appear to be a useful model for explaining industrial concentration in Latin America. In short, to fully understand industrial organisation from a world viewpoint, scholars need to look beyond the United States and Western European cases." (Haber, 1991, p.578)

Second, most of the previous studies on the possible link between financial development and economic growth have largely focused on cross-national estimates, and very few on specific country situations. And yet, it has been well documented that the pure cross-country studies method fails to explicitly address potential biases induced by endogeneity of the explanatory variables and the existence of cross-country heterogeneity. Many researchers argue against widespread use of cross-section econometric analysis in the context of attempting to discover a reliable empirical relationship between financial development and economic growth[3]. They contend that the results from such investigations usually rest on a relationship of averages across countries, which may not exist in any one particular country. Further, the results report partial correlations, which may change as more variables are added to the equations. They also argue that the issue of causality is not addressed adequately in cross-section analysis. And, indeed, time series investigation has suggested that the direction of causality may vary across countries (see, Demetriades and Hussain, 1996; Arestis and Demetriades, 1997). As Rodrik (2005) suggests, therefore, focusing on a single country enables to bypass the limitations of cross-country studies; and, the findings so obtained may be representative of the relationship between financial development and growth. Solow (2001) also argues that, whilst a group of economies may share some common features, each has its own distinctive characteristics. As such, explaining the evolution of economic behaviour observed over time requires an economic model that is dynamic in nature. In particular, Solow (2001) contends that it is important to carry out country-specific studies in order to relate the findings to policy designs within specific cases.

The foregoing, therefore, supports the need to conduct similar studies on the financial development and growth nexus for countries at different levels of development; and, preferably on an individual country basis, in order to effectively establish the linkages. This study, therefore, attempts to fill this gap and proposes to add to the literature by investigating the relationship between financial development and industry structure (thus, industry concentration and net firm entry); and, performance (thus, profitability and output growth) in the Malawian manufacturing sector, using panel data covering 20 industry groups for the period 1970 to 2004. To date, there is no known research study that has extensively focused on the link between financial development and the manufacturing industry structure and performance in Malawi; certainly, not following financial liberalization.

[3] See, for instance, Kenny and Williams (2001); Arestis and Demetriades (1997); Gibson and Tsakalotos (1994); Levine and Zervos (1993); Quah (1993); and, Levine and Renelt (1991)

Besides being a country-specific investigation, which is a departure from tradition, this empirical study takes advantage of Malawi's implementation of financial reforms during the review period. As an integral part of the structural adjustment program, which the country adopted since 1981, under the auspices of the World Bank and IMF, the financial system was liberalized. And, besides institutional reforms – which included reviewing of the laws and regulations governing the financial sector, restructuring and privatization of banks, and the adoption of indirect instruments of monetary policy – the financial liberalization process, in the main, involved decontrolling interest rates and eliminating directed credit allocation systems and credit ceilings (see, for example, Mehran, *et al*, 1998). The objective was that, following the McKinnon (1973) and Shaw (1973) hypotheses, financial liberalization would lead to higher levels of investment and output growth, as resources would be channelled towards financing the more productive projects. According to this view, therefore, an increase in real interest rates following the financial liberalization process, should encourage saving and expand the supply of credit availability to firms. As a consequence, a larger volume of investment can be financed; and further, that through easy access to credit, any previously rationed high return projects are afforded a chance to compete for funds, thereby contributing to economic productivity and growth.

Evidently, the financial liberalization process in Malawi has generally led to some transformation of the entire financial infrastructure. The process has also affected the environment in which firms in the manufacturing sector operate in terms of openness of financial market institutions and availability of financial products for private sector investment. And, according to literature on business systems that attempt to explain the organization and functioning of the manufacturing industry, the development of institutional environment is hypothesised to have a lasting influence on industry structures and performance. Important elements in this institutional environment include financial institutions, both formal and informal, which determine who gets access to credit and capital (Whitely, 1992; Aryeetey *et al*, 1997). Arguably therefore, effective financial markets are essential ingredients in the development of industry. Rarely, if ever, are industrial firms able to generate in their normal operations the resources needed to finance capital expansions or working capital. A smoothly functioning financial system can provide the required resources in a timely fashion and at adequate costs. Failure to do so enhances barriers to entry to any aspiring entrepreneurs, and for those firms already in operation, this raises production costs, fosters inefficiency, and retards growth and competitiveness in the manufacturing sector (see, Aryeetey *et al*, 1994; Levy, 1992; and Steel and Webster, 1992). This ultimately breeds monopolies, oligopolies, which are detrimental to the development of the manufacturing sector and economic growth (see, for example, Pedersen and McCormick, 1999).

However, several studies and survey results provide evidence that despite the transformation of the financial infrastructure following the financial liberalization efforts, access to credit remains a major problem for firms in Malawi, just like in many other countries in the sub-Saharan African region, as well as other developing countries that have implemented these reforms[4]. Notably, as documented by Loayza and Ranciere (2006) and, Pagano (1993) among others, financial liberalization may either deepen the financial system or induce financial fragility; thus, its long-term benefits on an economy are ambiguous, from both empirical and theoretical perspectives. Studying the Malawi manufacturing industry, before and after financial liberalization, therefore makes an excellent test case of the relationship between financial development and industry structure and performance.

1.3. SIGNIFICANCE OF THE STUDY AND PROBLEM STATEMENT.

In addition to its contribution to the literature on the finance and growth nexus, this study has significance because of its important development policy implications. If financial liberalization and financial development have distributional effect on the Malawian manufacturing sector, then the country, which has remained agricultural-based for many years, will have a lot to gain in terms of its industrialization efforts. This should be achieved through the adoption of policies directed at expanding and improving the efficiency of its financial system, thereby promoting the development of the manufacturing sector.

[4] See, for example, Nissanke (2001) and, Aryeetey *et al* (1997) for a comprehensive review on the sub-Saharan African countries experience.

In Malawi, continued high dependence on agricultural commodities has been of concern because it is associated with decreasing terms of trade and macroeconomic instability, with potential adverse consequences for output and consumer prices. More importantly, Malawi, like other countries in sub-Saharan Africa, needs high and sustained growth to make a significant impact on poverty; and, history has shown that the manufacturing sector is the main source of dynamic and sustained growth (see, UNCTAD, 2003). Besides, literature on endogenous growth also emphasise the importance of increasing returns to scale in the manufacturing sector in long-run growth (see, for example, Matsuyama, 1992). By supporting the manufacturing sector and lifting any constraints to its high and sustained growth, is critical to improving economic performance and growth. However, according to a number of surveys conducted in many parts of the sub-Saharan Africa (see, for example, Biggs and Srivastava, 1996; UNIDO, 1985); there exist a lot of constraints that impede the development of the manufacturing sector, a situation shared by Malawi. Evidently, policies within the manufacturing sector are usually biased against small and new investors, while favouring large and fully established firms[5]. For instance, concessions such as investment incentives and tax holidays are sometimes accorded selectively, usually only benefiting large established firms.

Extending from the foregoing, a key constraint to the development of the manufacturing sector, and of particular relevance to this research study, is the lack of access to financial resources for firms’ investments and development. Financial institutions view large established firms as low risk, and cheap to service per unit of funds lent. As a result, they have preferential access to credit. Even though this phenomenon is evident in both developed as well as developing countries, it is more prevalent in the latter group of countries. This is because in developing countries like Malawi, private sector credit is relatively scarce, information networks are underdeveloped, and binding interest rates characterise the financial markets[6]. Arguably, poorly functioning credit markets constrain firm entry and expansion,

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[5] For a more comprehensive review, see Little (1987), and Gauthier and Gersovitz (1997). Also specific case studies by Pack and Westphal (1986) on Korea, Cortes *et al* (1987) on Colombia, and Wade (1990) on East Asia.

[6] Aryeetey *et al* (1997, 1994); Nissanke and Aryeetey (1998); and, Nissanke (2001) adequately cover this phenomenon as it relates to sub-Saharan African countries, including Malawi. However, Chipeta and Mkandawire (1996, 1992) specifically focus on Malawi.

thereby rendering the industrial sectors uncompetitive and inefficient oligopolies. Hence, credit programmes have long been a favoured intervention by donors and governments in most developing countries, particularly those in sub-Saharan Africa, which includes Malawi. Implicit in these interventions is a concern that credit markets are not functioning well and that their malfunctioning results in low economic activity and growth. The literature documents well-established reasons for credit markets not to be perfect (see, Hoff *et al* 1993).

The prevalence of the foregoing conditions in the Malawi economy, raise a number of fundamental empirical issues in regard to the development of the manufacturing industry; and more particularly, the effectiveness of the financial system in engendering a competitive business environment as is claimed in the orthodox theoretical literature, following the McKinnon-Shaw hypothesis. Most critical are the questions: *first*, whether, through deregulated interest rates and increased credit accessibility, the financial liberalization and development process, has any distributional ramification on the industrial structure in the manufacturing sector, thereby engendering dynamism and competition in the industry; and *second*, whether entrenched oligopolies have instead emerged following the financial liberalization and financial development process, that are neither innovative, technically efficient, nor likely to price competitively; and, in turn, if this has compounded the problem of monopoly profits that usually arise in such business environments. In this research study, therefore, these issues are investigated from industry-level datasets drawn from the Malawian manufacturing sector.

1.4. MAIN HYPOTHESES INVESTIGATED.

In this study, the following main hypotheses are examined:

(i) Financial liberalization has positive and robust distributional effects on the industry structure. This is accomplished through a critical appraisal of the following two related sub-hypotheses;

- ⇒ Industries where firms are more dependent on external finance become relatively more competitive; and, disproportionately less concentrated with the liberalization and development of the financial system.
- ⇒ Financial liberalisation, working through financial development, facilitates firm's access to credit, thereby fostering the creation and entry of new firms over the life cycle of an industry.

(ii) Financial liberalization enhances performance in those industries that are characterised by a significant number of small-sized firms. This involves an appraisal of the following sub-hypotheses;

- ⇒ Financial liberalization induces higher price-cost margins in those industries that are characterised by a significant number of small-sized firms.
- ⇒ Financial liberalization leads to increased and real output growth, more in those industries that are characterised by a significant number of small-sized firms.

The first hypothesis is investigated in Chapters Four and Five, while the second hypothesis is the subject of Chapter Six.

1.5. DATA SOURCES.

The study uses panel data on Malawi's manufacturing firms over a 35-year period (1970 – 2004). Dataset for industry value-added over 20 industry sectors is obtained from two related sources: the UNIDO electronic database [Industrial Statistics Data base 2006 at the 3-digit level of ISIC Code (Revision 2) (INDISTAT 3) (1963-2004)]; as well as from the Annual Economic Survey (AES) reports as published by the Malawi National Statistical Office. Apparently, these two sources are related as the country page for Malawi on the UNIDO database is updated using AES data. The AES data, which is collected through a questionnaire, gives a quantitative description of economic enterprises in the economy with regard to their production and employment characteristics, profitability level, acquisition and issue of both real and financial claims in different sectors of the economy. Further, the survey covers industries with 20 or more employees engaged in the production and sales of goods and services on the market at prices normally designed to cover the cost of production. The United Nations system, ISIC (New York), is used to classify economic activities. Where possible, the data is presented for each 4-digit ISIC division. However, in order to preserve confidentiality, since Malawi Statistics Act of 1967 restricts publication of any information that would identify the activities of individual persons or business undertakings, some activities are classified at 3-digit level. Over the study period, 1970-2004, some enterprises have emerged while others have disappeared or did not qualify for selection into the AES sample. Total number included in the survey sample during the study period has therefore ranged between 307 and 404 establishments. Further, from the Malawi National Statistical Office, privileged access was also obtained to unpublished individual firms’ files from the AES questionnaires, from where largest firms’ value-added data was extracted; which together facilitated the estimation of some of the variables, such as the industry concentration ratios, price-cost margins, external finance dependence ratios, and firm sizes.

Data on financial and monetary aggregates is sourced from the International Financial Statistics of the IMF, and Reserve Bank of Malawi periodic reports. This includes data on sectoral distribution of credit to the economy as reported by the Malawian banking system. World Development Indicators published through the World Bank database is the main source of data on the real sector aggregates[7].

1.6. RESEARCH METHODOLOGY.

The methodological and analytical basis for this study is drawn from the empirical literature focusing on financial liberalization, financial development, and industry dynamics. An extensive review of the theoretical and empirical literature underpins the analysis for the Malawian manufacturing sector. Descriptive statistics and econometric techniques are used to derive the results in this study. Econometric

[7] Where a variable is determined through a ratio between one variable measured at the end of the year and GDP which is measured over the year, the ratio is deflated using the GDP deflator as, for example, in Favara (2003).

models are constructed which forms the basis of the test of the hypotheses. The methods and analytical techniques employed in the study are highlighted in each of the chapters in which they are used and their limitations are also clearly spelt out. Where necessary, graphic illustrations and tables also support the results obtained in the study. Policy implications of the results and areas that warrant further research are highlighted in the last chapter of the thesis.

1.7. STRUCTURE OF THE STUDY.

This study is organised into seven chapters. Chapter One, provide introductory background to the study. Chapter Two, gives an overview of developments in the Malawian economy. In particular, this overview seeks to demonstrate how changes in the Malawian economic landscape during the study period have influenced the research interest as highlighted in the empirical questions above. The overview also includes a preliminary simple econometric investigation of the before and after effect of financial liberalization on major financial and industrial sector aggregates.

Chapter Three, reviews literature related to the role of finance in the economic growth process. Special focus is made on literature regarding the effect of financial liberalization on the availability of credit, or lack of it, in terms of its supply as well as pricing, on firms' size distribution, investment decisions, and by extension, profitability of its investments. This takes the form of an inspection of both theoretical models as well as empirics on financial development and industrial organisation. The literature review in its entirety makes preparation for the specification of the models in this study, in line with developments in theory and in estimation techniques.

Empirical models are specified and presented in Chapters Four, Five, and Six. In Chapter Four, aggregated models relate to the link between financial development, external finance dependence, and industry structure – specifically, industry concentration and net firm entry; in Chapter Five, a disaggregated approach is used to investigate heterogeneity across industry groups in terms of their responsiveness to changes following financial liberalization; and, in Chapter Six, the study examines the effects of financial liberalization on the relationship between firm size and industry performance, measured through price-cost margins and output growth. Models investigated in the empirical Chapters Four, Five, and Six, draw heavily from the literature discussed in Chapter Three as well as consideration of the structure of the Malawi economy as discussed in Chapter Two. Further, Chapters Four, Five and Six also separately discuss, in detail, the estimation techniques adopted in the respective chapters, and present and analyse the econometric regression results following the estimation process. Discussions following the models' estimations involve assessing the consistency of the results with regard to economic and statistical theoretical criteria, as well as evaluating their individual performance. All the three empirical chapters make assessments of policy implications drawn from the respective analyses.

Chapter Seven, presents a summary of the study findings, draws conclusions based on the analyses, identifies the study's contribution to the literature as well as policy implications of the study findings, and finally recommends areas for future research.

1.8. CONCLUSION.

Theoretical and empirical literature continues to deliver disparate predictions regarding the impact of financial liberalization on the firm's investment capacity; and, its influence on industry structure and performance.

In Malawi, the paradox is that during the same period that the country's economic policy stimulated entrepreneurship, through easier access to capital following financial liberalization, the manufacturing sector contracted; unlike during the pre-liberalization period when it registered some expansion. To date, the sector has persistently declined and has registered closure of several major companies[8]. The trend for most companies is: *either* to shift from manufacturing production in the country to marketing products which they previously used to produce but are now manufactured by their offshore sister companies; *or* simply close-down and exit; thereby leaving a structure that is only dominated by a few firms. Such a structure

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[8] Closures and exits, in the main, include those of major companies in the metal fabrication and machine tool, fertilizer production, furniture, textiles, tobacco processing, and even in food processing industries (World Bank, 2004b).

hides inefficiency and limits the ability to compete both locally and globally. Though firms operating in such an environment are likely to enjoy scale economies, they are also likely to focus on static rather than dynamic gains. Firms operating under monopoly are likely to focus on temporary gains that they enjoy due to their monopoly power, all at the cost of consumer welfare as a result of their uncompetitive pricing. However, under a competitive environment, innovation and product quality are likely to flourish. As such, apart from anti-trust policy formulation, there is need for articulating the role of the financial sector in facilitating this process.

Against this background, it is therefore important to examine the links between financial liberalization, financial development and industry structure and performance in the manufacturing sector. Indeed, given the hypothesised competition-enhancing effects of this policy on the economy, one is led to ask whether there is a possible link between a liberalized financial system and the structure of the industry that evolves, as well as the performance patterns that emerge. Besides, since the impact of financial liberalization in each industry is also likely to vary over time[9]; but, also depending on industry-specific characteristics – including the extent to which an industry depends on external financing – this research study therefore explicitly consider these aspects in its empirical framework.

[9] As observed by Kaminsky and Schmukler (2008) as well as Loayza and Ranciere (2006), all recent models that examine the evolution of the effects of financial liberalization through time, differentiate between short- and long-run effects on economic growth.

CHAPTER 2.0: MANUFACTURING INDUSTRY, FINANCIAL LIBERALIZATION AND THE FINANCIAL DEVELOPMENT PROCESS IN MALAWI.

2.1. OVERVIEW OF THE ECONOMY AND THE MANUFACTURING SECTOR IN MALAWI.

2.1.1. Macroeconomic Background.

The performance of the Malawian economy up to 1978 was relatively good, registering high growth rates and favourable balance of payments position. The contribution of the manufacturing sector to gross domestic product rose from 8.0 percent in 1964 to 11.0 percent in 1978. However, the country experienced macroeconomic instability and structural constraints after the 1979 international oil shocks and civil strife in the neighbouring Mozambique, which prompted the implementation of the IMF/World Bank structural adjustment programme (SAP) in 1981. Several policies were therefore implemented under these programmes, amongst which were those specifically aimed at stimulating competition and growth in the manufacturing sector.

However, more than twenty years following the economic reform programmes in Malawi, the policies have had limited success and in some instances even perpetuated instability in the manufacturing sector. The contribution of the manufacturing sector towards real output has been erratic and declining, while the agricultural sector remains to be the dominant sector of the economy. Further, the size of the manufacturing sector is still small, predominantly oligopolistic, and mostly concentrated in five sub-sectors: food processing, beverages, tobacco processing, textiles, and pharmaceuticals. This chapter therefore provides an overview of the structural changes that have characterised the Malawian manufacturing industry within the reform period; and attempts to relate the policy reforms with the intended objectives. Specifically, an important question for policy debate is whether financial sector related reforms managed to engender competition and growth in the manufacturing industries in Malawi.

2.1.2. Industrialization Policy Framework.

Like most sub-Saharan countries, Malawi adopted industrialization as part of its development agenda since attaining political independence in 1964 (see, Malawi Government, 1971). The primary objective of this policy option was to enhance the modernisation of the economy. According to literature, industrialization is expected to facilitate the transformation of a country's economic structure from being typically agricultural-based to a modern economy. Further, the importance of industry to the economic growth process include its effects in stimulating production more widely through its forward and backward linkages with other parts of the economy[10]. The industrialization policy option in Malawi was, therefore, expected to translate into an increased share of industry activity in GDP; thereby increase employment opportunities, raise incomes, and ultimately translate into improved standards of living for the country's population. These efforts were originally embedded in two related pieces of legislation. First, the *Industrial Development Act of 1965* that set out the conditions for licensing industrial firms including the related incentives. Thus, it governed entry procedures by allowing discretionary approvals of entry applications based on, *inter alia*, adequacy of resources, and public significance of the products, location and relative size of the investment, in the manufacturing sector. This legislation also provided exclusive monopoly rights to large enterprises with the potential for the exploitation of economies of scale. Thus, the emphasis on a minimum efficient scale in the Act – together with other protection provisions relating to depreciation allowances, and tariffs – meant that large firms were favoured at the expense of small firms; thereby breeding monopolies and infant industries that could not have survived if protection were lifted. Second, was the *Control of Goods Act of 1966*, which imposed an 'average cost plus margin' ceiling on prices for selected domestic manufactured products. Regulations were imposed regarding fixed maximum ceiling prices on mass-produced, fairly homogeneous commodities; and, both maximum selling prices at the retail level and controls at the wholesale level on certain consumer goods that allegedly composed an important part of low-income budgets. However, the government also set up price controls by decree for a wide variety of other goods (see, Malawi Government, 1971). Generally, this system

[10] Lewis (1954), Fei and Ranis (1964) provide the theoretical background to this phenomenon. Also see, Seidman (1986); Killick (1993); Gibbon (1996); Pedersen and McCormick (1999).

introduced price distortions in the manufacturing sector; and provided little incentives to entry by potential investors, as government was now seen to be limiting price movements on the existing firms, thereby distorting their profitability (World Bank, 1981, p.39).

2.1.3. Industry Structure.

The industrial sector in Malawi, like elsewhere in sub-Saharan Africa[11], was characterized by a dualistic structure, where large numbers of small-scale enterprises co-existed with a small number of relatively large-scale modern plants, mostly dominated by public enterprises and multinational affiliates; and, with few linkages between the two.

2.1.3.1. Large- Scale Enterprises.

The large-scale enterprises have predominantly been in the form of public enterprises. As observed by Pedersen and McCormick (1999), after political independence, most of the new states in Africa, including Malawi, agreed with donors that due to the limited indigenous capital, the state had to play a catalytic role in the industrialization process. Public enterprises were therefore created in key manufacturing sectors, either through nationalisation of existing enterprises or through government investment in existing or new industries[12]. Multinational companies have also invested at the back of either the state, in a joint venture with a public enterprise, or with a large private business (see, for example, Seidman, 1986, p.566). Generally, in such arrangements, the foreign investor supplied management and technical services and some capital, while the public enterprise supplied additional capital plus expertise on the local economic environment. As observed by Seidman (1986), such arrangements were

[11] A relatively recent description of structure of industry in less developed countries, like Malawi, is made by UNCTAD (2006, pp.222-224); and Tybout (2000).

[12] According to World Bank (1989b)estimates, by 1980, state-owned enterprises accounted for 17.0 percent of GDP in sub-Saharan Africa.

mostly common elsewhere in the less developed countries of the sub-Saharan African region as well[13].

Accordingly, where private entities were either unable or unwilling to set up industries, public enterprises were set up to fill the gaps, as government pursued an industrial strategy aimed at increasing local participation in light of a weak local private capital base. This industrial strategy was implemented under the aegis of public enterprises, *viz*, MDC, PRESS, ADMARC, IMEXCO, and INDEBANK, amongst others (see, Lawson and Kaluwa, 1996; Chirwa, 2001, 2004). Although each of these five leading public enterprises started out with a very specific purpose, each rapidly branched out into many different industries. As Chirwa (2004) notes, by 1980, ADMARC and MDC had direct and indirect ownership in 32 manufacturing enterprises, operating in highly oligopolistic markets and competing with private local and foreign firms in various industrial markets. Whilst all the public enterprises were operated on commercial lines, with government expecting them to make profits, the majority performed dismally, due to weak management, partly explained by the interlocking ownership structures. And, Harrigan (1991) observes that due to the interlocking ownership structures in several investments, it meant that any poor performance in major subsidiaries affected the rest of the public enterprises.

2.1.3.2. Small-Scale Enterprises.

The small-scale enterprises, by definition, consist of micro- small- and medium-scale enterprises. In Malawi, this sub-sector grew as a relatively small segment of the industrial sector, both in absolute terms and in relation to the formal manufacturing sector. In terms of characteristics, Ettema (1984) observes that, in Malawi, just like in other countries within the sub-Saharan region, enterprises in the small-scale sub-sector are labour intensive and mostly depend on local inputs of raw materials; machinery and spare parts have to be imported. The technology to which the small-scale enterprises have access is mostly very simple. In individual enterprises, methods

[13] In Malawi, such arrangements were most notable in the following industries: beverages (Calrsberg from Denmark); Pharmaceuticals (Unilever International, UK); Food Processing and Textiles (LONRHO, UK).

and machinery used are directly related to the entrepreneurs' access to finance and technical assistance, rarely to a conscious choice of appropriate production methods. However, the usual shortage of imported inputs forces many to adapt their mix of inputs. As a result, quality and/or production have tended to decline in those areas where there are no alternatives to imports, but not the price (see, for example, Ettema, 1984; Malawi Government, 2000). Generally, small-scale enterprises have underperformed despite government's provision of technical and financial support[14].

2.1.4. Macroeconomic Policy Framework and the Manufacturing Industry.

The performance of the manufacturing industries in Malawi has been intimately tied to overall economic growth in general. Thus, while GDP grew at 5.7 percent per year between 1973 and 1979, industrial output grew at the same rate. Between 1980 and 1987 the economy grew at 2.3 percent per year and industry grew at 1.2 percent. The close relationship between the growth of the sector and that of the economy is not coincidental; industrial output is mainly sold in the domestic market and consequently domestic demand is by far the most important factor affecting sales of industrial goods.

Accordingly, as shown in Table 2.1, the implementation of the broad-based structural adjustment programme that Malawi embarked on during 1981, in response to a series of external shocks that characterised the economy at that time was, in part, aimed at stimulating competition and growth in the manufacturing sector (see, World Bank, 1989a). Overall, the objective of the reform efforts, in relation to the manufacturing sector, was to develop outward-looking industrial structures; create an enabling policy environment through sound macroeconomic management and reforms of trade policy and financial intermediation; downsize inefficient public sector; improve the management and finances of public enterprises; and, foster the development of private sector enterprise, especially small and medium-sized enterprises[15].

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[14] Several institutions have since been created, *viz*; INDEBANK, MUSCCO, and SEDOM, providing financial support; MEPC, for export promotion; MEDI and DEMATT, for vocational training and skills development (see, Ettema, 1984)

[15] See, World Bank (1996); Gulhati (1989); Kaluwa *et al* (1992); and, Mulaga and Weiss, 1996)

However, despite all these policy initiatives, the performance of the manufacturing sector fell short of expectations. And, in its analysis of the industrial sector in Malawi, the World Bank (1989a), identified financial sector underdevelopment as a continuing impediment to the growth and development of the manufacturing sector in particular, and the overall economy in general. Consequently, after several financial sector studies and initiatives, systematic financial sector reforms were undertaken within the realms of the structural adjustment program framework (World Bank 1991).

Table 2.1: Malawi's Structural Adjustment Programme, 1981-1998

Prog. / Year	*Main Policy Action Affecting the Manufacturing Sector*
SAL I 1981-83	-Devaluation of currency by 15% in Apr.1982, 12% in Sep. 1983. -Periodic increase of interest rates
SAL II 1984-85	-Devaluation of currency by 3% in Jan.1984, and 15% in Apr.1985. -Industry Price Decontrol-41% of controlled products. -Periodic adjustment of interest rates.
SAL III 1986-87	-Devaluation of currency: 9.5% in Jan., 10% in Aug.1986, and 20% in Feb.87. -Industrial Price Decontrol -Privatisation of State-Owned Enterprises. -Establishment of an Export Financing Facility. -Periodic adjustment of interest rates.
ITPAC 1988-89	-Devaluation of the currency by 15% in Jan. 1988. -Industrial Price Decontrol. -Abolition of exclusive product (monopoly) rights. -Revision of duty drawback and introduction of surtax credit system. -Partial liberalization of foreign exchange rationing on 65% of imports. -Reductions in the scope of export licensing.
ASAC 1990-91	-Devaluation of the currency by 7% in March 1990. -Periodic adjustments of interest rates. -Complete liberalization of foreign exchange allocation.
EDDRP 1992-95	-Devaluation of the currency by 15% in June and by 22% in July 1992. -Floatation of the local currency (Malawi Kwacha) in February 1994. -Malawi Investment Promotion Agency is created. -Replacement of Industrial Development Act with Industrial Licensing Act. -Review of Labour market imperfections including minimum wage policy. -Reduction in tariffs and consolidated tariffs limited to a maximum of 75%. -Elimination directed bank credit controls and liberalisation of interest rates.
FRDP 1996-98	-Implementation of Export Processing Zones Act. -Establishment of the Malawi Stock Exchange. -Privatisation of State-Owned Enterprises.

Source: World Bank (1996), and Reserve Bank of Malawi Economic Reports (Various Years).

2.1.5. Financial Liberalization Objectives and Implementation Framework.

Malawi implemented, within the structural adjustment programme, a series of financial reforms with the objective of developing the financial system. The financial liberalization process started with the deregulation of lending rates in 1987, and of deposit rates in 1988. Deposit rates were adjusted upwards by 3.0 percentage points; immediately followed by a reduction in both lending and deposit rates (see, Nissanke and Aryeetey, 1998). The liquidity reserve ratio was also introduced as a monetary policy tool during this period. These reforms, which were seriously embarked on in 1989, also led to the overhaul of the legal framework for the financial sector. Changes were effected on the Reserve Bank Act of 1965 and the Banking Act of 1965; and government enacted the Reserve Bank Act of 1989 and the Banking Act of 1989, both of which broadened the powers and mandates of the central bank; and gave due recognition to the role of market mechanism in the resource allocation process. Further to this, the central bank was given the task of promoting and developing the money and capital market in Malawi (see, World Bank, 1991). These changes immediately resulted in the restructuring of the existing institutions, and facilitated entry of new financial institutions; thereby reducing, to an extent, the monopoly power of the dominant commercial banks (see, Mlachila and Chirwa, 2002). The fixed exchange rate regime of the local currency was also discontinued by 1994 in favour of a market-determined system. Further, the central bank stopped the use of periodic changes in the liquidity reserve requirement to control liquidity, preferring the use of the discount rate as the main instrument of monetary policy[16].

2.1.6. Financial Liberalization and the Financial Development Process.

A key objective in the implementation of financial liberalization, according to the orthodox view, is achieving development in the financial system[17]. However, a number of studies have examined the effect of financial liberalization on the Malawi

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[16] Notably, through open market operations, the central bank started issuing Treasury bills with low denominations in order to encourage small savers as well (see, Mlachila and Chirwa, 2002)

[17] Gertler and Rose (1994, p.32) characterize this process as multi-dimensional, involving, *inter alia*: an evolution from self finance to external finance, development of intermediation, subsequent development of markets for direct credit, and narrowing of interest rates spread.

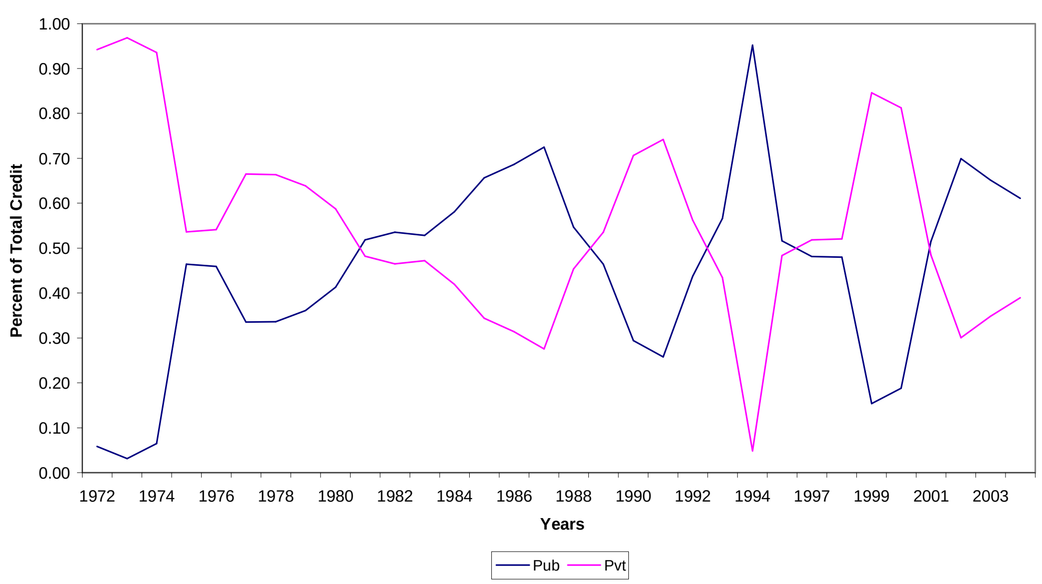
financial system, and find evidence of positive impact of this policy initiative in the country; albeit, not of the expected magnitude. Chirwa (1998a) observes an annual increase in financial depth, re-allocation of credit to non-preferential sectors, and increase in the share of deposits of non-bank financial institutions, and a decline in monopoly power within the banking system. Seck and El Nil (1993, pp.1873-1875) observe some improvement in real interest rates, as well as a reduction in the monetary system's net claims on government relative to GDP, during the period after financial liberalization in Malawi. Aryeetey *et al* (1997), also find evidence of improvements in financial depth in Malawi, but observe that the financial system remains segmented. Nissanke and Aryeetey (1998) observe positive changes in financial indicators in Malawi, among other countries in the sub-Saharan Africa region that undertook financial reforms. Further, in a study involving twenty-nine sub-Saharan African countries, Reinhart and Tokatlidis (2003) identify Malawi to be among the only nine countries (together with Botswana, Ghana, Kenya, Mauritius, Namibia, South Africa, Uganda and Zambia) that register "more advanced" progress in financial development following financial liberalization. Gelbard and Leite (1999), arguing against the orthodox criteria for assessing the impact of financial liberalization on financial development, particularly for the sub-Saharan region, provide a summary of improvements in the financial systems of 38 countries in sub-Saharan Africa, including Malawi, using a calculated comprehensive survey-based index of financial development. They demonstrate that compared to other countries in sub-Saharan Africa, and based on six aspects of financial development, the financial system in Malawi improved from being underdeveloped in 1987, to being minimally developed by 1997.

Conclusion from the foregoing studies is that, despite the relatively impressive developments in the financial sector, it is nonetheless clear that Malawi still has to do more, particularly in areas of financial liberalization, institutional environment, and monetary policy[18]. Consistent with these observations, Nissanke and Aryeetey (1998) and Nissanke (2001) separately note that merely changing policy from financial repression to financial liberalization has not fully addressed the fundamental problems

[18] As observed by Mlachila and Chirwa (2002), interest rate spreads in the Malawian banking system significantly increased after the reforms, and that the banks are shifting the cost of liberalization to customers.

facing financial systems in sub-Saharan Africa, including Malawi. Specifically, the savings mobilization and private sector credit availability have been observed to be slow to emerge[19]. Evidently, in Malawi, despite some positive developments related to private sector credit, most firms continue being affected by both high cost of finance due to high interest rates, as well as problems stemming from limited access to finance. Certainly, those sectors of the economy that suffered from policy biases under the financially repressive regime, such as the private small-scale manufacturing sector, continue to experience problems of credit access after the financial reforms (see, Aryeetey *et al*, 1997; Nissanke and Aryeetey, 1998; NORAD, 2002; Malawi Government, 2000, 2004). Accordingly, whilst one of the key objectives of financial liberalization in Malawi was to increase the volume of lending to competitive sectors of the real economy, credit allocation to the private sector has varied over the period (see, Chart 2.1).

Chart 2.1: Distribution of Domestic Credit between Public and Private sector.



Source: Reserve Bank of Malawi Economic Reports (Various Years)

This notwithstanding, however, in recent years the trend has been in favour of the private sector, albeit still unstable (see, Sacerdoti, 2005). Besides, when compared to other countries in Africa, Malawi's position is much better in this regard. as observed

[19] Nissanke and Aryeetey (1998) cite high incidence of non-performing loans , excess liquidity, and externally imposed policy uncertainty and credibility, as reasons behind these developments.

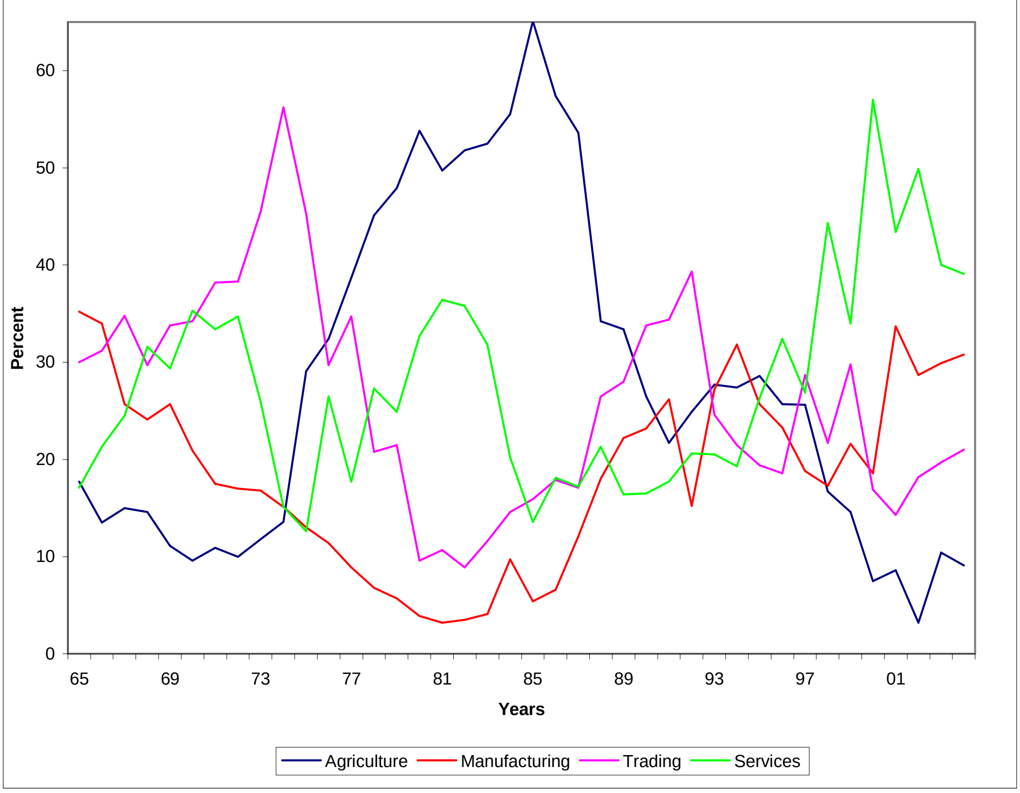
by Nissanke and Aryeetey (1998) in a comparative study of some countries in the sub-Saharan Africa region, actually documents that unlike in the other countries where financial reforms have also been undertaken, Malawi has had a better distribution of financial system's loans and advances and that the private sector has tended to be favoured in lending.

Table 2.2: <u>Private Sector Credit as a Share of Total Domestic Credit.</u>
(Percentages)

Year	*Malawi*	*Tanzania*	*Ghana*	*Nigeria*
1986	39.4	7.2	13.6	47.2
1987	29.0	7.8	10.6	54.7
1988	35.5	12.9	16.9	51.9
1989	48.2	9.6	37.0	n/a
1990	52.5	4.6	37.6	63.5
1991	59.0	11.8	30.1	54.1
1992	63.0	23.0	30.9	40.8
1993	40.4	27.1	35.8	44.9

<u>Source</u>: Nissanke and Aryeetey (1998).

Chart 2.2: Share of Private Sector Credit by Main Economic Activities.



<u>Source</u>: Reserve Bank of Malawi Economic Reports (Various Years)

As depicted in Chart 2.2, most private sector credit has been extended to agriculture, manufacturing and trading sectors, which, since independence in 1964, have together accounted for more than 50.0 percent of loans and advances extended by the banking system, with the balance being absorbed in the various services industries. During the period before liberalization, average credit to the agricultural sector accounted for 38.0 percent, whilst that to manufacturing was only 9.5 percent of total advances. Government's deliberate policy of directing credit to the agricultural sector that was implemented during the 1970s explains the dominance of the agricultural sector in the credit market. However, after financial liberalization, the banks are now exercising a lot of discretion as they freely allocate credit to various economic sectors. Accordingly, by 2001, the share of bank loans and advances to the agricultural sector was 8.6 percent, whilst that to the manufacturing sector was 33.7 percent; and, increasing on average.

However, despite these positive developments in credit to the manufacturing sector, most firms continue experiencing financing constraints in Malawi. Apart from the high cost of finance, as alluded to earlier, there are institutional and regulatory problems regarding access to credit for both the large- and small-scale enterprises. Clearly, the problem is not one of inadequate number of institutions with a mandate to finance business activity, since, by 2004, the country boasted of eleven registered commercial banks (compared to only two during the pre-liberalization period)[20], a stock exchange, two discount houses, and over twenty notable NBFI's, additional to insurance companies and foreign exchange bureaux. Nevertheless, despite this financial infrastructure, access to finance still remains a problem for both large- and small-scale enterprises; particularly the latter category (Chirwa, 2004; Malawi Government, 2000, 2004; Aryeetey *et al*, 1997). Several reasons explain this situation.

Regarding credit access problems by large-scale firms, there is very little term lending carried out by the commercial banks. Business lending, which mostly is to "blue chip" firms, is in the form of short-term overdraft facilities. As Chipeta and Mkandawire (1996) argue, the commercial banking sub-sector has for too long focused on short

[20] Apart from actively lending to large firms, most of these banks (notably, National Bank of Malawi, Commercial Bank of Malawi, and INDEBANK) also have specialized windows for lending to small-scale enterprises.

term lending that has historically targeted the foreign trade sector and large scale enterprises, leaving a persistent unsatisfied demand for medium term and long term capital finance for both large and small-scale enterprises. And, surveys by World Bank (1991) and Malawi Government (2000, 2004) did show that the financial sector in Malawi indeed specialises in short-term credit as opposed to the long-term loans that are necessary for industrial development. This is partly because of the availability of high interest government bonds, as a result of which there is no pressure on banks to lend to businesses. Further, the traditional term lending institutions such as pension funds are not yet fully developed. Most important factor is regarding the financial institutions lending characteristics where banks tend to concentrate their lending to traditional and established customers (often public enterprises and businesses with good cash flow – usually large and modern), and avoid those that are new and without any record. In their study of financial reforms in four sub-Saharan African economies of Malawi, Ghana, Tanzania and Nigeria, Aryeetey, *et al* (1997, pp.210-211) notes, "[Following the financial reforms] there was little change in banks' lending profile within private sector portfolio. Banks continued to concentrate on their traditional large, established customers and to avoid small-scale enterprises and small farmers... In Malawi, the small enterprise sector (fewer than 30 workers) received only 15.0 percent of total loan volumes in 1992, while large enterprises received 63.0 percent of total loans disbursed."[21] Thus, typically banks find it easier and more profitable to deal with the already established and large-scale enterprise segment of the market, as risk is considered to be minimal and transaction costs are lower. As Little (1987) notes, "institutional credit is better seen as a means of facilitating the expansion of firms that have passed the survival stage and have acquired at least the beginnings of a good track record." (ibid, p.233)

The small-scale enterprises also encounter similar problems; albeit, in a relatively severe manner. Thus, despite establishing facilities to cater for small-scale enterprises, applicants from this sector are rarely served. Collateral security and information inadequacy are usually used as reasons for denying credit to this sub-sector. Recent studies (Malawi Government 2000, 2004) show that finance feature highly as a key

[21] A similar observation is made by Bigstein *et al* (2003) in a study of Ghana, Zimbabwe, Kenya, Ivory Coast, Burundi, and Cameroon, where, on average, of those firms with a demand for credit, only 25.0 percent obtained the loans; and, of those that received loans, the majority were mostly large firms compared with the small firms who were much less likely to get a loan.

constraint to starting up an enterprise in Malawi. As shown in Table 2.3, at 2.0 percent, loans from credit institutions barely register as source of start-up capital for most small-scale enterprises in Malawi (Malawi Government, 2000). Besides, for those that are able to obtain loans – particularly from the micro-financing institutions – repayments rates are erratic and poor. This adversely affects the operations of the micro-financing institutions in terms of lending capacity, as most of these institutions were created with donor seed capital and have no mandate to collect savings. Consequently the low recovery rates directly translate into an erosion of the capital base; which, in turn, constrains the institutions lending capacity. Besides, these micro-finance lending institutions do not provide medium and long-term credit, which is necessary for economic growth (Chipeta and Mkandawire, 1996; Chirwa, 2004).

Table 2.3: Principal Sources of Start-Up Capital for Micro- and Small - Scale Enterprises in Malawi.
(*Percentages*)

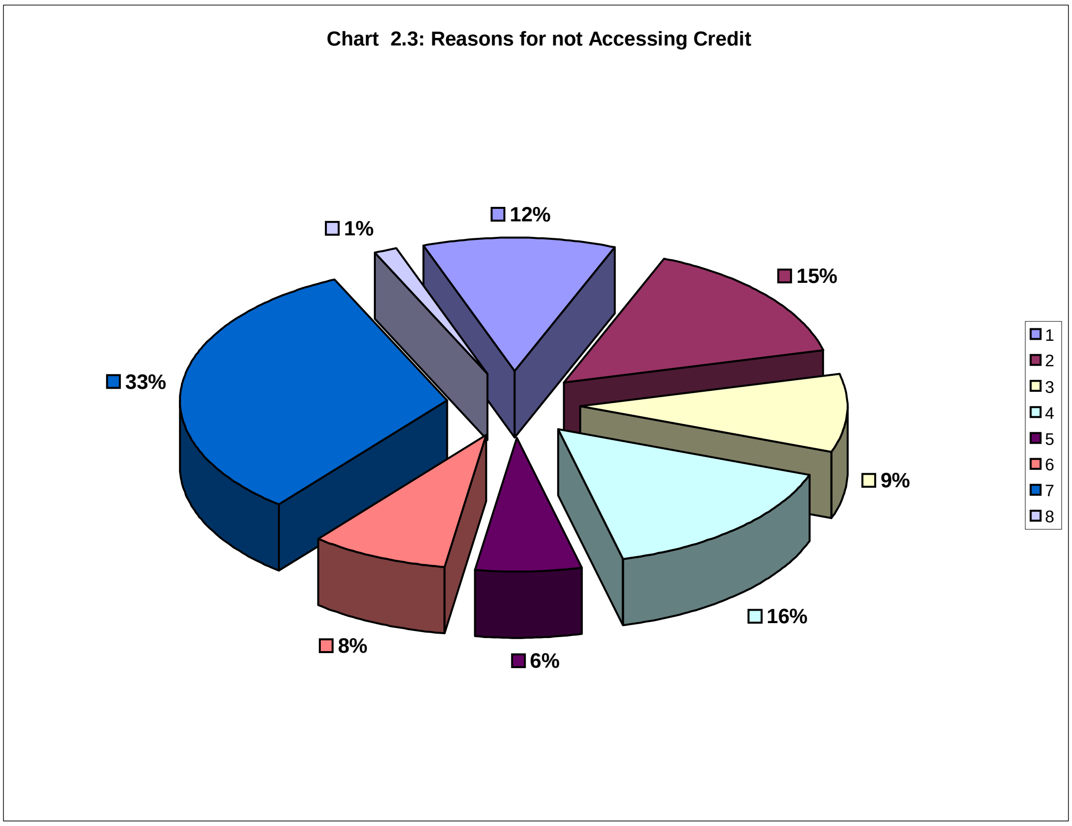
Source of Capital:-	**Creation of Micro and Small-Scale Enterprises**				
	Pre-88	***1988-92***	***1992- 96***	***1996- 00***	***Total***
Loan from family / friends	5.0	5.0	7.0	7.0	6.0
Given free from family/ friends	18.0	13.0	15.0	20.0	17.0
Money Lender	0.0	1.0	1.0	0.0	0.0
Own Savings	59.0	60.0	62.0	64.0	61.0
Agricultural Credit	3.0	5.0	4.0	2.0	4.0
Credit Institution	**1.0**	**3.0**	**1.0**	**2.0**	**2.0**
No need for Credit	14.0	13.0	10.0	5.0	10.0
Total	***100.0***	***100.0***	***100.0***	***100.0***	***100.0***

Source: Malawi Government (2000)

Further, most entrepreneurs within the small-scale sub-sector consider credit from the lending institutions to be expensive and would therefore risk their own savings, if available, rather than pay for expensive loans to start-off with (Malawi Government, 2000, p. 39)[22]. A related study (Malawi Government, 2004) describes how business establishments secured financial assistance between 2000 and 2003. Chart 2.3 below shows that, about one-third of enterprises that did not apply for any loan, reported lack of information on potential lenders, as the main factor barring them from borrowing. This highlight the low outreach financial institutions have to this business

[22] Similarly, an UNCTAD (2001) study of several African countries, establishes that between 59.0 percent and 98.0 percent of SME's use their personal assets to capitalize their enterprises than borrow from the financial system.

sector. About 16.0 percent did not apply due to the rigorous screening requirements, which most consider unnecessary. Furthermore, high rejection rates tend to discourage any would-be applicants and potential investors.



Legend:

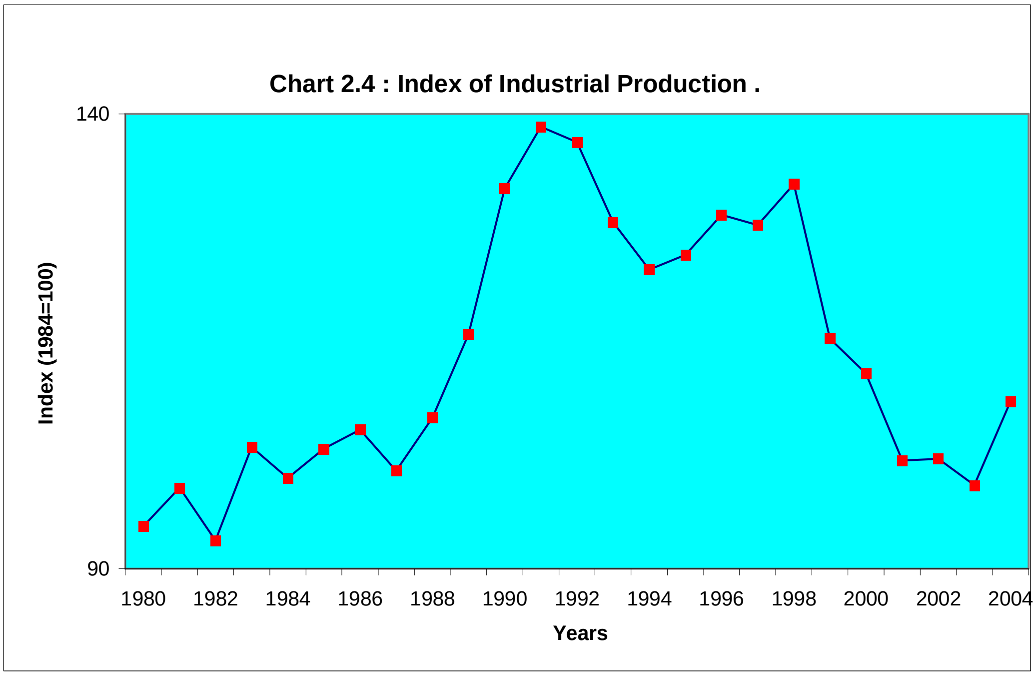
1. No need for credit (***12%***)	5. Inadequate Collateral (***6%***)
2. Believed would be refused (***15%***)	6. Do not like to be in debt (***8%***)
3. Too expensive (***9%***)	7. Do not know any lender (***33%***)
4. Too much trouble for what it is worth (***16%***)	8. Other (***1%***)

Source: Malawi Government (2000)

2.1.7. Manufacturing Industry Performance following Financial Liberalization.

2.1.7.1. Industry Productivity.

The macroeconomic environment in Malawi has had a devastating effect on the performance of the manufacturing sector. Measured by the index of industrial production, Chart 2.4 shows total manufactured output to be lower in 2004 than it was in 1991; and, even much lower than what was recorded during the period before the reforms started in 1980 (see, Mulaga and Weiss, 1996, p.1272).



Source: Malawi National Statistical Yearbook (Various Years).

Table 2.4: Capacity Utilization in Key Industries of the Manufacturing Sector. (Percentages)

Industry Group	*1997*	*1998*	*1999*	*2000*
Food Processing	65.0	54.6	47.5	49.0
Beverages	60.0	55.0	60.0	43.0
Textiles	53.5	50.5	46.0	46.0
Sawmill and Wood Products	63.3	68.3	67.5	85.0
Paper and Paper Products	60.0	65.0	62.5	61.5
Other Chemicals (Pharmaceuticals)	90.9	74.2	78.9	74.3
Metal Fabrication	12.7	23.1	21.5	30.0
Mineral Products	42.0	55.0	62.0	63.0

Source: World Bank (2004b)

As Table 2.4 shows, the low and declining level of manufacturing activity is further reflected in low capacity utilisation across all sub-sectors. Major sub-sectors such as food processing, beverages, textiles, and metal fabrication have been operating below 50.0 percent capacity. Notably, Malawi has not fully succeeded in diversifying its exports away from agricultural to manufactured products, despite prevailing export opportunities[23]. Further, as a proportion of total merchandise exports, the manufacturing sectors' contribution remains to be relatively low, with the manufactured exports per capita currently at less than half the level recorded in 1980, whilst the share in GDP has fallen to 11.0 percent. When compared with other countries in the region, Malawi's manufacturing sector is lagging in most respects.

Table 2.5: <u>Key Manufacturing Sector Performance Indicators: Selected African Countries – 1980, 1990, and 2000</u>

Indicator:-	*Year*	*Ethiopia*	*Kenya*	*Malawi*	*S. Africa*
Manufacturing Value Added per capita (USD)	*1981*	13	33	34	729
	1991	12	37	33	661
	2001	21	34	23	591
Share of Manufacturing in GDP (percent)	*1981*	6.8	9.6	14.4	21.5
	1991	7.3	10.1	17.4	21.5
	2001	6.2	10.3	11.1	19.4
Share of Manufactured Goods in Total Exports (percent)	*1981*	10.2	52.7	35.1	19.4
	1991	17.0	51.3	13.1	25.7
	2001	12.4	37.7	19.1	63.8
Manufactured Exports per capita (USD)	*1981*	1	39	15	139
	1991	1	22	6	288
	2001	-	19	6	384

<u>Source:</u> UNIDO Industrial Development Report (2004).

Following a study review of its support of the private sector development in Malawi, NORAD (2002, p.9) reports that, "...the Malawi manufacturing sector showed 0.0 percent growth in the period 1996-1999. The reasons for this are many, but worth mentioning is the rapid liberalization of markets, exposing Malawi's manufacturers to competition from South Africa and Zimbabwe. The sector is still hampered by monopolistic behaviour, trade barriers, and lack of access to capital (etc).... The privately owned garment [clothing and apparel] sector is fast disappearing. Since September 1999, five garment manufacturing companies have closed, and others at a serious risk. It is a possibility that the whole garment sector will have closed in the next two years." Further, in its assessment of the Malawi manufacturing sector, the World Bank (2004b) observes that, "...in Malawi the manufacturing sector has been in stagnation over the past five years and there has been a contraction in output during the past two years. Over the past five years, there have been 10 closures of major manufacturing enterprises in tobacco processing, metal products, and garments.

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[23] For example, the US-based AGOA facility and the EU/ACP "Everything-But-Arms" (EBA) agreement, provide preferential market access for exports from countries like Malawi.

Furthermore, value-added in manufacturing grew by only 0.5 percent per annum over 1996 – 2001, respectively. While the fall in output has been observed in all sectors, the largest fall (38.2 percent) has been experienced in the clothing, footwear, and textile sector[s]. The fall in output has been reflected in the reduction of private investment, most of which goes into manufacturing, from about 8.0 percent of GDP in 1995 to 2.7 percent of GDP in 2000." (ibid, p.60)

Survey results on the prevailing patterns of finance (see, Malawi Government, 2000, 2004; World Bank, 2004b) suggest that, despite the reforms, insufficient finance for working capital continue to constrain the daily operations of most enterprises, particularly the micro and small-scale enterprises. As a consequence, enterprises use their retained profits to finance working capital for survival, rather than ploughing back into expansion of capacity. The micro- and small-scale sectors' ability to grow and provide competition in the manufacturing sector continues to be inhibited by unavailability of adequate financial resources; thereby making it difficult to transform from micro and smaller enterprises to larger establishments[24]. Consequently, more than 70.0 percent of enterprises in this sub-sector have, over their lifetime, contracted in size (both in terms of capital, as well as number of employees). Specifically, over the period 1996-2000, 78.0 percent of the firms started, ended up contracting in size. Further, since 1999, more enterprises have closed-down much faster than those that have been created (Malawi Government, 2000).

2.1.7.2. Competition in Industry.

The pattern of industrial structure in the manufacturing sector, following the financial liberalization process, remains to be typical of a country at an early stage of industrial development. In terms of ownership structure, the manufacturing sector is still heavily skewed towards a few prominent, but relatively large establishments; a feature linked with the centralizing role of the public corporations, as well as foreign ownership. State involvement has been, and still remains, significant in a number of manufacturing sub-sectors through its designated public enterprises (see, Chirwa,

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[24] According to recent survey results, micro- and small-scale enterprise sub-sector is stagnating despite showing great potential for growth (World Bank, 2004b).

2004). For instance, government has had, and continues to have, presence in manufacturing sub-sectors. Evidently, there is a persistent lack of competition within the manufacturing sector, with most industries continuing to be dominated by monopolies and oligopolies. As Chirwa (2004) observe, despite the privatisation process, there is continued holding of ownership by the state in most of the key privatised enterprises; and, the major public corporations (ADMARC, MDC and PRESS) continue to dominate a wide range of businesses, including agro-processing and production of consumer goods[25]. Disappointingly, the small-scale enterprise sub-sector has not developed adequately to provide the needed competition in the manufacturing sector. The graduation rate from micro "seed bed" into more complex enterprises is not high; and, in particular, it is found to be lower in Malawi, like most sub-Saharan African countries, than it is in Asia and Latin America (see, for example, Nissanke and Aryeetey, 1998). This is because the small-scale investors have not been able to effectively compete with the conglomerates. Further, the relatively small size of the domestic market and the need for firms to be large to gain the benefits of economies of scale partly explains the relatively skewed industry structure in Malawi. Government granting monopoly rights to certain firms in a bid to allow them to grow enhanced this development.

Foreign ownership too, either through direct multinational investments or as a joint venture with a locally based entrepreneur, has contributed to the development of oligopolistic structures in the manufacturing sector. Notably, many of the industries that are characterized by oligopolistic structures, with foreign involvement, are significantly capital intensive; and, thus have large economies of scale[26]. This has been a key entry-deterrent for most aspiring local entrepreneurs, due to inadequate resources to acquire even the required minimum capital. This characteristic seems to be consistent with the view in the literature that multinational corporations may also enhance skewed industry structures through their aggressive conduct and possession of intangible assets (see, Lall, 1979).

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[25] According the World Bank (2004, pp.59 and 95), as of end-2001, annual sales of firms belonging to these three conglomerates (ADMARC, MDC, and PRESS) together accounted for nearly 26.0 percent of Malawi's GDP.

[26] For instance, tobacco manufacturing, beverages, printing and publishing, electrical machinery, and transport equipment, are all characterised by high capital intensity.

Finally, the absence of any effective antitrust legislation must have also contributed to lack of competitiveness in the manufacturing sector. It was only in 1998 that a Competition and Fair Trading Act was introduced to restrict anti-competitive practices. Prior to this, government used some of its policies to control restrictive business practices or abuse of dominant positions of market power; such as the extensive regime of price controls, the directed credit and foreign exchange allocation system, all designed to influence private sector operators (see, Mulaga and Weiss, 1996). The introduction of the Competition and Fair Trading Act in 1998 was therefore in recognition of the fact that, despite the implementation of the economic reform programmes (including financial liberalization), which was aimed at ushering in a market-oriented economy; there remains a need to level the playing field. As noted in the preamble to the Act, "...the Malawian economy is characterized by imperfect market structures. In addition to 'natural' monopolies such as utilities, most goods in Malawi are produced and distributed under monopolistic or oligopolistic conditions. Even after all regulatory barriers to entry into these markets are removed; economies of scale may inhibit other players from entering certain markets. [The] ongoing privatization programme [of public enterprises] may result in some public sector monopolies being divested into private ownership with an attendant greater risk of the abuse of a position of dominant market power." (Malawi Government, 1989)

2.1.8. Summary of Observations.

In summary, following several government efforts and policy initiatives, the foregoing situation has had two notable implications in terms of shaping and influencing the structure and performance of the Malawian manufacturing sector:

First, apart from a few large-scale establishments, the rest of the manufacturing sector is comprised of small-scale firms. However, due to several barriers to entry and growth, these small-scale enterprises are not able to graduate into large-scale enterprises that could lead to deepening of industrial transformation, thereby lowering the monopolistic and oligopolistic structures that have been prevalent in the manufacturing sector in Malawi. Notably, inadequate financial resources severely restrict small-scale enterprises investment and expansion. Thus, for a prospective small-scale entrepreneur with a well thought out project, whether in an existing or a new product line, investment capital is a problem. The situation is aggravated by the lack of commitment from commercial banks and other lending institutions, in terms of credit extension to the small-scale enterprises. The commercial banks have played practically no part in financing small-scale enterprises. As observed by Chipeta and Mkandawire (1992) following a study of the Malawian financial institutions lending characteristics, "...few SME's obtain credit from commercial banks, and/or other financial institutions, as [these institutions] have not developed mechanisms for dealing directly with SME's whom they consider to be risky. Further, [for those who attempt to obtain credit from these institutions] the number of loan applicants always far exceeds the number that succeed in obtaining credit[27]. Credit constraints have been experienced even where the institutions were specifically created to cater for the small-scale enterprises. Apart from a 1.0 to 2.0-percentage point interest rate advantage available on loans from these institutions, compared with prime rates to commercial bank borrowers, the institutions are inadequately capitalized and lack effective outreach to carry out the functions for which they were established. Besides, their lending conditions have not been favourable either[28]. Consequently, the institutions' liquidity constraints, coupled with the owner contribution requirement, have worked against the success rate of obtaining credit from these institutions.

Second**,** the public corporations have over the years reinvested their profits, rather than distributing them. However, despite this property income leading to high rate of investment in the manufacturing sector, it has nonetheless increased further the public enterprises' market power in the manufacturing sector (Chirwa, 2004). The privatisation policy on public enterprises which was designed to promote participation by Malawian public in the state owned enterprises which are being privatised, as well as reducing monopoly and increasing competition, has not been effective either. This is because the majority of the interest group of indigenous people earns low average levels of income. Even though this constraint is being addressed by setting up special loan facilities through banks to enable Malawians to purchase shares in the

[27] According to a study by Chipeta and Mkandawire (1992, p.14), out of an average of 726 SME's that applied for loans at SEDOM, an annual average of 53.0 percent was rejected. At INDEBANK the rejection rate averaged 93.0 percent per year.

[28] For instance, INDEFUND requires borrowers to put up at least 10.0 percent of the initial capital, whilst SEDOM has a 20.0 percent floor for the clients' own share in a project (see, Chipeta and Mkandawire, 1992).

enterprises, which are being privatised, there is no easy access to these facilities (see, Chipeta and Mkandawire, 1992). This is because applicants to these facilities are subjected to the same usual creditworthiness tests by the banking system. Consequently, the programme is only benefiting few individuals and institutional investors who the banks consider to be financially strong. Further, the objective of reducing monopoly is not achievable, particularly in cases where large enterprises undergoing privatisation are not being split into and sold as small independent units, in order to facilitate affordability as well as spread ownership (Privatisation Commission, 1998).

In view of the foregoing developments, therefore, there is limited competition in the manufacturing industries. As observed by Chirwa (2004) and the World Bank (1989), in Malawi, the majority of the industries have been registering high concentration ratios, with a generally increasing trend. This suggests that the manufacturing sector continues to be beleaguered by lack of competition, despite the broad-based economic reforms, which included financial liberalization. Accordingly, as suggested by Reinhart and Tokatlidis (2003), refining future policy choices and enhancing government intervention and measures, necessitates the undertaking of a broad-based investigation of the responsiveness of the related economic indicators to the implemented financial liberalization process. In the next section of this chapter, this study attempts to achieve that through a simple preliminary empirical investigation on the effects of financial liberalization.

2.2. ECONOMETRIC EVIDENCE ON THE EFFECTS OF FINANCIAL LIBERALIZATION ON SELECTED FINANCIAL AND REAL SECTOR VARIABLES.

2.2.1. Empirical Framework.

Financial liberalization, according to literature, can either have a negative or positive effect on both the financial as well as manufacturing industry aggregates. The process, which is premised on the McKinnon-Shaw hypothesis, is often believed to enhance economic growth through its effect in promoting the development of the financial system[29]. However, while the financial liberalization paradigm has gained wide acceptance at the conceptual level, empirical testing of its validity remains, at best, inconclusive. For instance, there is a view that if financial liberalization is introduced at an early stage of development it will have a negative rather than positive impact on growth (Kawai, 1994; and, Adelman and Morris, 1997). Arguably, deregulation of financial markets in developing countries, such as Malawi, may lead to higher interest rates, thereby increasing the cost of funds and reducing investment. Some researchers have therefore expressed doubts as to the effectiveness of financial liberalization in creating a competitive manufacturing sector in developing countries (see, for example, Taylor, 1981; Diaz Alejandro and Helleiner, 1982; and Rodrik, 1992a). Amongst the reasons for such pessimism is that developing countries lack efficient institutions responsible for effective resource allocation (see, Nissanke, 2001).

Whilst the foregoing issues are tackled in more detail in the subsequent chapters of this thesis, this chapter conducts a simple preliminary investigation on the effect of financial liberalization on key macroeconomic variables. Accordingly, in order to identify the pre- and post-financial liberalization effects, the study tests whether the behaviour of selected industrial and financial variables significantly change in the years following financial liberalization, using a simple model by Demirguc-Kunt, Detragiache, and Gupta (2006). Investigations start from 1990, which is one year after financial liberalization in Malawi. Accordingly, applying the OLS estimator, the variables are regressed on six time dummies, one each for six years following liberalization. Where necessary, industry dummy variables are introduced in the regression to control for heterogeneity across industries. Thus, the following empirical model is estimated:

$$y_{it} = \gamma_i + \mu_{it} \qquad \text{for } t = T\text{-}1, T\text{-}2.... T\text{-}6;\ i = 1...N; \text{ and,} \tag{2.1}$$

$$y_{it} = \gamma_i + \beta t_t + \mu_{it} \qquad \text{for } t = T+1, T+2... T+6;\ i = 1...N. \tag{2.2}$$

where, N denote the number of industries, and y_{it} is an observation for variable y in period t and industry i. Further, μ_{it} represent the disturbance term, whilst γ and β are

[29] McKinnon (1973) and Shaw (1973) argue that, financial liberalization induces positive real interest rates, thereby giving rise to more savings, increased investments, improved efficiency of capital markets in terms of credit allocation, and ultimately economic growth.

regression coefficients. The estimate of each β, the coefficient of the period t dummy is therefore the mean difference between the value of the variable at t and the mean of the pre-liberalization period. Thus, according to Demirguc-Kunt, Detragiache, and Gupta (2006), if the estimated β values are significantly different from zero, then the variable behaves differently in the post-liberalization period than in the pre-liberalization years. This approach provides a comparison between the coefficients of the time dummies, which, in turn, facilitates tracing of the dynamic evolution of each variable during the period after the financial liberalization process. Due to heterogeneity across industries, the study uses heteroskedasticity-consistent standard errors to do hypothesis testing.

2.2.2. Data Specifications.

The dataset is of the combined cross-section (N = 1, 2…20), time series (T = 1, 2... 35) variety, with a total of N x T = 20 x 35 = 700 observations for each variable. Table 2.6 presents the summary statistics for most of the key variables in this study, and Table 2.7 shows the correlations between these variables.

Table 2.6: Summary Statistics: Major Financial and Real Sector Components (Annual Panel Data: 1970-2004)

Variable Description:-		Mean	Std. Dev.	Min.	Max.
GR	Industry value-added growth as % of real GDP	1.787	4.555	-14.16	11.25
NFE	Number of Firms (% Change)	0.003	0.174	-0.60	3.00
SH	Industry Share (Ratio of Industry Value Added to Total Man. Value Added)	0.047	0.072	0.01	0.70
CR	3-Firm Concentration Ratio	82.202	18.065	29.45	100.00
PCM	Industry Price-Cost Margins	0.183	0.135	- 0.26	0.70
MM	Ratio of Manufactured Imports to Total Merchandise Imports (% Growth)	73.637	3.148	63.39	80.77
MX	Ratio of Manufactured Exports to Total Merchandise Exports (% Growth)	8.572	2.811	4.62	15.44
GDP	Real Gross Domestic Product (Annual % Growth)	3.822	5.395	-10.24	16.73
DD	Demand Deposits (Annual % Growth)	20.011	14.768	-7.60	56.90
M2	Time and Savings Deposits (Annual % Growth)	23.317	16.174	-5.03	67.76
LR	Lending Rates (Nominal)	24.703	15.139	8.50	56.17
DR	Deposit Rates (Nominal)	15.028	9.429	5.50	37.27
RR	Real Interest Rates	5.609	10.382	-16.86	36.31
TDC	Total Domestic Credit from the Banking System (Annual % Growth)	1.255	0.216	0.69	5.86
FIT	Credit to Manufacturing Sector (as % of Total Domestic Credit)	0.283	0.086	0.18	0.48
FIN	Credit to Manufacturing Sector (as % of GDP)	0.120	0.129	0.01	0.44

Table 2.7: <u>Correlation among Major Financial and Real Sector Components: (Panel Data - Yearly Observations).</u>

	GR	*NFE*	*SH*	*CR3*	*PCM*	*MM*	*MX*	*GDP*	*DD*	*M2*	*LR*	*DR*	*RR*	*TDC*	*FIT*	*FIN*
GR	1.000															
NFE	0.007	1.000														
SH	0.669***	0.082	1.000													
CR3	0.105***	-0.112***	-0.735***	1.000												
PCM	0.097**	0.176**	0.132**	0.425***	1.000											
MM	-0.190***	0.081**	-0.079**	-0.224***	0.165*	1.000										
MX	0.156***	-0.033	-0.070*	0.316***	0.005	-0.397***	1.000									
GDP	0.054	-0.054	0.011	0.062	0.110***	0.191***	-0.284***	1.000								
DD	-0.175***	0.013	0.035	0.106***	0.080**	-0.195***	0.252***	0.097**	1.000							
M2	0.111***	-0.013	0.042	0.358***	0.041	-0.195***	0.202***	0.089**	0.065*	1.000						
LR	-0.323***	-0.053	-0.112**	0.480***	0.012	-0.512***	0.576***	-0.089**	0.080**	0.471***	1.000					
DR	-0.241***	-0.042	-0.107***	0.452***	0.053	-0.385***	0.467***	-0.090***	-0.050	0.527***	0.945***	1.000				
RR	0.198***	-0.013	-0.099**	0.198***	-0.105***	-0.607***	0.324***	-0.265***	0.262***	0.022	0.540***	0.359***	1.000			
TDC	-0.181***	0.085**	0.061*	-0.537***	-0.079*	0.084**	-0.325***	-0.277***	-0.072*	-0.390***	-0.458***	-0.398***	-0.097**	1.000		
FIT	0.128*	-0.044	-0.090**	0.605***	0.110***	-0.184***	0.294***	0.148***	0.233***	0.334***	0.658***	0.634***	0.289***	0.741***	1.000	
FIN	0.025	-0.010	0.012	0.214***	0.172***	-0.188***	0.107**	0.108**	0.133***	0.133***	-0.054	0.091**	-0.117**	-0.302*8*	0.536***	1.000
T+1	-0.022	0.037	0.007	-0.034	-0.053	0.222***	-0.077**	0.059	-0.021	-0.130***	-0.042	-0.053	0.062*	-0.095*	0.131***	0.248***
T+2	-0.021	0.009	0.007	-0.007	0.014	0.106**	-0.225***	0.156***	0.003	0.023	-0.053	-0.046	0.046	-0.087**	0.161***	0.370***
T+3	-0.046	-0.001	0.003	-0.030	0.085**	0.071*	-0.082**	-0.355***	-0.021	-0.080**	-0.031	0.027	0.035	0.088**	0.025	0.181***
T+4	-0.019	0.003	-0.001	0.090*	0.096**	-0.004	-0.219***	0.187***	-0.017	0.176***	0.054	0.122***	-0.076**	0.009	0.171***	0.255***
T+5	-0.046	-0.050	0.011	0.114**	0.129***	0.024	0.297***	-0.447***	-0.042	0.140***	0.071*	0.182***	-0.029	0.074**	0.209***	0.539***
T+6	-0.012	-0.003	0.006	0.120**	0.073**	-0.007	0.095**	0.411***	-0.040	0.349***	0.257***	0.405***	-0.371***	-0.175***	0.156*	0.025

<u>*Note:*</u> This table report the correlation matrix of selected industry and financial variables. And, ***, **, * indicate significance levels of 1, 5, and 10 percent, respectively. "*T+1*" is a dummy for one year following implementation of financial liberalization, and *T+2*, *T+3*, *T+4*, *T+5* and *T+6* are dummies for each of the subsequent five years following the financial reforms.

2.2.3. Estimation Results.

Table 2.8 show results for simple regressions on the effect of financial liberalization on the behaviour of selected real sector and financial sector variables.

Table 2.8: Financial Liberalization Effect on Selected Economic Indicators.

	T+1	*T+2*	*T+3*	*T+4*	*T+5*	*T+6*
GR	0.023 *(0.140)*	**0.230*** *(0.128)*	**0.538***** *(0.150)*	0.045 *(0.258)*	**0.878***** *(0.081)*	**0.391***** *(0.076)*
PCM	-0.032 *(0.028)*	0.020 *(0.035)*	**0.077**** *(0.037)*	**0.085**** *(0.049)*	**0.111**** *(0.041)*	**0.067**** *(0.026)*
NFE	0.040 *(0.051)*	0.013 *(0.016)*	0.015 *(0.017)*	0.000 *(0.010)*	0.054 *(0.073)*	0.000 *(0.010)*
SH	-0.029 *(0.138)*	0.192 *(0.128)*	-0.090 *(0.148)*	-0.044 *(0.256)*	**0.438***** *(0.077)*	**0.134**** *(0.075)*
CR3	-0.038 *(0.028)*	0.002 *(0.027)*	-0.031 *(0.030)*	**0.145***** *(0.021)*	**0.180***** *(0.020)*	**0.190***** *(0.020)*
MM	**4.471***** *(0.139)*	**2.201***** *(0.139)*	**1.530***** *(0.139)*	0.121 *(0.139)*	**0.641***** *(0.139)*	0.051 *(0.139)*
MX	**-1.607***** *(0.115)*	**-3.307***** *(0.115)*	**-1.677***** *(0.115)*	**-3.247***** *(0.115)*	**5.473***** *(0.115)*	**1.043***** *(0.115)*
GDP	**1.880***** *(0.167)*	**4.920***** *(0.167)*	**-11.140***** *(0.167)*	**5.880***** *(0.167)*	**-14.050***** *(0.167)*	**12.920***** *(0.167)*
DD	**-0.551**** *(0.176)*	-0.048 *(0.176)*	**-0.570***** *(0.176)*	**-0.472**** *(0.176)*	**-1.011***** *(0.176)*	**-0.962***** *(0.176)*
M2	**-10.694***** *(0.663)*	**3.676***** *(0.663)*	**-5.974***** *(0.663)*	**18.096***** *(0.663)*	**14.776***** *(0.663)*	**34.466***** *(0.663)*
LR	**-2.923***** *(0.666)*	**-3.923***** *(0.666)*	**-1.923***** *(0.666)*	**5.577***** *(0.666)*	**7.077***** *(0.666)*	**23.407***** *(0.666)*
DR	**-1.723***** *(0.380)*	**-1.323***** *(0.380)*	**2.677***** *(0.380)*	**7.927***** *(0.380)*	**11.177***** *(0.380)*	**23.447***** *(0.380)*
RR	**3.034***** *(0.438)*	**2.104***** *(0.438)*	**1.394***** *(0.438)*	**-5.276***** *(0.438)*	**-2.476***** *(0.438)*	**-23.166***** *(0.438)*
TDC	**-6.384***** *(0.479)*	**-5.865***** *(0.479)*	**5.115***** *(0.479)*	0.155 *(0.479)*	**4.235***** *(0.479)*	**-11.365***** *(0.479)*
FIT	**8.171***** *(0.365)*	**11.081***** *(0.365)*	0.141 *(0.365)*	**12.161***** *(0.365)*	**16.711* ***** *(0.365)*	**10.611***** *(0.365)*
FIN	**1.143***** *(0.017)*	**1.603***** *(0.017)*	**0.893***** *(0.017)*	**1.173***** *(0.017)*	**2.243***** *(0.017)*	**0.303***** *(0.017)*

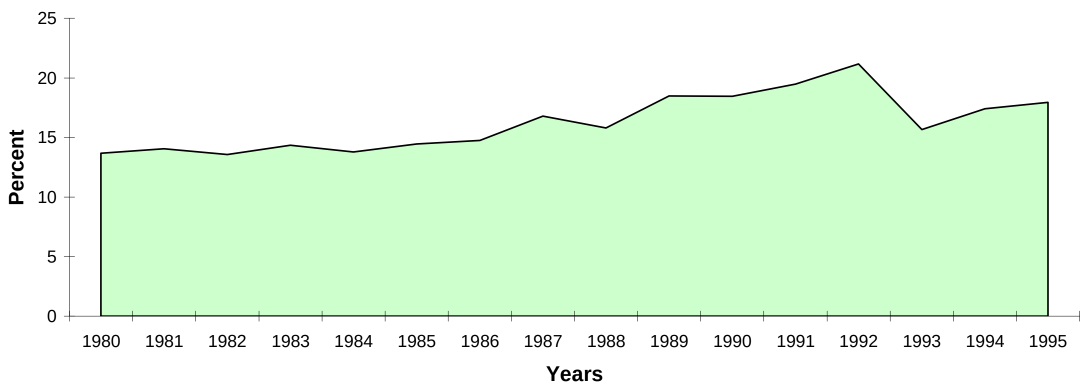
Note: ***, **, and *, indicate significance levels of 1, 5, and 10 percent, respectively. "*T+1*" is a dummy for one year following implementation of financial liberalization, and *T+2*, *T+3*, *T+4*, *T+5* and *T+6* are dummies for each of the subsequent five years following the financial reforms. White's heteroskedasticity-consistent standard errors are in parentheses.

2.2.3.1. Real Sector Performance.

The results in Table 2.8 show that the performance of the Malawian manufacturing industries, as measured by growth in manufacturing value-added and price-cost margins, does not change in the year immediately after the financial reforms.

However, by *T+2* manufacturing growth register recovery, as it is significantly above the pre-liberalization level during the subsequent years, except for the brief stagnation in *T+4*. Next, after stagnating in *T+1* and *T+2*, price-cost margins increase to a level above the pre-liberalization level from *T+3* and in the subsequent years.

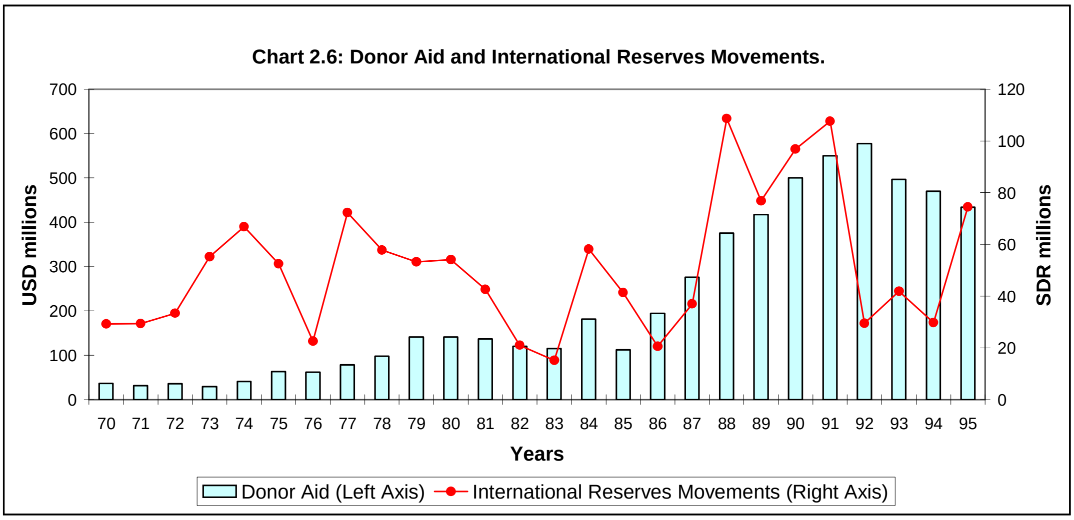
Chart 2.5: Manufacturing Value-Added (as % of GDP)



Source: Malawi Government (National Statistical Office, Economic Planning Ministry).

Arguably, however, growth in real industry output can be linked to either an increase in industry value-added or expansion in the number of firms. Evidently, in the case of the Malawian manufacturing sector, growth in output must be due to the former explanation, since the number of firms does not change during the five years following financial liberalization, as evidenced by the insignificant coefficient on net firm entry. Apparently, this outturn may explain the increase in the average firm share, and, possibly, in the three-firm concentration levels. What may be happening is that the increase in value-added is originating from a few pre-existing large firms or companies, which subsequently grow even bigger. Hence, industry concentration, which had hitherto remained unchanged following the financial liberalization process, now has a positive and significant coefficient from *T+4* and the subsequent years.

A related explanation for the insignificant result in output growth in the manufacturing sector during *T+4* is the impact of donor-aid withdrawal from Malawi during this period, due to governance concerns by the donor community. In Malawi, as is similarly common with most recipients of large donor aid in sub-Saharan Africa, the high levels and unpredictability of aid flows contribute to macroeconomic volatility (see, Bulir and Hamann, 2001)[30].



Source: World Development Indicators (World Bank).

The country's foreign reserves position, which benefit significantly from donor inflows, was eroded following this development; with adverse implications on the manufacturing sector's performance. It is for similar reasons that manufactured imports also register no change in *T+4*, after recording annual increases between *T+1* and *T+3*. However, manufactured imports are significantly above the pre-liberalization level in *T+5*, before slowing down again in *T+6*. Apparently, the manufacturing imports intensity that followed the financial reforms exposed domestic manufacturing firms to stiff foreign competition. In reaction to this, many firms either stopped normal operations or started to scale down their operations, or turned to trading in goods, which they formerly produced themselves. Notably, the insignificant outturns on the change in the number of firms, or the lack of firm creation, from the year after financial liberalization through to *T+6*, testify to this policy development. Besides, as part of the financial liberalization package the exchange rate regime changed from fixed to a managed float. This had a massive impact on the exchange rate, which depreciated by a significant margin within a short space of time, particularly due to the low foreign reserves levels that characterised the economy at

[30] In Malawi, foreign aid amounts to approximately 20.0 percent of GDP per annum. And, budgeted government expenditures - mostly in form of demand for manufactured goods - are made in anticipation of aid, and if that aid is curtailed, this creates 'ripples' throughout the economy.

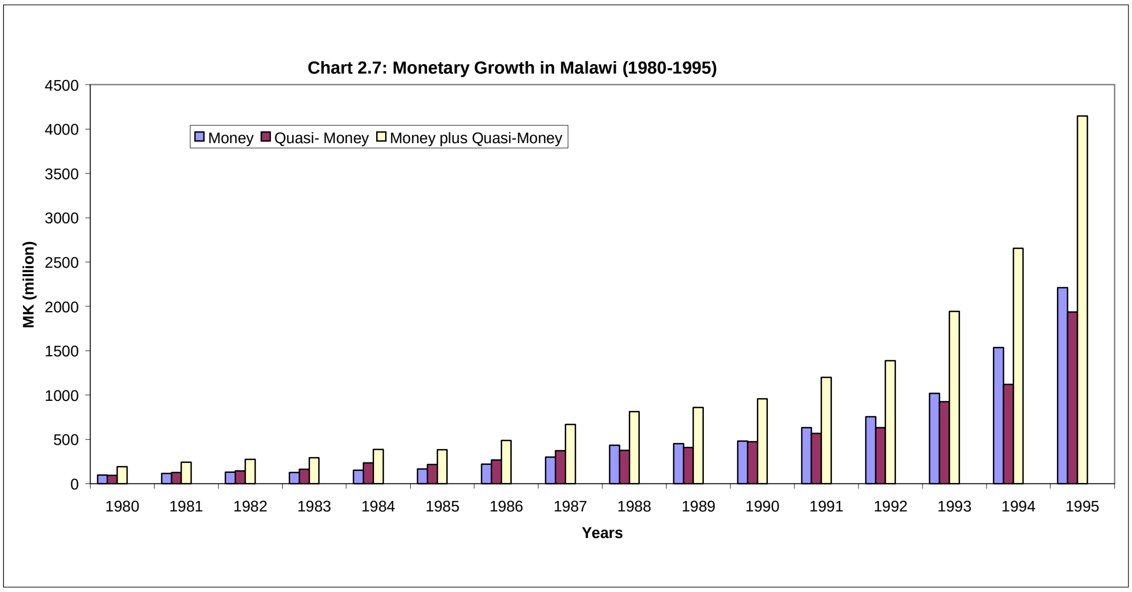
that time, as indicated. This had a crippling effect on the economy overall, which is predominantly dependent on imported inputs. In contrast, however, the exchange rate regime change benefited the manufactured exports sector, which gained in terms of local currency earnings; hence its significant recovery to above the pre-liberalization level in *T+5* and *T+6*.

In terms of the overall economic performance, financial liberalization is accompanied by an increase in gross domestic product (GDP) growth, of the order of 2.0 percentage points in the year immediately after the reforms. Growth remains above the pre-liberalization levels in the second year following the financial reforms, registering an increase of 5.0 percent, before decreasing below the pre-liberalization levels in *T+3*. This underperformance is due to persistent drought during the period *T+3* that adversely affect agricultural productivity. Agriculture, a primary component of the economy, account for about 33.0 percent of GDP. Economic recovery in *T+4* is again disrupted, mainly due to two developments that put pressure on the government's fiscal position: the donor aid withdrawal, and the conducting of the country's first multi-party elections. However, in *T+6*, macroeconomic performance strongly recovers and registers a 13.0 percent growth. Overall, despite underperformance during the two periods, output growth remained above the pre-liberalization levels. This is consistent with findings of Bakaert *et al* (2005), that financial liberalization positively influences economic growth, particularly through its effect on financial development, thus emphasizing the importance of financial development for economic growth. The result is also consistent with findings by Vlachos and Waldenstein (2005), who establish that economic growth in real output is boosted by financial liberalization. Further, this confirms the evidence of Laeven (2003), suggesting a positive correlation between financial liberalization and growth, given a relatively developed financial system.

2.2.3.2. Financial Sector Performance: Savings Mobilization, Intermediation, and Credit Availability.

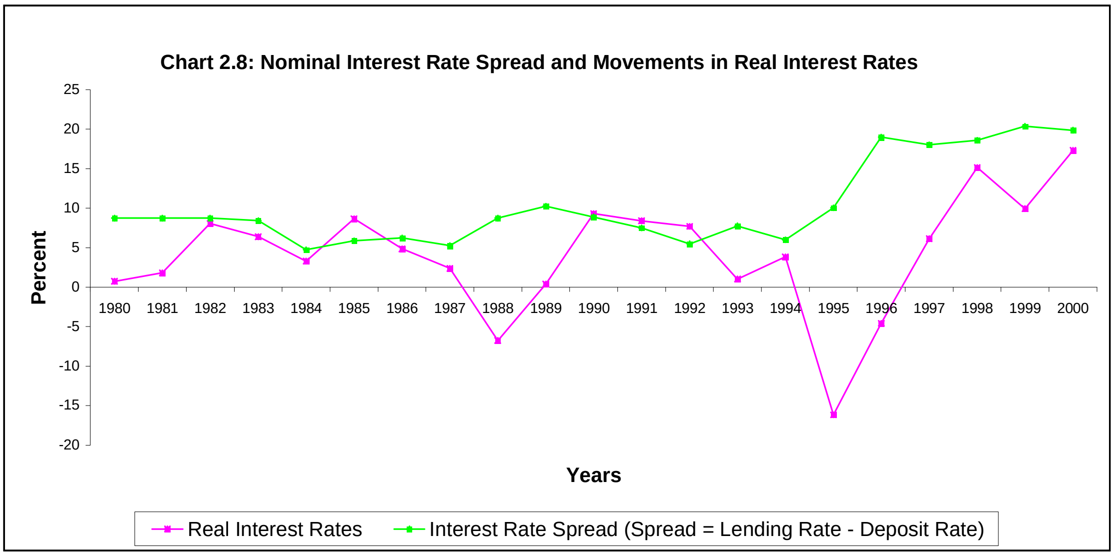
In the year after the financial reforms and all the subsequent years, except in *T+2*, the rate of growth in demand deposits significantly falls below the pre-liberalization level.

Evidently, there is an increase in long-term liabilities in the banking system as broader money supply (*M2*) becomes significant and positive from period *T+4* to *T+6*. These findings suggest that, following financial liberalization, there is some moderate change in depositors' behaviour from short-term to medium and long-term savings.



Source: International Financial Statistics, IMF.

Interest rates on deposits and lending, which were controlled by the monetary authorities before the financial reforms, initially decline below the pre-liberalization level in the liberalization year and the following two years. However, in the three years after financial liberalization, the average interest rate on deposits increased significantly above the pre-liberalization levels. Lending rates also become positive and significantly above the pre-liberalization level from *T+4* onwards, mainly reflecting the reaction from the banking system on the 'squeeze' on their profit margins following the introduction of the liquidity reserve ratio (*LRR*). The *LRR* was introduced during the reforms in 1989 for monetary policy objectives as well as for prudential purposes so as to safeguard depositor's interest. However, the legal liquidity reserves form a sizeable loanable fund that the financial institutions could use to expand the size of their loan portfolio. Apparently, in Malawi, the high reserve requirements (which comprise the legal liquidity reserve ratio and the cash reserve ratio), together with high central bank discount rate and high inflation are the factors influencing interest rate spread. As Seck and El Nil (1993) also observe that, the high spread between lending and deposit rates in many developing countries that have undertaken financial reforms can be viewed as an implicit tax through the high reserve requirements on the banking sector by the monetary authorities[31].

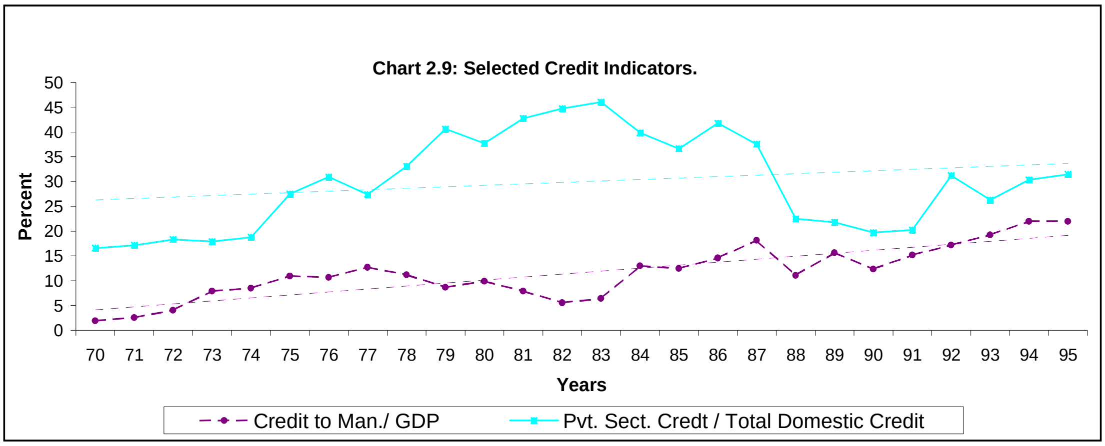


Source: World Development Indicators (World Bank).

Real interest rates are significantly above the pre-liberalization level from the year after financial liberalization and continue to rise during the subsequent two years. However, beginning in the period *T+4*, they slide back to the pre-liberalization level, as they reached negative 16.9 percent in 1995. This was a result of increasing inflation, which rose from a three-year average of 15.2 percent during the year following the financial liberalization to an average high of 46.9 percent for the rest of the period, with a record high of 83.0 percent in 1995. Two major reasons explain this increase in inflation following financial liberalization. First, the liberalization of the exchange rate system in February 1994 resulted in a huge depreciation of the local currency, and the higher price of imported inputs quickly filtered through to domestic prices. Second, unbudgeted expenditure on the country's 1993 political referendum for pluralistic politics, followed by Malawi's first general elections in 1994, led to a large increase in money supply which became inflationary (World Bank, 2004b).

[31] In Malawi, the spread between the deposit and lending rates has been around 20.0 percent on average (see, Mlachila and Chirwa, 2002).

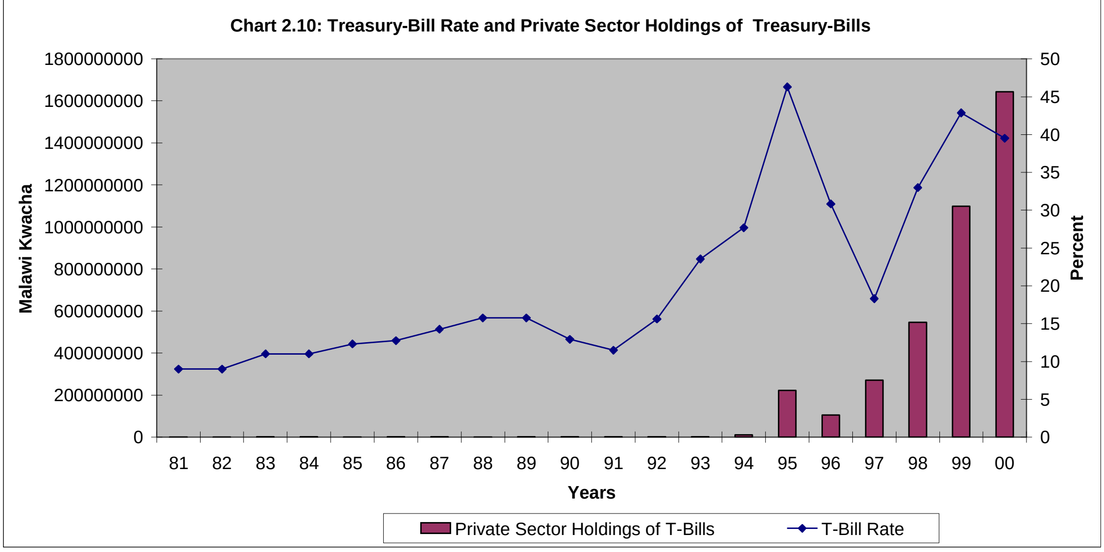
On credit availability following the financial reforms, the results show that despite total domestic credit initially remaining below the pre-liberalization level in the two years after the financial reforms, credit to the manufacturing sector rose substantially beginning in the year after financial liberalization. This was due to the discontinuation of directed credit allocation policy, where the agriculture sector was previously accorded preferential treatment. Subsequently, the share of commercial banks' loans and advances to the manufacturing sector increased. Thus, as a percentage share of GDP, credit to the manufacturing sector is, to a great extent, significantly different from its pre-liberalization level from *T+1*, through to *T+6*.



Source: Reserve Bank of Malawi Quarterly Economic Reviews (various) Table 1.7.

Notably, however, a significant proportion of the increase in credit to manufacturing was invested into financial assets and not the real sector. The high treasury bill rates – which fluctuated between 40.0 percent and 70.0 percent nominally (or approximately between 20.0 percent and 50.0 percent in real terms) led to increase in demand for these financial assets, as this was considered more lucrative at that time than investing in the real sector[32]. Due to a few alternative financial instruments, the composition of broad money shifted gradually in favour of time deposits and financial assets, despite negative interest rates on deposits during part of the period under review

[32] A World Bank (2004b) study shows that, in Malawi, following financial liberalization (precisely, at end-2001) four large conglomerates and their subsidiaries (which included financial institutions) held nearly 60.0 percent of Treasury bills (or about 7.0 percent of GDP). A tendency for 'speculative' type of investments, particularly following financial liberalization is well documented in the literature (see, Grabel, 1995).



Source: World Development Indicators (World Bank) and Reserve Bank of Malawi.

2.2.4. Robustness Test.

In the foregoing results, insignificance of some of the coefficients of the aftermath time dummy may be due to a small number of observations. In order to increase degrees of freedom, therefore, the regressions are re-estimated: *first*, using one time dummy covering the period following the implementation of the financial reforms; thus, excluding the year when financial liberalization is implemented (*FL1*); and, *second*, using another time dummy covering the entire period, thus, both during and after the reforms (*FL2*). Table 2.9 show the results. Despite slight variations in some of the variables, the results are basically unchanged particularly when we consider coefficients for industry concentration, savings mobilization and credit indicators. Overall, these results lend credence to the fact that financial liberalization has some effect on the behaviour of the variables.

In summary, the econometric results provide a clear indication of the effects of financial liberalization on the various macroeconomic variables. However, as argued by Demirguc-Kunt, Detragiache, and Gupta (2006), whilst the foregoing methodology is simply designed to specifically identify the effects of financial liberalization without necessarily establishing any causal links, it nonetheless provides a robust base for identifying possible relationships between the variables that may necessitate further in-depth investigation and analysis. The subsequent chapters of this study, therefore, attempt to accomplish such a task by making a comprehensive examination of a possible link between financial liberalization / financial development, concentration, net firm entry, profitability, and output growth in industry.

Table 2.9: ***Financial Liberalization Effect – Robustness Tests Results.***

Variable:-	*FL 1*	*FL 2*
GR	**- 0.346*** *(0.183)*	**0.139**** *(0.061)*
PCM	**0.003**** *(0.014)*	**0.023***** *(0.012)*
NFE	0.020 *(0.017)*	0.000 *(0.010)*
SH	0.000 *(0.000)*	0.003 *(0.008)*
CR	-0.003 *(0.021)*	**0.080***** *(0.019)*
MM	**0.007***** *(0.002)*	**0.014***** *(0.002)*
MX	**0.213***** *(0.031)*	**-0.030***** *(0.013)*
GDP	**2.358***** *(0.876)*	**-2.558***** *(0.171)*
DD	**-0.151***** *(0.030)*	**-0.467***** *(0.182)*
M2	**2.476***** *(1.400)*	**-1.626***** *(0.673)*
LR	**5.472***** *(0.862)*	**-0.956***** *(0.687)*
DR	**8.103***** *(0.795)*	**-1.111***** *(0.393)*
RR	**1.842***** *(0.824)*	**-6.117***** *(0.450)*
TDC	**1.963***** *(0.519)*	**-4.469***** *(0.493)*
FIT	**0.007***** *(0.002)*	**0.014***** *(0.002)*
FIN	**0.503***** *(0.055)*	**0.749***** *(0.017)*

Note: ***, **, and *, indicate significance levels of 1, 5, and 10 percent, respectively. White's heteroskedasticity-consistent standard errors are in parentheses.

2.3. CONCLUSION.

Overall, development of the structure and performance of the Malawi manufacturing sector can be traced to the highly risky environment faced by firms in engaging in production. Arguably, the unstable macroeconomic environment and a fragmented financial structure have led to high costs of capital coupled with a discretionary credit system that might have bred monopolies and oligopolies in the manufacturing sector.

Despite an improvement over the years in private sector credit as a proportion of total credit from the banking system, the financial markets have not adequately addressed firm's capital needs to enable them grow. This is because the financial markets are segmented and different kinds of firms enjoy very different access to capital (see, Nissanke and Aryeetey, 1998; Nissanke, 2001). Thus, as some classes of firms face limited access to borrowing, they will be forced to rely on internally generated funds and may have to forego some desired investment because of financial constraints. The ability to obtain external funds in domestic credit market differs between private and public enterprises, between firms affiliated with, and owned by, a group and independent firms, and between export and domestic oriented firms. Moreover, following the liberalization of exchange controls makes it possible now for those firms with good reputation and close connections in other countries to borrow from offshore. Access to domestic credit also differs across firms and industries. Although most commercial banks are now extending credit to various enterprises, it is mostly to the larger firms, which have special channels to the bank in terms of long-term relationships and ability to provide collateral. Besides, those belonging to conglomerates, as well as large joint ventures and public enterprises, have ability to borrow offshore. Relatively new and young, independent firms, which have not built up their reputation and connections, face highly constrained access to credit. This is despite most commercial banks now having specialised windows for lending to small-scale enterprises (Aryeetey *et al* 1997; Malawi Government, 2004).

In summary, there are profound differences among Malawian firms in their access to credit markets. Arguably, this differential access to, and cost of, external finance for different categories of firms is likely to have a profound effect on their investment choices, level of competition, and market share, which determine the structure and performance of the industry. However, the link between financial liberalization and industry structure and performance in the Malawian manufacturing sector remains to be investigated further in order to inform this policy debate.

CHAPTER 3.0: LITERATURE SURVEY.

3.1. FINANCE AND GROWTH – AN OVERVIEW.

"Banks were the happiest engines that ever were invented for spurring economic growth"
(Hamilton – 1781)

"Banks harm the morality, tranquillity, and even wealth of nations"
(Adams – 1819)

These contrasting views reflect the different perspectives economists hold on the theoretical link between financial development and economic growth[33]. Hamilton's (1781) views are later extended by Bagehot (1873) who argue that the financial system played a critical role in igniting industrialisation in England by facilitating the mobilization of capital and growth; and, subsequently by Schumpeter (1912) who contends that services provided by financial institutions are essential drivers for innovation and growth. Schumpeter notes that a well developed financial system channel financial resources to the most productive use. Alternatively, and in agreement with Adam's (1891) views, Robinson (1952) propagates an explanation that finance does not exert a causal impact on growth. Robinson instead asserts that financial development follows economic growth as a result of higher demand for financial services. According to this view, which is somehow shared by Lucas (1988), it is argued that when an economy grows, more financial institutions, financial products and services emerge in the markets in response to higher demand of financial services. In fact, Lucas (1988) contends that the role of finance in economic growth has been overstressed.

However, the literature on this debate is generally more supportive of the growth-enhancing view espoused by Hamilton (1781), Bagehot (1873), and Schumpeter (1912), that a country's financial development has a causal impact on its long-run

[33] The quotations from Hamilton and Adams are drawn from Hammond (1991).

economic performance and growth. These arguments are subsequently formalized by Gurley and Shaw (1955), Goldsmith (1969), Shaw (1973), and McKinnon (1973); and, much later, by Fry (1988) and Pagano (1993). Building on these works, recent studies have focused on assessment of the role of the financial sector in stimulating growth. Theory suggests that economic agents create debt contracts and financial intermediaries to ameliorate the economic consequences of informational asymmetries, with beneficial implications for resource allocation and economic activity. Several empirical studies have been conducted on these theoretical predictions[34]. Overall conclusion of this research agenda is that, indeed, financial development exerts a 'first-order' effect on long-run economic growth. As Levine (1997) concludes; "...the preponderance of theoretical reasoning and empirical evidence suggests a positive, first-order relationship between financial development and economic growth...There is even evidence that the level of financial development is a good predictor of future rates of economic growth, capital accumulation, and technological change" (ibid, pp. 688-689).

3.2. TRANSMISSION MECHANISM BETWEEN FINANCE AND GROWTH: A MACRO MODEL.

In the literature, Pagano (1993) demonstrates how finance and growth could be related, using a simple hypothetical macro model. Pagano structures a transmission mechanism showing that financial development influences economic growth through the savings mobilisation process. Pagano's exposition summarises a process where the financial system mobilises savings; thereby increasing the proportion of savings going towards investment. The private savings rate is altered and the marginal productivity of capital is increased. In order to demonstrate this resource mobilisation and transmission mechanism, Pagano proposes a simple endogenous growth model, where aggregate output is a function of aggregate capital stock, as follows;

[34] King and Levine (1993a); Levine and Zervos (1996, 1998);Bencivenga and Smith (1991); and, Greenwood and Jovanovic (1990) , all provide evidence that financial intermediation promotes growth. More elaborated econometric analyses by Rousseau and Wachtel (2001); Beck *et al* (2000), and Beck and Levine (2002), further confirm the relationship between financial development and economic growth.

$$Y_t = \beta K_t \tag{3.1}$$

where, β is the social marginal productivity of capital K_t. The economy is hypothesised to produce a single good, which is either consumed or invested. If the good is invested, then gross investment is given by;

$$I_t = K_{t+1} - (1-\alpha) K_t \tag{3.2}$$

where, α is the depreciation rate of investment per period t. Aggregate investment is merely a change in aggregate capital stock, less depreciation. For simplicity, the model assumes a closed economy, such that, in equilibrium, aggregate savings S_t equal aggregate investment I_t. The transmission of savings into investment involves the financial sector in the process of financial intermediation. There is a cost associated with intermediation; such that, a proportion of savings $1-\delta$ is 'lost' through intermediation whilst δS_t is the remaining proportion of savings that goes into investment; thus,

$$\delta S_t = I_t \tag{3.3}$$

From Equations (3.1) (3.2) and (3.3) above, dropping the time indices, the steady state growth rate may be given as;

$$g = \frac{\beta I}{Y - \alpha} = \beta \delta s - \alpha \tag{3.4}$$

where, s is the private savings rate. According to Pagano (1993), through Equation (3.4), the model shows how financial development can raise economic growth.

First, this can be achieved by increasing δ, the proportion of savings channelled towards investment. As indicated, $1-\delta$ represents the proportion of savings absorbed by financial institutions as a reward for providing services, which may be in the form of increased interest rate spreads between lending and borrowing, and the commissions and fees that securities brokers and dealers charge, etc (see, Roubini and Sala-i-Martin, 1992). Accordingly, if financial development leads to a reduction in this leakage of resources – thereby increasing δ in Equation (3.4) – then this should lead to an increase in the growth rate g.

Second, financial development can also influence growth by increasing β, the social marginal productivity of capital. As argued by Diamond and Dybvig (1983), Bencivenga and Smith (1991), and Greenwood and Jovanovic (1990), financial development enables banks to increase the productivity of investments both by directing funds to illiquid, high-yield technology and by reducing investment waste due to premature liquidation. Hence, the gains in productivity increase the growth rate g. Further, β in Equation (3.4) can also be increased through the increased risk sharing process that is made possible through increased financial intermediation. For instance, Levine (1991), and Saint-Paul (1992) show that economic agents buffer idiosyncratic liquidity shocks through selling of shares on the stock market, while the stock markets also facilitate the reduction of the rate-of-return risk through portfolio diversification. Accordingly, Pagano (1993) argues that when this risk can be shared efficiently via the stock market, producers are encouraged to specialise and this raises productivity, and ultimately, economic growth g.

Third, the financial sector could also influence growth of the economy through the savings rate. However, in the literature, direction of the effect of the savings rate on economic growth remains ambiguous. Financial development enables households to gain better insurance against endowment shocks and better diversification of rate of return risk, while consumer credit becomes more readily and cheaply available. Further, as the financial system develops, the wedge between interest rate paid by firms and that received by households is narrowed. Overall, each of these factors affects savings behaviour, but in each case the effect is ambiguous, and the relevant empirical studies remain inconclusive on the direction of impact[35].

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[35] See, for example, Bencivenga and Smith (1991); Devereux and Smith (1991); Jappelli and Pagano, (1992); and, De Gregorio (1992).

3.3. FINANCIAL DEVELOPMENT.

3.3.1. Policy Overview.

Policy debate on the finance-growth nexus became increasingly prominent around the 1970s when most governments – particularly in developing countries – adopted interventionist policies in the financial system, with the objective of achieving quick development, as well as fulfilling social agendas (see, World Bank, 1989b; Gibson and Tsakalotos, 1994). This took the form of 'financial repression'; which McKinnon (1973) defines as policies and regulations that prevent financial intermediaries from operating at a level in accordance with their technological potential[36].

As emphasised by Fry (1988, 1997), Giovannini and de Melo (1993), and Nichols (1974), the main motive behind financial repression is fiscal, as governments aim to generate financial resources to finance intertemporal budget constraints. Through imposition of large liquidity and reserve requirements, it creates a captive demand for its own interest bearing or non-interest bearing instruments, respectively, and uses it to finance its own priority spending (see, Agenor and Montiel, 1996 p.152). Further, putting a cap on interest rates creates excess credit demand, and directs credit to selected priority sectors. Financial repression also involves limiting the menu of instruments that the public can hold in order to ensure greater seigniorage revenue to finance government expenditures (see, Roubini and Sala-i-Martin (1992). In fact, evidence from empirical studies point to substantial government revenue generated through controls on financial markets. For instance, Giovannini and DeMelo (1993) find that the Mexican government extracted about 6.0 percent of that country's GDP (almost 40.0 percent of total conventional tax revenue) through controls on financial markets. Similarly, Fry (1993) reports a figure of almost 2.8 percent of GDP as revenue from inflation tax alone for a sample of 26 developing countries. The size of these sums, in comparison with the fiscal revenue generated by explicit taxation, possibly explains why financial repression is often used as a source of tax revenue, having the added advantage of being more flexible than formal tax legislation.

[36] Financial repression practices include; low-yield required reserves, ceilings on nominal deposit and lending interest rates, quantitative controls and selective credit allocation, and inflation tax on monetary assets. As savings are sensitive to real interest rates, nominal interest rate controls cum inflation reduces the amount of national income allocated to capital formation (McKinnon, 1973).

In a study that focus on some of the developing countries in sub-Saharan Africa, Nissanke (2001) observes that, historically, financial repression regimes in this region emerge out of post-independence economic landscape when the policies pursued during this period were interventionist, with governments determining credit allocation to specific sectors, imposing high reserve requirements, and enforcing interest-rate ceilings. However, according to Nissanke (2001), implementation of such policies in most developing countries was justified in terms of the Keynesian approach to investment demand. The argument is that low interest rates were considered to be an instrument for private investment promotion, while directed credit allocation was meant to facilitate resource redistribution in a bid to achieve broad-based economic development. However, as observed by Aryeetey *et al* (1997), Nissanke and Aryeetey (1998), and Nissanke (2001) for sub-Saharan Africa, under such conditions emerges a fragmented credit market in which favoured borrowers obtain funds at subsidized, often highly negative, real interest rates, while others are forced to seek credit in inefficient, expensive informal markets. Generally, therefore, following theoretical arguments as well as the foregoing empirical evidence, financial repression weakens the incentive to hold money and other financial assets, lowers savings, reduces credit availability for investors, reduces productivity of capital and therefore retards economic growth[37].

3.3.2. Financial Liberalization.

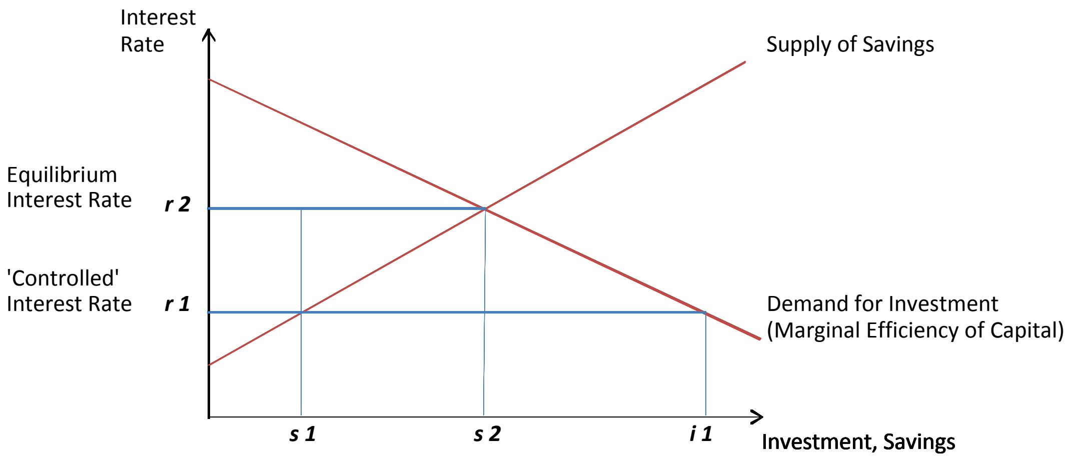
Financial liberalization policies have been implemented in many developing countries with the objective of developing the financial systems, a la McKinnon (1973) and Shaw (1973). In theory, financial liberalization is hypothesised to encourage savings mobilisation; thereby leading to easing of liquidity constraints for firm's investments. This view follows classical economics where interest rates are seen as providing a return for the choice between consumption and saving. Put simply, a rise in interest rate decreases the incentive to borrow and lowers the utility of consumption raising

[37] Besides, ceilings on deposit rates and loan rates tend to raise the demand for and depress the supply of funds. Unsatisfied demand for investible funds then forces financial intermediaries to ration credit by means other than the interest rate (McKinnon 1973;, Shaw 1973; Fry 1982, 1988).

the inducement to save and lowering the excess demand for savings (see, Gersovitz, 1988; Bayoumi, 1993; and Mavrotas and Kelly, 2001). When interest rates are put artificially low, the result will be shallow financing. As Shaw (1973) and McKinnon (1973) separately argue "...[financial] deepening implies that interest rates must report more accurately the opportunities that exist for substitution of investment for current consumption and the disinclination of consumers to wait. Real interest rates are high where finance is deepening." (Shaw, 1973, p.8); and "...if financial policy including inflation reduces real rates of interest and makes savings appear cheap, so cheap that they must be rigorously rationed" the result will be "excess demand" for savings (op. cit. p.12). "If the real return on holding money increases so will self-financed investment over a significant range of investment opportunities...The financial "conduit" for capital accumulation is thereby enlarged" (McKinnon, 1973, p.60).

Figure 3.1 is a simple illustration of the foregoing orthodox view of financial liberalization. Under a financially repressed regime, interest rates may be officially held at *r1*, which means there will be a resource gap (a savings-investment gap) represented by the distance between *s1* and *i1*. Where possible, this resource gap may be covered through dependence on overseas sources of finance.

Fig 3.1 Financial De-Repression: Conventional View



However, implementing financial liberalization or de-repression policies means that the interest rate will be allowed to move from the officially 'controlled' to the equilibrium level; and, supply of savings will increase from *s1* to *s2*, and the savings-investment gap disappears. Consequently, any inefficient projects, which might have been profitable at the government-managed rate of interest *r1*, but not at the new rate *r2*, will naturally close down and exit. Ultimately, quality of the entire investment portfolio and in time the growth rate of the economy will increase. An increased growth rate, in due course, will bring down the savings supply curve and the equilibrium interest rate.

Neoclassical theorists such as Kapur (1976, 1983), Mathieson (1980), and others have followed this line of thought and supported it by formalizing various models[38]. This line of thought has however been contested by a group of economists called neostructuralists, led by Buffe (1984), Taylor (1983), and van Wijnbergen (1982, 1983a, b), who argue that financial liberalization which leads to higher interest rate will probably reduce the rate of economic growth by reducing the real supply of credit available to firms. Using a portfolio framework for the allocation of household assets, they contend that whether higher interest rates really increase total amount of real lendable funds depends on the required reserve ratio and on whether increased holdings of real money balances come mainly at the expense of cash and inflation hedges or mainly from direct lending in the informal credit market.

As Cho (1990) observes, policy recommendations from the foregoing two conflicting views – the McKinnon-Shaw group of neoclassical theorists that is for the positive effects of financial liberalization, and the neostructuralists group which is against it – have confused financial policy makers in developing economies. Worst still, Grabel (1995), amongst others, also identifies a third dimension to this debate – the emergence of a post-Keynesian perspective to financial liberalization, which argues that financial liberalization induces speculative investments, thereby adversely affecting economic growth. According to this view, financial liberalization creates boom-euphoric expectations and/or competitive pressures to engage in profit-seeking activities. This, as argued by Crotty (1993), drives economic agents to engage in and abet high-risk investments that they would have never been involved in if it were not for financial liberalization. As such, the economic agents become vulnerable to financial system shocks – such as, credit availability and interest rate fluctuations – as

[38] For an extensive survey of the literature, see Fry (1988).

they tend to move toward 'speculative financing', the short-term financing of investment projects with long-term horizons.

Figure 2: Neoclassical, Structuralist, and Post-Keynesian Interpretation of the Effects of Financial Liberalization in Developing Countries.

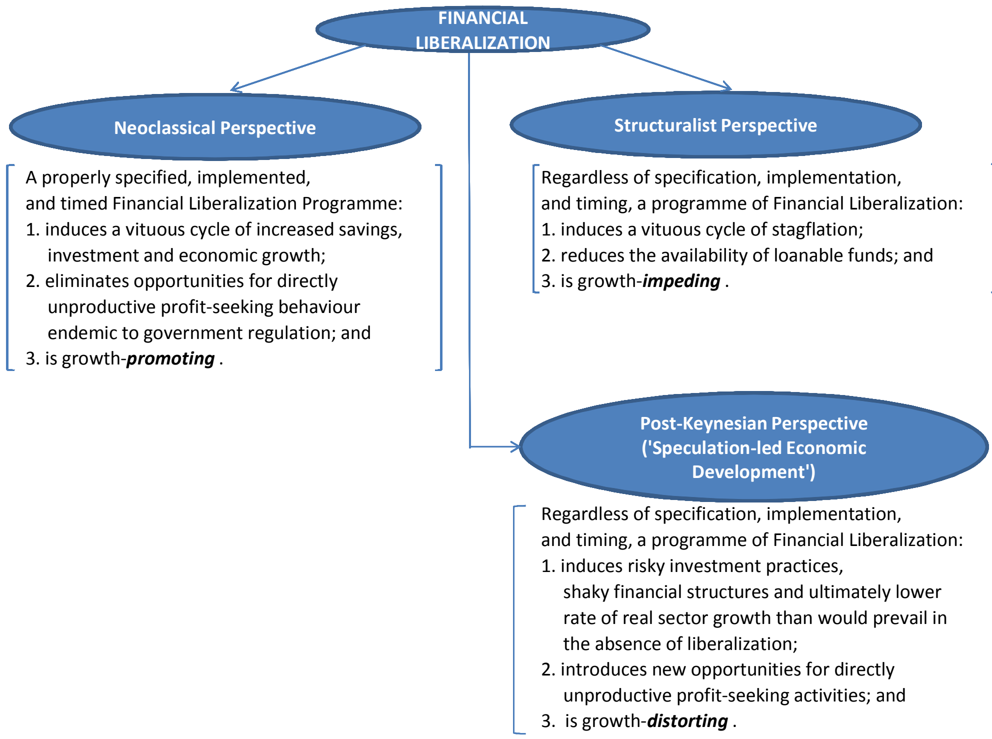


Figure 2 summarizes different interpretations of how the financial liberalization process is hypothesised to influence economic growth. Notably, views emerging out of the three perspectives remain, utmost, inconclusive. As Khan *et al* (2001) notes, therefore, the connections between financial liberalization and economic growth are very complex and that, as of now, it is not possible to discern what the overall relationship is – in terms of its direction as well as the nature or avenue through which it exists. This has been the basis of numerous researches in financial development.

3.3.3. Macroeconomic implications of Financial Liberalization.

Whilst the McKinnon-Shaw hypothesis has made significant contributions to the literature and spurred further research, the proposed theoretical underpinnings have, in most studies, been taken for granted and their validity not adequately examined. Hence, the wide applicability of the McKinnon-Shaw hypothesis has, at times, been challenged in the literature[39]. In fact, Stiglitz and Weiss (1981) amongst others have observed that financial liberalization as such does not solve the problem of asymmetric information as hypothesised. Others, like Boot (2000), have even argued that financial liberalization may actually increase information problems. Further, following a range of reviews, the experience of financial liberalization has demonstrated not to conform to prior expectations. Notably, those studies that exhibit a significant positive influence of financial liberalization on economic growth cannot be satisfactorily addressed in a simple broad comparative framework as they are largely confined to industrialized countries (see, Arestis and Demetriades, 1997). Otherwise, for the majority of developing countries, particularly those in the sub-Saharan African region, financial liberalization has not led to the hypothesised results and in some cases even culminated into economic and financial crises. Empirical results on the investigation of the macroeconomic effects of financial liberalization have, therefore, often been conflicting.

Positive effects of financial liberalization are reported by, for instance, Nazmi (2005) in a study of five Latin American countries. Similar results are found by Abiad *et al* (2004), using data from five emerging markets. Bakaert *et al* (2005) also find support for the view that liberalization of the stock market spurs economic growth through reducing cost of equity capital and increasing investment, in a large sample of countries. Henry (2000a, b) finds that stock market liberalizations are associated with a reduction in the cost of capital, followed by an investment boom in a sample of listed firms in 12 emerging markets. Mitton (2006) finds that firms with stocks that open to foreign investors, experience higher growth, greater profitability, and improved efficiency. Similarly, Levchenko *et al* (2008) also establish that financial liberalization has a positive effect on growth of production across industries; and further observe that this positive growth effect partly comes from increased entry of firms. Bertrand *et al*, (2007) suggest that the banking reform in France during the 1980's influenced product market competitiveness by increasing entry and exit of firms and lowering industry concentration, especially in bank-dependent industries. Guiso *et al*, (2004) analyze variations in financial development across Italian

[39] For example, Bascom (1994); Lewis (1992); Lucas (1988); Singh (1997); Mauro (1995); and Bhagwati (1998), all contend that an increase in real interest rates results in decline in real investment, which disrupts economic growth.

provinces and find that financial development enhances entrepreneurship. Cetorelli and Strahan (2004), show that increased competition among banks in the USA facilitated creation of new firms due to enhanced access to finance. Similarly, Black and Strahan (2002) employ USA data and find that entry of new firms increased following deregulation. Jaramillo *et al* (1996), in a study of Ecuador's manufacturing sector, report an increase in the flow of credit accruing to technically more efficient firms during post-liberalization period. Evidence for Mexico by Gelos and Werner (1999) suggests that liberalization of the financial system eased financing constraints of small firms, but not for large firms, which they attribute to the political economy considerations that large firms have preferential access to directed credit before deregulation. In a study of 13 developing countries, Laeven (2003) finds evidence for the hypothesis that financial liberalization reduces financial constraints of firms and increases economic growth[40].

However, other empirical results are less supportive of the findings as highlighted in the foregoing[41]. Bonfiglioli (2005) use information for 93 countries and shows that financial liberalization only marginally affects capital accumulation. In a study of eight developing countries, Bandiera *et al* (2000) obtains results which suggest that savings rates actually fall, rather than increase, following the liberalization process; thereby contradicting the McKinnon-Shaw hypothesis. In fact, Diaz-Alejandro (1985) argues that the Latin American experience shows that financial liberalization has not increased savings, and further that vulnerability of the financial system to collapse appears to have been augmented. Ogaki *et al* (1996) observe that interest rate elasticity has been found to be low in high-income countries and negligible in developing countries; thereby concluding that financial liberalization could simply lead to a temporary expansion of consumption and a reduction, rather than an increase, in savings. Kaminsky and Reinhart (1999) find that banking and currency crises are closely linked in the aftermath of financial liberalization, with banking crises, in general, beginning before the currency collapse.

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[40] Similar results are found by, among others, Cho (1988) and Koo and Shin (2004) for Korea; Gelos and Werner (1999) for Mexico; Guncavdi *et al* (1998) for Turkey; and Harris *et al* (1994) and Siregar (1995) for Indonesia.

[41] Country-specific studies that find no positive effect of financial liberalization on growth as suggested by the McKinnon-Shaw hypothesis, include those by Capoglu (1991) for Turkey; Schiantarelli *et al* (1994) and Jaramillo *et al* (1996) for Ecuador, and Hermes (1996) for Chile.

Most importantly, a review of financial liberalization episodes in several countries, studies makes some crucial findings, specifically regarding credit allocation[42]. These studies observe that despite interest rate liberalization, endogenous constraints in the credit market, such as those resulting from imperfect information; persist as significant barriers to efficient credit allocation. In fact, they note that most private sector firms, particularly small-scale enterprises, continue to face problems accessing credit and as a result have to either finance their investment from their internal resources, or where this is not possible, most are forced to scale-down operations or even exit.

3.3.4. Evidence beyond Economic Growth.

Overall, the foregoing review of the literature suggests that theory as well as evidence on the relationship between financial liberalization, financial development, and economic growth gives mixed and inconclusive results. Besides, whilst much of the literature has focused on proving the financial development and economic growth nexus, less attention has been focused on understanding the channels through which finance works. Yet, there exist several other aspects or conditions of the economic system – affected by financial liberalization and financial development – that equally impact a country's long-run ability to grow economically, such as competition and industry structure. For instance, the literature only makes occasional reference to investment and total factor productivity growth, despite providing some evidence, albeit limited, on the possible implications of financial liberalization and financial development on these aspects[43].

Arguably, the foregoing perspectives are particularly important in the designing of effective policies through which finance can promote growth. Cetorelli and Strahan (2004), and Cetorelli and Gambera (2001) contend that one way of achieving this objective is to focus on specific characteristics of financial markets that seem to affect

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[42] See, Cho and Khatkhate (1989) for Asia; Grabel (1995) for Southern Cone countries; Mosley (1996) for Eastern Europe; Nissanke and Aryeetey (1998), and Nissanke (2001) for sub-Saharan Africa.
[43] See, for instance, Haber (1991); Guiso *et al* (2000); and, Cetorelli (2001).

firms and industry; and, also specific characteristics of firms and industries that are especially affected by finance so that it eventually translates into higher economic activity. Zingales (2003) suggests that one approach in establishing the main channels is to derive some cross-sectional implications about which firms or industries would benefit the most from financial development. This is the approach followed by Rajan and Zingales (1998). In a very influential study, Rajan and Zingales use industry-level data from manufacturing sector to study the mechanisms through which financial development may influence economic growth. This study draws a lot from the Rajan and Zingales (1998) approach.

3.4. FINANCE AND FIRMS' INVESTMENTS.

Research on how financial development may influence investment decision, and subsequently the size distribution, of firms can be traced back at least to Karl Marx. On economic law of motion of modern society, Marx (1887) regards the capitalist system simply as one stage in its development, and describes the general rise in industry concentration - or the accumulation of capital in a few establishments or entrepreneurs - as the 'centralisation of capital'. A major factor in Marx's theory of 'centralisation of capital' is technological change which results in increasing importance of large scale production; subsequently, lower prices that are made possible by mass production drive out smaller, higher cost, competitors (ibid; p.586). However, Marx's theory specifically expounds on the role of banks and non-bank financial institutions, as being catalytical in facilitating the process of 'centralisation of capital' because of the profits they earn in the formation of companies. According to Marx, it is the development of the financial system that allows large amounts of capital to be concentrated in one enterprise, thus making possible scales of production that would have been beyond the reach of individual capitalists. Thus, Marx observes that whilst increasing industry concentration is the inevitable outcome of a combination of technological factors and the increasingly severe crises associated with competition, financial factors are particularly catalytical in this process; and, concludes that; "...the credit system…becomes a new and terrible weapon in the battle of competition and is finally transformed into an enormous social mechanism for the centralisation of capital" (Marx, 1887, Vol. 1: 587).

Similarly, Schumpeter (1911) emphasises the inherent functions of financial systems, as critical in encouraging firms' productive investment and therefore total factor productivity. Schumpeter's monetary theory describes banks credit as capital, which constitutes the necessary premise for the realization of innovative processes planned by entrepreneurs and their imitators. The fundamental role of banks in this process is therefore considered to be creating means of payment to finance the innovator-entrepreneur. Schumpeter further describes the re-distributional function of financial system through the use of bank credit. Thus, according to Schumpeter, "...credit is the characteristic method of the capitalist type of society – and important enough to serve as its *differentia specifica* – for forcing the economic system into new channels, for putting its means at the service of new ends…it is as clear *a priori* as it is established historically that credit is primarily necessary to new combinations" (ibid, pp. 69 - 70). Modigliani and Miller (1958) also note that in perfect capital and credit markets, a firm's financing decisions do not affect its investment behaviour. However, in the presence of market imperfections, any financing constraints will affect firms' investment decisions. Empirically, financing constraints could be identified through the sensitivity of investment with respect to internal funds. According to Modigliani and Miller, the basic premise of such empirical design is that – due to information asymmetries – external funds are more costly than internal funds. Higher sensitivity of investment to internal funds suggests presence of financing constraints.

Many researchers, however, attribute the effect of financial condition on investment to imperfections in financial markets – a phenomenon that seems to be overlooked in earlier studies, such as that by Modigliani and Miller (1958). And, a growing body of literature find that firms' investment depends on availability of internal funds. One of the important explanations, in the literature, why investment is sensitive to internal funds in imperfect financial markets is the high cost of external funds that firms are expected to pay. As demonstrated by Myers and Majluf (1984) and Stiglitz and Weiss (1981), the cost of external funds is higher than that of internal funds because of the asymmetry of information between borrowers and lenders. Thus, firms face a constraint in financial markets because of a wedge between costs of internal and external funds. Under such financial constraints therefore, firms tend to rely on internal funds to finance investment. Among many others, Schiantarelli (1996) and

Hubbard (1998) empirically examine whether imperfections in financial markets influence firm' investment. Most studies interpret the cash-flow effect on investment as resulting from financial constraints. Fazzari *et al* (1988), show that investments of more constrained firms are more sensitive to changes in cash flow. Others have used various segmenting measures to identify unobservable degree of financial constraints[44].

However, extending from the foregoing, some researchers further examine what brings about temporal changes in the cash-flow sensitivity of investment. Notably, amongst other studies, Laeven (2003) relates financial liberalization to changes in the cash-flow sensitivity of firms' investment. Meanwhile, Love (2003) contends that business cycle and financial development explain temporal changes in the cash-flow sensitivity of investment. However, these studies reveal that, due to certain industry-specific characteristics as well as financial system behaviours, the effect of financial liberalization and financial development on credit availability and access, and the subsequent impact this process has on firm's investment decisions and economic growth is somehow mixed. As a further extension of the McKinnon and Shaw hypothesis it is therefore reasonable to assume that not all firms or entrepreneurs have equal access to the credit market; thereby suggesting variations in industry structures and performance patterns.

3.5. FINANCIAL INSTITUTIONS LENDING CHARACTERISTICS AND FIRMS ACCESS TO CREDIT

While numerous studies have shown that entrepreneurship is bound by financial constraints, there has been little work focusing on how increasing competition in the financial system – following financial liberalization and financial development – affects the lending behaviour of credit institutions, and how this influence credit access by firms.

[44] Such as: group affiliation in Hoshi *et al* (1991); firm size and age in Devereux and Schiantarelli (1990); issuing commercial paper and bond ratings in Whited (1992); exchange listing in Oliner and Rudebusch (1992); ownership structure in Schaller (1993); and country characteristics in Bond *et al* (2003).

3.5.1. Credit Rationing.

Studies of credit markets and the role they play in economic growth often focus on financial systems' lending patterns. Financial institutions are viewed to be particularly important because, through their lending activities, they collect and provide valuable information on borrowers whose balance sheets lack sufficient transparency to allow direct access to financial markets. Lending to such opaque borrowers requires resolving information-related problems of adverse selection and moral hazard in the credit market. Adverse selection affects the ability of the markets to allocate credit by the lending rate (price) because it removes the lower-risk borrowers from the set of potential borrowers. Moral hazard reduces the ability of prices to clear the markets by influencing actions of borrowers. Stiglitz and Weiss (1981) observe that problems posed by adverse selection and moral hazard can result in credit rationing; thus, the inability to obtain a loan at any price[45]. Consequently, lenders ration loans on some basis other than price, and there are firms who are unable to secure outside financing at any price. Thus, according to Stiglitz and Weiss (1981), credit rationing can occur even in regimes where interest rates are liberalized. They further argue that rationing is bound to characterise credit markets with small-scale business borrowers because of lending institutions' difficulty in getting sufficient information about them.

It has been widely documented that small and new firms are more likely to suffer information problems in the financial markets – both in developing as well as developed[46] economies – and are, therefore, credit rationed. Notably, Aryeetey *et al* (1997), Nissanke and Aryeetey (1998), and Nissanke (2001) establish that, following financial liberalization in most sub-Saharan African countries, there has been little change in the financial institutions lending behaviours[47]. Financial institutions continue to concentrate lending to their traditional, large, established customers and

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[45] The 'credit rationing' literature follows the original lead of Jaffee and Russell (1976), who model the concept as an equilibrium phenomenon where asymmetric information between borrowers and lenders create the potential for adverse selection.

[46] For instance, study results by Levenson and Willard (2000) for the USA; Cressy (1996) for United Kingdom; EU (2005) for European Union; and, Rao *et al* (2006) for India, provide credit rationing experiences in developed countries.

[47] In a study of Ghana, Malawi, Nigeria, and Tanzania, Aryeetey *et al* (1997), and also, Nissanke and Aryeetey (1998), separately show that simply shifting policy from financial repression to financial liberalisation could not change lending patterns by financial institutions in these countries.

avoid new and small-scale enterprises. In fact, Aryeetey *et al* (1997) show that, in Malawi, small-scale enterprises received only 15.0 percent of total loan volumes in 1992, while large-scale firms received 63.0 percent of total loans disbursed. Similar observations are made in other sub-Saharan African countries[48]. Accordingly, Nissanke (2001) concludes that, "...[following financial liberalisation], banks' preferred loan composition continues to be heavily weighted against small-scale enterprises and small farmers....banks perceive small borrowers as more risky, and they often charge them higher interest and use collateral requirements as a credit rationing device. Consequently, banks concentrate on lending to larger (often public) enterprises, whose performance is not necessarily rigorously screened and monitored" (ibid, p.348). Besides, as observed by Nissanke (2001) and Aryeetey *et al* (1997), sectoral credit distribution remains dominated by short-term credit. Despite the emergence of non-bank financial institutions, including semi-formal financial institutions, in several developing countries, particularly in the sub-Saharan Africa region, financing requirements of small-scale enterprises sector are still not addressed due to capacity limitations. Further, as Brownbridge and Harvey (1998) and Nissanke (2001) note, newly established banks instead compete for large corporate entities, where good and quick profits are assured. Generally, therefore, despite financial liberalization and attempts to introduce greater competition, as expected under the McKinnon-Shaw hypothesis, financial resources are not accessible to a broad section of the real economy, except for a few privileged borrowers.

3.5.2. Lender – Borrower Relationships.

Lending relationships within the financial system have been recognized in the literature as an important market mechanism for reducing credit rationing. In an earlier study, Kane and Malkiel (1965) reach conclusions similar to Stiglitz and Weiss (1981) about lending institutions rationing credit, but further suggest that lending relationships are a market response to information problems. Kane and Malkiel (1965) conclude that the extent to which borrowers face credit rationing depends on the strength of existing borrower-lender relationship. Thus, financial lending institutions

[48] For example, similar observations are made by Aryeetey *et al* (1994) in Ghana; Blanc (1997) in Tanzania; and, Nissanke (2001) in Zimbabwe.

are hypothesised to allocate credit to current and prospective borrowers in accordance with the strength of existing bank-borrower relationships along with expectations about future profitability of those relationships.

Accordingly, literature on financial intermediation emphasizes value creation of relationship between financial lending institutions and their client firms. In a context of asymmetric information in the credit markets, lending relationships facilitate information exchange between borrower and lender through repeated interaction over the duration of the relationship and through provision of multiple financial services. According to Boot (2000), financial lending institutions invest in generating information from their client firms and borrowers are more inclined to disclose information. Allen *et al* (1991) and Nakamura (1993), separately establish that long-term relationships between lender and borrower enable banks to collect private information on borrowing firms by monitoring their performance over time under credit arrangements and/or through provision of other services such as deposit accounts, and use this information in designing future credit contracts. The benefits of such relationships are many, ranging from ameliorating project-choice moral hazard (Diamond, 1991); reduction in collateral requirements (Berger and Udell, 2002, 1995), to more broadly restoring the desired behavioural incentives for borrowers, such as flexible loan contracting terms (Boot, Greenbaum, and Thakor, 1993). Petersen and Rajan (1994), in a study of U.S. firms, indeed note that not only do firms borrow from banks, but they also tend to concentrate their borrowing at a single bank with which they have a long-term relationship. They further establish that the cost of credit is reduced when banks forge relationships with firms. Berger and Udell (2002, 1995), indeed find that borrowers with longer lending relationships pay lower interest rates and are less likely to pledge collateral.

Further, Cetorelli (2001) argues that information gained over the course of time by the lender can be used to make value-enhancing credit decisions – thus, whether to expand credit or restrict credit to potential borrowers. As such, lending relationships affect the behaviour of lenders vis-a-vis potential new borrowers[49]. The less competitive the conditions in the credit market, the lower the incentive for lenders to

[49] See, for example, Spagnolo (2000); and, Helmann and Da Rin (2002)

finance new comers. Further, the relationship lending characteristics have implications on allocation of capital. Northcott (2004) indicates that in relationship-based systems price signals are obscured; usually, with the consequence of widespread and costly misallocation of resources. Accordingly, effective contribution of relationship lending to economic growth may only be realised if financial lending institutions provide credit to the most productive projects first. Nonetheless, this still implies that financial resources may not be equitably accessed.

3.6. EXTERNAL FINANCE DEPENDENCE AND OTHER VARIATIONS IN INDUSTRY CHARACTERISTICS.

In the literature, differences in sensitivity of industrial specificities to different causal factors are further alleged to influence the degree of variation in firm’s responsiveness to changes following financial liberalization and financial development. Previous empirical studies find considerable cross-industry heterogeneity in policy sensitivity that is statistically related to differences in output durability, financial structure and firm size (see, for example, Malerba and Orsenigo, 1996). Further, any policy changes in the financial system, should most likely disproportionately impact those firms that are highly dependent on outside financing, than it does on those that mostly rely on internally generated resources.

Empirically it has been established that whilst an effective financial system is important for entrepreneurship and firm growth, the effect is likely to be more significant on those firms that rely heavily on external financing, than for those that are predominantly self-financed. Most notable contribution to this empirical literature is by Rajan and Zingales (1998). In their landmark study, Rajan and Zingales identify an industry’s external finance dependence under the assumption that, “...there is a technological reason why some industries depend more on external finance than others. To the extent that the initial project scale, gestation period, cash harvest period, and the requirement for continuing investment differ substantially between industries, this is indeed plausible” (Rajan and Zingales, 1998, p.563).

In their methodology, Rajan and Zingales (1998) use the ratio of domestic credit and stock market capitalization to GDP and country accounting standards as measures of financial development. Their analysis suggests that *ex ante* development of financial markets facilitate *ex post* growth of sectors dependent on external finance. The evidence is consistent with the view that financial development lowers the cost of external finance and exerts a positive influence on industries with comparatively greater reliance on external finance. Upon observing that better-developed financial systems ameliorate market frictions that make it difficult for firms to obtain external finance, Rajan and Zingales argue that industries that are naturally heavy users of external finance should benefit disproportionately more from greater financial development than industries that are not naturally heavy users of external finance. Accordingly, if industries that are naturally heavy users of external finance grow faster in economies with better-developed financial systems, then this supports the view that financial development spurs growth by facilitating the flow of external finance. Further, Rajan and Zingales' decompose the effect of financial development in its effect on growth in the number of establishments and growth in the size of existing establishments. Accordingly, their study shows that, "...two-thirds of the growth is spurred by an increase in the average size of establishments, while the remaining third is accounted for by an increase in the number of establishments" (Rajan and Zingales, 1998, p.578). This approach, unlike other previous finance-growth nexus investigation methodologies, facilitates the study of a particular mechanism – external finance dependence – through which finance operates rather than simply assess links between finance and growth. Rajan and Zingales (1998) argue that the methodology offers a valid and exogenous way to identify the extent of external finance dependence of an industry anywhere in the world. Further, the methodology exploits within-country differences concerning industries.

The Rajan and Zingales (1998) approach has been widely adapted in the literature, where, specifically their exact calculated external finance dependent ratios, have been directly adopted in identifying industry-level variations. For instance, Almeida and Wolfenzon (2004) estimate the efficiency of capital allocation as a function of financial development and the external finance dependence of firms. Beck, Demirguc-Kunt, Laeven and Levine (2005) controls for external finance dependence to investigate whether financial development enhances economic growth by easing constraints on industries that are technologically more dependent on small firms. Similarly, Cetorelli and Gambera (2001) examine whether industries whose younger firms are more external finance dependent grow more or less rapidly in countries where the banking sector is highly concentrated. Laeven, Klingebiel and Kroszner (2002) investigate whether sectors that are highly external finance dependent experience greater contraction in value added during a crisis in deeper financial systems than in countries with shallower financial systems. Carlin and Mayer (2003) use external finance dependence ratios to examine the association between structure of financial systems and the types of activities in which different countries are engaged. Fisman and Love (2004, 2003) investigate the relationship between financial development and inter-industry resource allocation in the short- and long-run, among external finance dependent industries. Fanelli and Keifman (2000) examine the extent to which finance matters in explaining the degree of trade success or failure in external finance dependent sectors. Larrain (2004) investigates whether, with financial development, volatility of industrial output is reduced in more external finance dependent industries. Further, Do and Levchenko (2006) examines whether countries that produce and export external finance dependent goods experience a higher level of financial development than countries producing and exporting goods less dependent on external finance. Fonseca and Utrero (2006) examine whether frictions in labour and product markets hinder the documented positive effects of financial development on firm size, especially in those sectors that are relatively more external finance dependent. Claessens and Laeven (2006) investigate the effect of competition in banking system on growth, and specific channels through which competition may affect growth in external finance dependent industries. In their analysis, Vlachos and Waldenstrom (2002) examine whether industries highly dependent on external financing experience a faster growth in countries with liberalized financial markets. Further, de Serres *et al* (2006) show that more external finance dependent industries are generally the ones that invest the most in R&D following financial development.

Nonetheless, despite its wide applicability, the Rajan and Zingales (1998) external financing dependence methodology is not flawless. Notably, Demirguc-Kunt and Maksimovic (1998) questions the assumption underlying the methodology – specifically, the assumption that US manufacturing firms are representative of manufacturing firms elsewhere in the world. They argue that it is important to allow for differences among countries in the amount of external financing needed by firms in the same industry. Ideally, this argument should equally apply to different industries within the same country. In any case, as Malerba and Orsenigo (1996) observe, there are bound to be many other firm-specific and/or industry-specific differences between firms within an industry, between industries within a country, and between countries – thus, other differences that extend beyond merely variations in the level of external finance dependence. Accordingly, whilst the Rajan and Zingales (1998) ratios constitute a distinct characteristic of industry groups, at a finer level of disaggregation, significant differences across industry groups exist. As observed by Malerba and Orsenigo (1996), among others, there is persistence of diversity among firms in terms of their characteristics. Firms are markedly heterogeneous in capabilities, organization, strategies, and performance[50]. As such, individual industries are expected to relate differently in the face of any competition enhancing policies.

3.7. CONCLUSION.

The literature is divided on the expected effects of financial liberalization and financial development in engendering competitiveness and growth in the real sector. Meanwhile, less research has been undertaken on the impact of financial liberalization and financial development on industry structure and performance. As barriers to entry and growth into the domestic market fall following the liberalisation of the financial system, are there likely to be major changes in the structure of industry? For instance, is ownership likely to become more or less concentrated? Thus, are there likely to be any major effects on growth and size distribution of industry value-added, separate from such indicators of revealed performance as exports and economic growth? And, does this process induce firm creation and entry into industry, or even profitability regardless of characteristics such as firm size? Literature provides a limited number of studies that have attempted to answer the foregoing questions. And, following a study of Southern Cone countries, McKinnon (1989) – a pioneer of neoclassical financial

[50] For instance, these differences, which naturally extend to the industry level, concern: costs (Baily and Chakrabarty, 1985); profitability (Mueller, 1990; Geroski and Jacquemin, 1988); output and innovative activities (Griliches, 1986; Pavitt and Patel, 1991); interest rate sensitivity and financial requirements (Dedola and Lippi, 2005).

liberalization theory and policy – endeavours to reinterpret the disappointing results of this policy experiment through the lens of new-Keynesian theory, and concludes that,

"...all is not well in the liberal camp. The general case favouring financial liberalization has been called into question by a series of bank panics and collapses ... That this attempted financial liberalization generally ended in failure – with an undue build-up of foreign indebtedness and government reintervention to prop up failing domestic banks and industrial enterprises – is well documented" (ibid. p.100).

Accordingly, there certainly exists a gap in the literature where the effect of financial liberalization is also considered specifically in the context of its implications on the industry structure and performance of low income developing countries of sub-Saharan African region, such as Malawi.

CHAPTER 4.0: FINANCIAL DEVELOPMENT, EXTERNAL FINANCE DEPENDENCE, AND INDUSTRY STRUCTURE.

4.1. INTRODUCTION.

Economic research has provided robust empirical evidence that developed financial systems are strongly associated, causally, with economic growth. Given this broad consensus, therefore, it is of great practical importance to understand the mechanism through which finance affects real economic activity. Specifically, it is important to identify the characteristics of the financial sector that affect or determine industry structures and production capacities in the real sector. Similarly, it is worthwhile investigating the characteristics of industry that are especially affected by finance so that it eventually translates into higher economic growth. Recent years have witnessed burgeoning empirical research in this context, each with a specific focus[51]. Nonetheless, considerably less research examines the cross-industry distributional effects of financial development. This is despite the existence, within the literature, of a relationship between the efficiency with which an economy mobilizes and allocates financial resources, and the industrial structure that an economy develops[52].

The foregoing suggests that financial intermediaries are thus considered to be catalytical in the development of industry structure. In any case, rarely if ever, are industrial firms able to internally generate in their normal operations the resources needed to finance capital expansions or working capital. As such, firms will periodically require extra resources sourced externally, a process that may only be facilitated by an intermediary. A developed and well functioning financial sector will, therefore, facilitate efficient mobilisation and allocation of resources, portfolio diversification and access of firms to funds for productive investments. Arguably, a

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[51] For cross-country studies see, King and Levine (1993a), Beck *et al* (1999), and Levine *et al* (2000); while firm-level studies are by Levine (1997), and Demirguc-Kunt and Maksimovic (1998). Wurgler (2000) focus on industry-level studies.

[52] For example, Gerschenkron (1962) refers to the influential role of financial institutions in the industrialisation process of 19th century Europe. Similarly, Davis (1966) relates the differences in capital mobilisation between the 19th century US and the UK, to the marked contrasts in their industrial structures. More recently, Levine (2005), as well as Da Rin and Hellman (2002) have also established that domestic financial development has non-trivial implications on industry structure.

liberalized financial system should facilitate the development of entrepreneurship in the economy. Thus, existing firms will be able to attain higher profitability and growth; and, many new investing firms will now be able to establish themselves, thereby promoting a competitive industry structure. Notably, however, despite growing literature on the consequences of financial liberalization, studies that investigate its impact on industrial structure are scanty or non-existent. This chapter, therefore, endeavours to close this literature gap through the empirical investigation of the relationship between the development of the financial system through financial liberalization and structure of industry that evolves in this process.

4.2. CONCEPTUAL FRAMEWORK AND TESTABLE HYPOTHESES.

4.2.1. Background to Financial Development Effects.

In recent years, a number of studies have questioned whether a firm's access to credit improves with the development of the financial system, such as that which follows financial liberalization. Thus, whilst there is a wide acceptance that the financial liberalization policies, if appropriately implemented, increase efficiency in the allocation and use of financial resources, their precise effect in inducing firm growth, as well as influencing the creation of new firms or facilitating increases in the number of investing firms, has nonetheless been a subject of theoretical and empirical scrutiny. Contrasting views have emerged from this debate; and, despite substantial research efforts on the precise effect of financial liberalization on the industrial firm, a consensus on the empirical testing of its validity remains to be reached[53].

4.2.1.1. Neoclassical Theorists versus Structuralists.

Two schools of thought have evolved out of the financial liberalization effects debate; a neo-classical theorist's paradigm and a structuralist's paradigm. From a neoclassical

[53] Most notable example is the study on the experience of the Southern Cone countries and the related econometric test results that have shown the limitations of the prescriptions that can be derived from the theory. For a comprehensive review on this issue, see Laeven (2003).

point of view, liberalizing financial markets would stimulate savings, and enhance physical capital-formation (see, Kapur, 1976, 1983; Mathieson, 1980). This is hypothesised to influence the financial systems ability to provide financial capital needed for firms' investments, and at a relatively affordable price[54]. According to this argument, therefore, financial liberalization should facilitate the creation and entry of new firms into industry, as well as enhance the growth and expansion of incumbent firms (see, Vlachos and Waldenstrom, 2005). This view is further supported by Lyons (1988, p.64), who notes that 'most entry barriers can be overcome by a sufficiently determined diversifying entrant who is backed by large financial resources'. Most important for this study is the assertion by Rajan and Zingales (1998, p.560), who suggest – much in conformity with the neo-classical theorists' paradigm – that 'the number of new; and, particularly external finance dependent firms, entering the industry should disproportionately increase following financial development'. Accordingly, the neo-classical theorists' paradigm suggest that financial liberalization should lead to equitable industry growth as well as increasing number of firm creation and entries in an industry, thereby inducing competition.

The structuralists' paradigm[55], however, maintains that deregulation of interest rates, during the financial liberalization process, raises the cost of borrowing, thereby inhibiting entry/creation of new firms due to lack of access to capital. Further, this policy leads to an increase in incumbent firms' overall cost structures, which adversely affects profits. They argue that firms usually have to make large advances from the financial system as working capital and to finance labour costs as well as intermediate goods. As such, deregulation of interest rates means that interest on these advances looms large in the firms' statements of profit and loss; which often leads to firm destruction and ultimate exit from operations, as most incumbent firms may no longer afford to raise adequate financial resources for operations. Taylor (1983) further observes that investment demand responses to interest rate changes – as a consequence of financial liberalization – may take longer to build up than its effect on working capital costs, thereby discouraging firm entry. The structuralists' paradigm

[54] Empirically, Henry (2000a, b) provides evidence that financial liberalization actually reduces the capital costs for industrial firms. Moreover, Henry further shows that this has significantly positive effects on the level of investment and of output growth.

[55] As propagated by van Wijnbergen (1982, 1983a, b); Taylor (1983); Buffie (1984); Diaz-Alejandro, (1985); Grabel (1995); and, Adelman and Morris (1997).

therefore suggests that, through interest rates deregulation, financial liberalization acts as a deterrent to entry for new firms, due to increased cost of loanable funds, and also destroys incumbent firms as they become unprofitable; thereby dampening industry growth and competition.

4.2.1.2. The Effect of Relationship Lending.

Empirical debate further focuses on whether increased competition within the financial credit market has any implications on the lending behaviour of the financial credit institutions (see, Andersen and Tarp, 2003; Elyasiani and Goldberg, 2004). At the centre of this debate is the prevalence of lender-borrower relationships within the financial intermediation process[56]. Thus, a long-term tie between a financial institution and client firm is hypothesised to generate value and increase efficiency. This is expected to be achieved in terms of both credit availability and loan contract terms such as loan interest rates and collateral requirements. This phenomenon is critical in the financial liberalization, financial development and industry structure debate due to its relevance in determining firms' access to credit, particularly those that are external finance dependent. However, debate on the exact implications of financial liberalization on the lending relationships remains inconclusive. Whilst some contend that higher competition, following financial liberalization, discourages the lending relationships, others argue the exact opposite. This question, therefore, forms another basis of this study, and expounds on two contrasting views that have emerged from this debate.

The first viewpoint is that, for those firms that are external finance dependent, financial development and increased financial sector competition means less relationship lending and therefore more market-based credit allocation to firms, both old and new entrants. Arguably, financial development results in reduced or no barriers to entry by banks and other financial intermediaries; thereby increasing competition in the financial system. Thus, banks are no longer protected from competition by barriers to entry, and non-bank financial institutions become

[56] Modern literature on financial intermediation emphasizes the value-creation function of lending relationships; see, Boot (2000); Berger and Udell (1995); Boot, Greenbaum, and Thakor (1993).

increasingly important providers of credit to new businesses. Credit should therefore be widely available and at relatively affordable prices, as all external finance dependent firms have access to several alternative sources of credit. And, as competition makes it easier for borrowers to switch lenders – either other banks or the financial market - this can reduce the incentive to invest in relationships at the outset (Andersen and Tarp, 2003; Berger and Udell, 2002; Cole, 1998). Thus, when banks anticipate a shorter expected lifespan of their relationships, they may respond by reducing their relationship-specific investments. More specifically, anticipated shorter relationships inhibit the reusability of information and thus diminish the value of information (Chan *et al*, 1986). Banks may then find it less worthwhile to acquire costly proprietary information; thereby making relationships unnecessary. Further, conventional analysis of market power predict that more market openness and an expansion of the number of competitors should lead to reduced costs of providing credit on average, thereby increasing its accessibility[57]. According to this view, therefore, financial development ought to enhance entrepreneurial activity through growth and expansion of all incumbent firms equally, as well as facilitate creation/entry of firms that are external finance dependent, through a wide and ready availability of cheap credit; which means increased competition in the industry.

An alternative view is that, for the external finance dependent firms, financial development and the subsequent increased banking sector competition lead to greater importance of relationships as a distinct competitive edge. Boot and Thakor (2000) argue that competition may raise the rewards to activities that allow lenders to differentiate themselves from other lenders, thereby raising the incentive to continue investing in relationships. Thus, a more competitive environment may encourage banks to become more client-driven and customize services, thus focusing more on relationships. Little (1987) also argues that often costs of lending to new and particularly small borrowers are prohibitively high. This is because, even with highly competitive financial credit markets, lenders still have to assess the probability of repayment, which ideally requires intimate knowledge of the borrower and of the project for which the money will be used. Arguably, this may be achieved through risk assessments, which require undertaking prior investigations on the borrower and

[57] For example, Jayaratne and Strahan (1998) find declines in average loan prices of about 40 basis points, with increased bank competition, following overall branching deregulation in the US.

the related project. However, Little (1987) observes that, in principle, there is an optimum amount to be spent on such character and project analysis, which obviously approaches zero with very small loans. As such, regardless of the competitive conditions that may be prevailing in the financial credit market, lending is still largely confined to those that have long standing relationships with the banks or non-bank financial institutions. As Stiglitz (1994) notes, when concerned with greater risk, lenders resort to non-price rationing rather than raise interest rates when faced with excess demand for credit. As a result, credit rationing may characterize market equilibrium even in the absence of interest rate ceilings and direct credit allocation. As such, even liberalized financial credit markets do not necessarily ensure Pareto-efficient credit allocation. Further, in a study of selected African economies, Aryeetey *et al* (1997) observe that, despite some evidence of competition in the financial systems following financial liberalization, banks continue to concentrate lending to customers with whom they have established relationships. Thus, despite the occurrence of financial reforms, whose main objective is to open up the credit market to make it accessible to a broad section of the real economy, the lending institutions prefer to continue dealing with their large and well-established clients. Generally therefore, financial institutions have the tendency to preserve relationships with their older clients, which grow larger, at the expense of potential new entrants, especially those firms more in need of external finance; thereby resulting in an industry structure that is less competitive. Further, according to these arguments, one could conclude that financial development perpetuates entry barriers for the external finance dependent firms as credit access remains a privilege of those with long-standing relationships with the lenders. This leads to no or minimal firm creation, as well as zero competition.

The foregoing contradicting views therefore suggest that the precise effect of financial development on industry structure and competition is, therefore, theoretically ambiguous. Meanwhile, little empirical evidence exists to support either prior. Previous studies, albeit limited by their focus on specific countries, periods, economic and political circumstances, give the general impression that financial development should have distributional consequences on industry structure, through facilitated access to credit; thereby inducing equitable growth and expansion of the incumbent firms as well as enabling entry or creation of new firms. But, financial liberalization, working through financial development may also induce destruction and exit of firms. Nonetheless, informed by the aforementioned historical references and by theoretical as well as empirical uncertainty, the goal of this chapter therefore is then to derive further empirical evidence, which could corroborate either effect of financial development on industry concentration and net firm entry.

4.2.2. Industry Structure: A Theoretical Framework.

4.2.2.1. Firm Size Distribution.

Theories of the firm, according to industrial organisation literature, are classified as technological, organizational and institutional; and, in a recent contribution, Kumar, Rajan, and Zingales (2001) test several implications of those theories regarding possible determinants of industry structure. In the process, several industry-specific and country-specific factors are identified such as the market size and its structure, capital availability and capital intensity, which are all likely to affect the size distribution of an industry. Further, the set of laws and regulation and the level of economic and financial development are some of those 'environmental' factors, common across industries in a country, which are also considered to be likely determinants of size distribution of firms.

The literature therefore, generally hypothesises that a combination of scale economies, barriers to entry, and size of the market mostly explain variations in the structure of an industry[58]. Notably, an increase in scale economies causes the minimum efficient scale at the firm level to increase and the number of firms required to minimize industry production costs to fall. Consequently, only a few disproportionately large firms survive in the long run, thereby resulting in increased concentration (see, for example, Sutton; 1991, 1999). Further, according to Gibrat's 'Law of Proportionate Effect', variable growth patterns among firms can shape

[58] Various empirical studies (see, for example, Bain, 1968; Caves *et al*, 1980) have relied on these three broad categories to draw a combination of variables to explain variations in industry structure, mostly by means of regression analysis.

industry concentration[59]. Gibrat (1931) asserts that in a market with a fixed number of firms that start out with equal market shares, firm growth is random and normally distributed with zero mean and a variance that is positive, constant, and independent of firm size. A question that is of particular relevance to the current study therefore, is what constitutes the random forces in the whole process? Thus, if the whole process relies on random forces to explain the firm size distribution, what can possibly explain its starting position? Ijiri and Simon (1971) suggest that the nature of the stochastic growth process may depend on cost conditions. In another study Jovanovic (1982) demonstrates that random shock to production costs can cause an increase in concentration. And more recently, Cabral and Mata (2003) also suggest that a financial constraint could characterise the firm's start-up, and therefore entry into industry. Similarly, Doraszelski and Markovich (2007) show that concentration may increase if some firms gain a marketing advantage, say through advertising. This follows Demsetz (1973a, b) and Agarwal and Gort (1996), who separately argue that, variable growth patterns among firms within an industry may result from a competitive advantage rather than purely random shocks. They contend that, one firm may gain a cost or marketing advantage over its competitors, through a deliberate government policy related to the firms' inputs or market structure in a selected industry. Such government policies may include; granting of monopoly rights to specific industries for a number of years, tax breaks over a specific period, and directed credit allocation to specific sectors of the economy. If an industry-specific competitive advantage endures, then this obviously influences incumbent firms' growth and expansion, which could lead to increases in the firm's market share and in industry concentration. Further, this may ultimately induce or facilitate entry of firms in those respective industries as they become more profitable. This study exploits this view, particularly as it relates to competitive advantage arising from a firm's access to capital or finance. Hence, this study adopts a methodology that allows testing the validity of the theoretical priors regarding the relationship between financial liberalization and financial development – and therefore enhanced credit availability – and industry structure, controlling for the simultaneous influence of other industry factors.

[59] Refer to *Appendix* 4.1; also see Hay and Morris (1993: 537-541), for a thorough analysis of this concept.

4.2.2.2. External Finance Dependence.

Arguably, finance ought to matter for industry concentration and net firm entry, particularly where incumbent firms and/or potential entrants are competing for credit resources. In sectors where incumbents are not dependent on external finance, there will not be any competition for resources with the new entrants. Financial liberalization and financial development should thus not matter much as a determinant of industry concentration or net firm entry in those sectors. On the other hand, where industry incumbents are dependent on external finance, they will be competing for financial credit resources with prospective entrants. Here is where financial development should matter, one way or another, for industry concentration or net firm entry. The model structure for this study, therefore, builds on the contribution by Rajan and Zingales (1998). In a cross-industry and cross-country analysis that uses industry ratios as a measure of external finance dependence for wide range of industrial sectors, Rajan and Zingales show that industries that are more dependent on external finance grow disproportionately faster in countries that are more financially developed. The Rajan and Zingales' external finance dependency ratios are based on the assumptions that there are underlying technological reasons why industries differ in their use of external funds, and that these persist across countries (op. cit. p.563). They further note that when financial systems are frictionless, the supply of external financing will be elastic. The differences in the actual use of external financing in such an economy will hence mainly reflect differences in demand for this type of funding, which will, in turn, be reflected in variations among the respective industry ratios. In their model, Rajan and Zingales use United States data to derive the typical external financial dependence for a particular industrial sector. They argue that the financial markets in the US are the most frictionless, therefore allowing firms to achieve the desired financing for their respective industrial sector. This, according to Rajan and Zingales, offers a way of identifying the degree to which industries desire external financing anywhere in the world.

However, Rajan and Zingales (1998) argue that the external finance dependence model in no way assumes a sector in two countries with the same degree of financial development to have exactly the same optimal external financing structures. Instead, local conditions, such as growth opportunities, are allowed to differ between countries. The model, therefore, assumes only that the rank order of optimal external financing needs across industries is similar across countries. Thus, Rajan and Zingales state that, "...while there are enormous differences in local conditions between countries, all we really need is that statements of the following sort hold: If Pharmaceuticals require a larger initial scale and have a higher gestation period before cash flows are harvested than the Textile industry in the United States, it also requires a larger initial scale and has a higher gestation period in Korea." (ibid, p.563)

The innovation of the Rajan and Zingales (1998) approach is in positioning an interaction between a country characteristic (in this case, a proxy of the level of its financial development) and this benchmark (external finance dependence ratio of a given industry). It then investigates how industrial growth relates to this interaction term, thereby investigating whether industrial sectors that typically use more external financing grow faster in countries with greater financial sector development. In the regression results, Rajan and Zingales, find a positive sign for the interaction between the external financial dependence ratio and the level of financial development, thus demonstrating a positive impact of financial development on growth due to greater availability of external financing.

Most recently, several other researchers have used the Rajan and Zingales (1998) methodology[60]. Specifically, these studies have employed the industry-level external finance dependence ratios as calculated by Rajan and Zingales, to investigate relationships between various industry characteristics and different aspects of financial development in predicting industry growth and performance. Whilst these research studies are not necessarily exhaustive, they nonetheless demonstrate the extent to which the Rajan and Zingales' (1998) calculated industry-level external finance dependency ratios have been adopted. This study therefore exploits the Rajan and Zingales model concept, as others have done, to complement and extend the literature by investigating the link between financial development and industry structure. The objective for this is to determine whether financial development has

[60] These include: Beck, Demirguc-Kunt, Laeven, and Levine (2008); Do and Levchenko (2006); Fonseca and Utrero (2006); Claessens and Laeven (2006); Vlachos and Waldenstrom (2005); Almeida and Wolfenzon (2004); Larrain (2004); Fisman and Love (2004); Carlin and Mayer (2003); Laeven, Klingebiel and Kroszner (2002); and, Cetorelli and Gambera (2001)

any cross-industry distributional ramifications, which could ultimately influence the structure of the industry in a country.

4.2.3. Methodological Approach.

In the literature on industry organisation, industry concentration and net firm entry constitute two fundamental aspects of industry structure. Highly concentrated industries are likely to have low levels of competition, thereby compromising on their effective contribution to the economic growth process. And notably, in the industrial organization literature, level of concentration in a market has been assigned an important role in analysis of market structure, conduct and performance. It is often used as a summary measure of market structure (Scherer and Ross, 1990), and as an indirect measure of the intensity of competition (Baldwin and Gorecki, 1994). Thus, concentration is seen to measure the potential for collusive or anti-competitive behaviour in a market. Similarly, a high firm turnover is counter-effective in contributing towards the economic growth process[61].

Nonetheless, there are some disputes in the industrial organisation literature, on whether industry concentration encourages or discourages entry; thus whether these two industry structure measures are related[62]. Notably, in the literature, this debate, on whether changes in the number of firms in an industry have any effect on industry concentration, is best explained in the context of the "contagion," "feedback," and organizational ecology" theories of industry dynamics[63]. In accordance with the hypotheses propagated under these theories, an industry is initially characterised by a small number of risk taking firms, and therefore with a highly concentrated industry structure. Through collusive pricing facilitated by the highly concentrated structures, industry profits increase and the industry is considered lucrative; thereby attracting secondary entry of firms, which occurs with a lag because information about

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[61] For instance, static Cournot and Bertrand models of oligopoly with product differentiation predict that pricing will become more competitive as the number of rivals increases. Oz Shy (1996) extensively covers this phenomenon in "Industrial Organization (Economic Theory), MIT Press.

[62] For instance, Shapiro and Khemani (1987), report that high industry concentration acts to deter entry, while Rosenbaum and Lamont (1992) find that high industry concentration encourages entry through the potential for super normal profits.

[63] See, Geroski and Mazzucato (2001); Horvath *et al* (2001); van Kranenburg *et al* (2002)

firm/industry success is difficult to observe. Once success becomes apparent, however, entry takes off, which may negatively affect concentration. These same information lags then lead to excessive entry, falling profits, and eventual ‘shake-out’. The subsequent reduction in the number of firms through the ‘shake-out’ leads to increased concentration again. This suggests the existence of a degree of feedback – or ‘loop’ effect – between net firm entry and industry concentration, over time. Thus, while concentration may be high in the very early stages of an industry’s evolution, an increase in net firm entry (thus, increased entry) will follow, leading to less concentration. As the industry matures with its resulting ‘shake-out’, a decrease in net firm entry (thus, increased exits) occurs and concentration increases (see, Jovanovic and MacDonald, 1994; Klepper and Simons, 1997; Jovanovic and Tse, 2006).

However, others do not support the foregoing perceptions, arguing that net firm entry may only influence concentration if the new entrants are significantly large and therefore competitive within the industry. Yet, as observed by Evans and Jovanovic (1989), Wagner (1999), and Audretsch and Elston (2002), the bulk of firms entering and / or exiting from the industry or market tend to be small-scale enterprises. As MacDonald (1986) observes, small firms cannot survive the financial pressure of a low or even negative profit margin for a long time. Because they have lower sunk costs than large firms, they may also be less reluctant to exit the industry.

Empirical evidence indicates that the process of entry and exit is numerically dominated by what might be termed ‘noise-entrants/exits’; thus, firms that enter, turn out to be inefficient – often for reasons related to scale and competition – and quickly exit[64]. As such, turbulence involving small firms may not have any significant impact on industry concentration. In fact, Curry and George (1983) mention that concentration should not necessarily be much related just by the total number of firms, but more by the number of firms of “significant” size. Overall these priors and arguments suggest that it may not necessarily be a foregone conclusion that net firm entry will always influence industry concentration. As a matter of fact, some

[64] For instance, in a study of the United States, Dunne *et al* (1988) find that, on average, 61.5 percent of all entrants exit in the five years following the first census in which they are observed; whilst 79.6 percent exit within ten years. Nissanke (2001); Fisseha and Mcpherson (1991); Parker and Aleke Dondo (1991) also make similar observations for sub-Saharan Africa, including Malawi, where exit rates are found to be particularly the highest in the initial three years, and mostly small-scale firms.

empirical findings show no support for any relationship between net firm entry and industry concentration[65].

In view of the foregoing, for completion, this study adopts a double-faceted approach, where both measures – industry concentration and net firm entry – are separately modelled and used in the investigation of the relationship between financial development and industry structure. Arguably, measuring as well as understanding the causes and consequences of industry concentration, as well as analysing the implications of net firm entry, following financial development, is crucial to assessing its effects on economic growth. This study therefore proposes to investigate the empirical questions whether the policy and institutional innovations in the financial sector, such as those that precede the financial liberalization process, provide equal growth and expansion opportunities to all firms, and whether the process also induces the creation of firms and their entry into industry through easy and equitable access to capital. That is, whether financial development has any distributional ramifications on industry structure; particularly in sectors where firms depend more on external finance, than in those which are less in need of external finance.

Related to specifics of the regression models therefore, there is an interaction term between the external finance dependence of firms and a measure of financial development, following the methodology by Rajan and Zingales (1998), which has also been used widely by other researchers. Accordingly, using industry-level panel data over the period 1970 - 2004 for Malawi's manufacturing sector, the study tests the influence of financial development on industry concentration levels and on net firm entry. The length of the time period of the sample facilitates investigations into dynamic patterns of industry structure. This facilitates further investigation on whether structural breaks in terms of policy changes as well as increased competitiveness – such as that following financial liberalization – has any relationship with subsequent changes in the levels of industry concentration or net firm entry.

[65] Notably, Das and Pant (2006) in a study of Indian manufacturing, conclude that since firm entry and firm exit occur at the lower end of the industry, they leave the industry structure unaffected. Similarly, Ghemawat and Kennedy (1999) in a study of Polish manufacturing, finds that net firm entry fails to affect significantly the significance of industry concentration, allegedly due to the particular 'noisiness' of net firm entry in competitive environments.

In terms of approach therefore, the methodology starts with an economy-wide investigation, where a financial development measure (i.e. growth of credit to the manufacturing sector as percent of GDP) - (*FIN*) is included as an explanatory variable in the respective models for industry concentration and net firm entry. This facilitates investigating whether financial development has a positive or negative effect on the structure of industrial sectors, regardless of their characteristics. However, since financial liberalization is hypothesised to reduce financing constraints for firms investments through easy access to credit, a financial liberalization dummy (*FL*) is therefore interacted with the financial development measure; thus $\left(FIN \times FL\right)$. This specification allows testing whether a regime change, from financial repression to financial liberalization, has any influence on credit access by firms, regardless of their individual characteristics.

Whilst the foregoing specifications measure the economy-wide effect of financial development, sector-specific implications are investigated next. Initially, an interaction term is constructed between the industry's external finance dependency ratio (*ED*) and the financial development measure; thus $\left(FIN \times ED\right)$, is included. This model specification allows testing whether there is, besides an economy-wide effect, also a sector-specific effect of financial development. As such, if financial development facilitates credit access by firms in the manufacturing industries, this effect should be especially noticeable on those industrial sectors where firms are highly dependent on external finance. Next, an additional specification allows testing whether a regime change, from financial repression to financial liberalization, has any influence on the sector-specific effect of financial development. Similar to the economy-wide model, a financial liberalization dummy (*FL*) is also added to the sector-specific interaction term – ($FIN \times ED \times FL$)[66]. This specification facilitates testing whether credit access by those industrial sectors where firms are highly dependent on external finance, increase or decrease following the regime change from a repressed to a liberalized financial system.

[66] It may be argued that financial liberalization was implemented at the same time as other reforms – most notably trade liberalization. However, in order to remove the effect of trade liberalization from the financial liberalization dummy, trade variables are included in the respective model specifications – which would undoubtedly first reflect the impact of trade reforms – among the control variables. This procedure is expected to let the financial liberalization dummy (*FL*) to model first and foremost the effect of financial liberalization (see, Bakaert *et al*, 2005).

4.3. EMPIRICAL FRAMEWORK.

4.3.1. Model Specifications.

4.3.1.1. Industrial Concentration.

The empirical model hypothesises that equilibrium industrial concentration**,** is a function of the level of financial development, through credit availability, which is, in turn, influenced by the financial liberalization process. And, in order to take care of industry specific differences, the model controls for growth in industry value added, changes in the share of the industry value-added in total manufacturing sector value-added, and the intensity of manufactured imports and exports, as explanatory variables. Time dummies are also included, reflecting policy changes implemented over the study period. The model is therefore structured as follows;

$$CR_{it} = \beta_0 + \beta_1 FIN_t + \delta_j X_{ijt} + \mu_{it} \tag{4.1}$$

where, CR_{it} represents industrial concentration at time *t* in industry *i*, which in this study is hypothesised to be a function of financial development, FIN_t and a number of explanatory variables, X_{ijt}. And, μ_{it} is the usual error term.

The empirical analysis initially investigates the economy-wide effect of financial development on industry concentration; followed by tests whether there is evidence of any differential and industry-specific effect. In particular, the study examines whether or not financial liberalization promotes competition among those firms that are relatively more dependent on external finance, by facilitating credit access to them. This is followed by an investigation on whether liberalization of the financial sector brings a different dimension to the relationship between financial development and industry concentration. The study therefore estimates several variations of Equation (1) above, using panel data.

(a) Baseline Model: Economy-wide Effect.

A baseline model for the study is obtained by re-arranging Equation (4.1). Thus, in the first empirical analysis, the study uses the baseline model, Equation (4.2) below to investigate the economy-wide effect of financial development on industry concentration. Thus, whether regardless of specific industry characteristics, financial development has a negative or positive effect on industry concentration. Next, the study examines how this economy-wide effect of financial development on industry concentration changes in the face of financial liberalization. The following equations are therefore estimated:

$$CR_{it} = a_0 + \beta_1 CR_{i(t-1)} + \beta_2 SH_{it} + \beta_3 GR_{it} + \beta_4 MX_t + \beta_5 MM_t + \beta_6 FIN_t + \beta_7 D_t + \varepsilon_{it} \quad (4.2)$$

$$\begin{aligned} CR_{it} = {} & a_0 + \beta_1 CR_{i(t-1)} + \beta_2 SH_{it} + \beta_3 GR_{it} + \beta_4 MX_t + \beta_5 MM_t + \beta_6 FIN_t \\ & + \beta_7 \left(FIN_t \times FL_t \right) + \beta_8 D_t + \varepsilon_{it} \end{aligned} \quad (4.3)$$

where, in Equation (4.3), an interaction of the financial development proxy and the financial liberalization dummy, $\left(FIN_t \times FL_t \right)$, is included in the model as an additional explanatory variable.

(b) Interaction Model: Industry-specific Effect.

Whilst Equations (4.2) and (4.3) facilitates the identification of an economy-wide effect of financial development, common to all industrial sectors, using industry-specific information helps in order to yield a deeper sector-specific effect. Such specification facilitates the decomposition of the total effect of financial development in first, an economy-wide effect and second, a sector-specific effect. Thus, following the Rajan and Zingales (1998) methodology, the study includes an index of industry concentration as a measure that could be explained by the interaction variable between each industrial sector's external financing dependence and the financial development variable, $\left(FIN_t \times ED_i \right)$, Equation (4.4) below. Further, since financial development has distributional effects on industries more in need of external finance, a result not obvious *ex ante*, it may be appropriate to be convinced that this effect is indeed robust, by testing whether levels of industry concentration vary with financial liberalization in those industrial sectors that are relatively more external finance dependent. Thus, another interaction model is estimated which includes an interaction variable that combines the external finance dependency variations as well as allowing for the financial liberalization effect, $\left(FIN_t \times ED_i \times FL_t\right)$ Equation (4.5) below. The following equations are therefore estimated:

$$\begin{aligned} CR_{it} = a_0 + \beta_1 CR_{i(t-1)} + \beta_2 SH_{it} + \beta_3 GR_{it} + \beta_4 MX_t + \beta_5 MM_t + \beta_6 FIN_t \\ + \beta_7 \left(FIN_t \times ED_t\right) + \beta_8 D_t + \varepsilon_{it} \end{aligned} \tag{4.4}$$

$$\begin{aligned} CR_{it} = a_0 + \beta_1 CR_{i(t-1)} + \beta_2 SH_{it} + \beta_3 GR_{it} + \beta_4 MX_t + \beta_5 MM_t + \beta_6 FIN_t \\ + \beta_7 \left(FIN_t \times ED_i\right) + \beta_8 \left(FIN_t \times ED_i \times FL_t\right) + \beta_9 D_t + \varepsilon_{it} \end{aligned} \tag{4.5}$$

4.3.1.2. Net Firm Entry.

Changes in the population of firms through entry and exits – or net firm entry – contribute to how the structure of an industry is defined. In this research, consideration of factors that are hypothesised to influence changes in the number of firms, follow the tradition established in the years after Bain’s (1956) definition of entry barriers and Orr’s (1974) applied work. This background has recently been extended through numerous studies on the determinants of net firm entry. As Acs and Audretsch (1989, p.470) put it, “the empirical model used to estimate [net firm] entry has by now become quite standard with only minor variations...In general, explanatory variables representing three different factors are included – market structure characteristics inhibiting entry or so-called barriers to entry, factors inducing entry, principally growth and profitability, and measures of the technological environment.” Thus, net firm entry is generally expected to depend on macroeconomic business conditions, which are gauged by how lucrative it is to operate in an environment. Specifically, profitability of business firms and increase in market demand, are considered to be key benchmarks in this process (see *Appendix*

4.2). Further, there exist other industry and market-specific characteristics that may also determine firm entry or exit. As such, consistent with economic theory, and following previous studies[67], a relationship of the following form is hypothesised:

$$NFE = f\left(PCM, MKD, X\right) \tag{4.6}$$

where, *NFE* is net firm entry or change in the number of firms, *PCM* represents industry profitability (price-cost margins), *MKD* is growth in market demand, and *X* is a vector of control variables that account for industry and market-specific characteristics, viz; growth in industry value-added and manufactured imports intensity. However, in this study, following Rajan and Zingales (1998) who hypothesise that the number of new firms entering the industry should increase with financial development *FIN*, is introduced to the model as an additional explanatory variable. Like in the industry concentration investigation, the methodology applied in the net firm entry analysis begins with an economy-wide examination followed by an interaction or industry-specific approach. The study therefore investigates several variations of the relationship as depicted in Equation (4.6).

(a) Baseline Model: Economy-wide Effect.

First is an investigation of the economy-wide effect or first-order effect of financial development on net firm entry at large, regardless of industry-specific characteristics. This is followed by an examination whether liberalizing the financial system adds any other dimension to this relationship. A model that reflects the influence of standard net firm entry fundamentals, including financial development, may therefore be estimated as depicted under Equation (4.7), whilst Equation (4.8) includes an interaction term between the financial development proxy and the financial liberalization dummy, $\left(FIN_t \times FL_t\right)$.

[67] See, for example; Jeong and Masson (1990); Geroski (1989, 1995); Fotopoulos and Spence (1998); Carree and Thurik (1996, 1999); Agarwal and Audretsch (1999); Holzl, Hofer and Schenk (2001); and Horvath *et al* (2001); Carree and Dejardin (2007); and, Arauzo *et al* (2007).

$$NFE_{it} = \alpha_0 + \beta_1 NFE_{i(t-1)} + \beta_2 PCM_{it} + \beta_3 GR_{it} + \beta_4 MKD_t + \beta_5 MM_t + \beta_6 FIN_t + \beta_7 D_t + \varepsilon_{it} \tag{4.7}$$

$$NFE_{it} = \alpha_0 + \beta_1 NFE_{i(t-1)} + \beta_2 PCM_{it} + \beta_3 GR_{it} + \beta_4 MKD_t + \beta_5 MM_t + \beta_6 FIN_t + \beta_7 \left(FIN_t \times FL_t\right) + \beta_8 D_t + \varepsilon_{it} \tag{4.8}$$

(b) <u>Interaction Model: Industry-specific Effect</u>.

Next, the study introduces heterogeneity across industrial sectors and tests whether there is evidence of an industry-specific effect. In particular, using the approach by Rajan and Zingales (1998) the study examines whether financial development facilitates entry of firms in those industries that are primarily more in need of external finance, by facilitating credit access to these sectors. As above, the use of industry-specific information yields instead a deeper exploration and understanding of the role played by financial development in the creation of new firms. This is done by including an interaction term between the industry-specific external finance dependence ratio and the financial development proxy $\left(FIN_t \times ED_i\right)$, as depicted under Equation (4.9) below. Additionally, in this extended specification of the model, a financial liberalization dummy is again interacted with the interaction term between financial development and external finance dependence ratio $\left(FIN_t \times ED_i \times FL_t\right)$. This should facilitate investigating whether financial liberalization enhances or dampens entry or exit of external finance dependent firms in the financial development process. Arguably, if financial liberalization, acting through financial development, removes or reduces barriers to external financing, industries highly dependent on external finance should register increases in net firm entry; thereby suggesting more firm entry than firm exits. This hypothesis is tested by estimating Equation (4.10);

$$NFE_{it} = \alpha_0 + \beta_1 NFE_{i(t-1)} + \beta_2 PCM_{it} + \beta_3 GR_{it} + \beta_4 MKD_t + \beta_5 MM_t + \beta_6 FIN_t + \beta_7 \left(FIN_t \times ED_i\right) + \beta_8 D_t + \varepsilon_{it} \tag{4.9}$$

$$NFE_{it} = \alpha_0 + \beta_1 NFE_{i(t-1)} + \beta_2 PCM_{it} + \beta_3 GR_{it} + \beta_4 MKD_t + \beta_5 MM_t + \beta_6 FIN_t + \beta_7 \left(FIN_t \times ED_i\right) + \beta_8 \left(FIN_t \times ED_i \times FL_t\right) + \beta_9 D_t + \varepsilon_{it} \tag{4.10}$$

For all the Equations; (4.2) to (4.5), and (4.7) to (4.10), a subscript *i* indicate that the variable refers to the *i*th industry and *t* is the period specification. Further, time dummies D_t are included in all the regression equations to incorporate time-specific effects common to all industries.

4.3.2. Variable Descriptions.

The study uses industry *Concentration Ratio* (CR_{it}), which is the oldest and most commonly used of all industrial concentration indices. More formally, this is commonly known as the '*k*- firm' Concentration Ratio (*CR* or *CRK*) defined as the cumulative share of the *Kth* firm (Saving, 1970; Scherer, 1980; George and Curry, 1983, Clarke, 1985; Carlton and Pearloff, 1994). Thus, a '*k* -firm' concentration ratio gives the share of industry value-added by the largest '*k*' firms. If there is one firm in an industry, then the one-firm concentration is 100.00 percent since all the value-added is by a single firm. An industry with '*n*' firms with total value-added $x_i\ (i = 1....n)$, ranked from largest to smallest. Industry value-added is defined as $x = \sum_{i=1}^{n} x_i$, and hence the market share of the *i*th firm is $s_i = \frac{x_i}{x}$. The ratio is therefore defined as follows:

$$CRK = \sum_{i=1}^{K} \frac{x_i}{x} = \sum_{i=1}^{K} s_i \tag{4.11}$$

According to the aforementioned literature, whilst the choice of '*k*' is somewhat arbitrary; for studies of aggregate concentration, '*k*' is frequently taken to be 100; and for market concentration, values between 3 and 8 are usually employed. Further, Saving (1970) shows that if '*k*' dominant firms collude to fix a price for the remaining firms, the value of the Lerner index is directly related to their combined market share. But, while the '*k*-firm' concentration ratio remains the most widely used summary measure of market structure and competition, it is not a perfectly inclusive measure of these[68]. Nevertheless, it is useful to employ this measure as a standard of comparison,

[68] For a review on the '*k*-firm' concentration ratio and other comparative measures, see Scherer and Ross (1990, pp.72-73), Curry and George (1983), and, Sleuwaegen and Dehandschutter (1986).

and also because of its measurement of the approximation of the industry to the monopoly – or correctly, small group oligopoly – model.

In this particular study, the 3-firm concentration ratio is tested as the dependent variable (thus, *'k'* is equal to 3) following many others (see, for example, Jeong and Masson, 1990). In a small country like Malawi, where there are industries with very few firms, concentration ratios above 3-firm may be equal to 1.0 (or 100) in many cases, hence the application of 3-firm[69]. In this study, therefore, this is estimated as the ratio of the total value-added for the 3 largest firms, to the final total value-added in the respective industry. However, an important consideration in the analysis of concentration ratios is that the value is bound from above by 1.0 (or 100), and, below by 0. This should reduce the effectiveness of linear forms as explanations of their behaviour. Hence, non-linear structural forms of relationships – such as logarithmic transformations – should fit better than linear forms. In this regard, therefore, a logarithmically transformed 3-firm concentration ratio is adopted as the dependent variable throughout this study, following many other previous studies[70].

The *initial concentration* level, here defined as the lag of the dependent variable ($CR_{i(t-1)}$) is, according to the literature, considered to be crucial in influencing the levels of concentration during the subsequent periods. Economic theory suggests that, *ceteris paribus*, leading firms in highly concentrated industries are likely to lose market share over time, or to increase less rapidly than less concentrated industries, (Stigler, 1952, p. 232; Mueller and Hamm, 1974, p. 514). Thus, there are two competing theories as to how the level of concentration would change over time in industries that were initially highly concentrated. Stigler (1964) argues that oligopolists will tend to yield up part of their market share over time in the interest of maximizing profits. For by charging a high price in the short-run, future entrants to the industry are encouraged by the high profits that are being earned; and, subsequently, a lower price and a lower concentration results in the long run through

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[69] In the USA the lowest is the 4-firm concentration ratio; 3-firm and 5-firm concentration ratios for the UK; and 3-firm for Germany.

[70] See, for example, Bottazzi *et al* (2007), Campos and Iooty (2007), Matraves and Rondi (2007), Das and Pant (2006), Ilmakunnas (2006), Driffield (2001), Cortes (1998), Davies and Geroski (1997), and Liebeskind *et al* (1996), among many others.

entry of new firms into the industry. However, an alternative theory advanced by Bain (1966) suggests that firms will set a low 'limit price', such that the resulting dismal profit rate discourages potential entrants. As a consequence, the concentration level will not fall; and, may even increase if oligopolists use very low prices to drive small firms out of business. However, Mueller and Hamm (1974), argue that the 'limit price' model is not inconsistent with a decrease in concentration if 'industries face a progressive rather than a constant general condition of entry' and if 'dominant firms frequently miscalculate the height of entry barriers'. Altogether, a negative and significant sign for the initial concentration variable ($CR_{i(t-1)}$) in the regressions will reveal either a dominant strategy of short-run profit maximization for leading firms or an unsuccessful attempt at preventing potential entry; whereas, a positive sign (or a sign not significantly different from zero) will point towards a successful 'limit price' strategy. Accordingly, no precise relationship is to be expected, *a priori*, from initial concentration levels.

Financial Development (FIN_t), is represented by the amount of credit issued to the manufacturing sector as a percentage of GDP. According to the literature the commonly used indicator for financial development is private sector credit, defined as the proportion of credit allocated to private enterprises by the financial system, expressed as a ratio to either total domestic credit or GDP[71]. Thus, higher values of this measure are supposed to indicate more credit to the private sector. However, since this study is investigating the link between financial development and industrial concentration as well as net firm entry in the manufacturing sector, simply focusing on private sector credit may be inadequate when determining credit access by manufacturing firms. This is because, apart from the manufacturing sector, private sector credit is also allocated to other economic sectors such as agriculture, mining, and services. Arguably, therefore, an increase in the ratio of private sector credit to

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[71] See, for example King and Levine (1993a 1993b); Beck, Levine, and Loayza (1999); and, Levine *et al* (2000). Advantage of this measure over other monetary aggregates as a proxy for financial development is that it excludes credit to the public sector; therefore represents more accurately the role of financial intermediaries in channelling financial resources to the private sector, and more closely related to the efficiency of investment, and hence economic growth. Besides, in developing countries a significant portion of financial development occurs in the banking system, unlike in the developed countries (see, for example Goldstein *et al*, 1992). Accordingly, in countries like Malawi, the amount of credit to the private sector by the banking system is considered to be a better proxy for financial development.

GDP may not necessarily mean an increase in credit accessibility by firms in the manufacturing sector; nor does this translate into increased investment, and therefore growth and expansion of firms in the manufacturing sector. Similarly, credit to the private sector may increase without any corresponding changes in the number of firms in industries in the manufacturing sector. This therefore explains why credit to the manufacturing sector is instead considered to be the most relevant and suitable proxy of financial development in this study.

Financial Liberalization Dummy (FL_t) is made up of 0 and 1 values associated with major financial reform measures implemented in Malawi. This approach follows Laeven (2003), Bandiera *et al* (2000), and Williamson and Mahar (1998) who observe that financial liberalization take place in various ways and in stages, which require proper distinction. In Malawi, the pre-liberalization phase 1970 to 1988, the financial liberalization dummy takes the value 0; then, the period from 1989 which marks the beginning of the financial reforms, specifically the deregulation of interest rates as well as other major financial reforms, takes the value of 1. Theoretically, in cases where financial liberalization makes easy firm's access to credit, growth and expansion of incumbent firms, as well as entry and creation of new firms should be facilitated. Otherwise, financial reforms could also strengthen the monopoly power of existing firms through disproportional growth opportunities; just as it could also result in summary exits of the incumbent firms.

External Finance Dependence (ED_i) is defined as the share of capital expenditures that the firm in the industry cannot finance through internal cash flow. According to Rajan and Zingales (1998) who authored this measure, external finance dependence is computed as capital expenditures minus cash flow from operations, divided by capital expenditures. Cash flow from operations is broadly defined as the sum of cash flow from operations plus decreases in inventories, decreases in receivables, and increases in payables (Rajan and Zingales, 1998: p.564). In their calculation of the external finance dependence ratios Rajan and Zingales employ data from Standard and Poor's Compustat for United States firms. However, while this conceptual methodology has been widely accepted in the industrial organisation literature, it has one caveat – the cross-country applicability of the external finance dependence ratios as determined by

Rajan and Zingales (1998). As such, in order to provide a more representative and country-specific framework, the industry-specific external finance dependency ratios that are applied in this study are calculated based on the Rajan and Zingales methodology, but using Malawian data (see *Appendix 4.3*).

Industry Growth (GR_{it}), is measured by the changes in the ratio of industry value-added to real GDP. Scherer (1970) argues that the more rapidly an industry grows, the more likely it is that increases in its size will outstrip increases in minimum optimal plant size and so the more feasible decreases in concentration will be. Thus, there is supposed to be a negative relationship between the rate of growth of the industry and the change in concentration. However, Stigler (1964), in the oligopoly theory, predicts differently. Stigler asserts that the stability of a price agreement in an oligopoly depends on several factors. In particular, Stigler notes that the 'the incentive to secret price cutting falls as the number of customers per seller increases' and 'rises as the probability of repeat purchases falls'. Stigler further identifies pooling of information as a way to detect less extreme cases of price-cutting. It is then possible that in cartelized industries faced with a demand curve shifting rapidly to the right, through an increase in the number of buyers, cartel members may want to pool information completely (e.g. through mergers) and thus increase concentration of the industry. In this case, there would be a positive and significant relationship between concentration and industry growth. Thus the sign of the industry growth variable in determining industry concentration will depend on the relative importance of the two effects aforementioned (see also, Geroski and Schwalbach, 1991). In regard to net firm entry, growth in industry value-added is important due to its disturbance effect on competition in industry. Higher industry growth may provide more opportunities for new entrants. This is expected to have a positive impact on net firm entry, unless the opportunities created by industry expansion are being exploited by expansion of already established firms, rather than new entrants (Fotopoulos and Spence, 1998).

Industry Share (SH_{it}) is calculated as the ratio of industry value-added to total manufacturing value-added; and, accounts for different sectoral sizes, and controls for the relative importance of a given industry group in the manufacturing sector. Hence, the share variable controls for the stage in which an industry is within the manufacturing sector and specifically it should capture the different intensity in development due to lifecycle-specific reasons. This is important to the extent that industry share is related to displacement effects within industries with subsequent implications on the level of concentration (see, for example, Shapiro and Khemani, 1987; and Fotopoulos and Spence, 1998). Thus, the average share of firms in an industry is likely to be influenced by the relative size of the industry in the economy (Rajan and Zingales, 1998). A negative relationship is therefore hypothesised between industry share and concentration.

Net Firm Entry (NFE_{it}), is measured as the percentage change in the number of companies or firms in an industry. Following Jeong and Masson (1990); Geroski (1989, 1995); Fotopoulos and Spence (1998); Carree and Thurik (1996, 1999); Agarwal and Audretsch (1999); Holzl *et al* (2001); Horvath *et al* (2001); and, Peneder (2008), net firm entry is presented as:

$$NFE_{it} = \frac{\left(n_{it} - n_{i(t-1)}\right)}{n_{i(t-1)}} \tag{4.12}$$

where, n_{it} is the number of firms in industry i during period t .

Conceptually, changes in the number of firms are thought to reflect the conditions of entry into the industry. High barriers to entry will discourage entry of new firms, whilst low barriers to entry will assist new entrants. The effect depends upon the overall state of the industry and the economy. The precise effect of financial development in firm creation or in facilitating entry may therefore not be known *a priori* [72]. Meanwhile, inclusion of net firm entry lagged one year ($NFE_{i(t-1)}$) follows the evidence provided in the industrial organisation literature (see, Geroski, 1995) that previous entry and/or exit influences current entry and/or exit. Johnson and Parker

[72] Several alternative definitions of *NFE* have been suggested in the literature, including the following;

$$NFE_{it} = \frac{\left(n_{it} - n_{it-1}\right)}{\left[\frac{\left(n_{it} + n_{it-1}\right)}{2}\right]}, \qquad \text{or} \qquad NFE_{it} = Log\left(\frac{n_{it}}{n_{it-1}}\right).$$

However, in a separate study, Fotopoulos and Spence (1998) find all these definitions to be conceptually the same, and therefore not leading to any significantly different results.

(1994) also argue that past entry influences future entry and past exits influence future exits, through what they describe as a ‘multiplier effect’. Thus, the effect serves to perpetuate a trend of entries or exits over time[73]. Further, as observed by Carree and Thurik (1999) and Gort and Komakayama (1982) that, through the ‘demonstration effect’, entry and/or exit decisions are likely to be related to the experience of others previously. Further, Carree and Thurik (1999) argue that even where there are no barriers to entry or exit, psychological, technological, and institutional reasons are all expected to contribute to delays between the decision to enter into industry or exit out of industry, and the actual entry or exit; hence, the expected effect of lagged net firm entry on current net firm entry.

Price-Cost Margins (PCM_{it}), is a proxy for industry profitability. This is calculated as the ‘operating’ surpluses in industry, and defined as value added minus labour costs (remuneration), and then divided by total value-added plus cost of materials. Thus, industry price-cost margins provide an aggregate measure of profit before taxes, financial charges, and depreciation. Even though it is sometimes regarded as a crude method for deriving price-cost margins, it is nonetheless broadly interpreted as representing a firm’s cash flow that is either paid to the shareholders, used for raising reserve assets, or for financing investments. Accordingly, *PCM* is the most commonly used measure of profitability in empirical studies of firm performance and indicates the ability of firms to elevate price above marginal cost, defined as;

$$PCM_{it} = \frac{Value\ added - Payroll}{Value\ added + Cost\ of\ Materials} \tag{4.13}$$

High profits are therefore expected to induce an increase in new firm entry[74]. However, although there is a strong theoretical argument of a positive impact of profit margins on net firm entry (Ilmakunaas and Topi, 1999), other empirical studies have

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[73] This is an extension of the ‘organizational ecology’ literature that focus on the growth of organizational populations that consider density dependence – thus, dependence of entry on the number of firms already in the industry or market – as a basic model (for an elaboration on this concept, see Hannan and Freeman, 1989).

[74] See, Podivinsky and Stewart (2007); Ilmakunaas and Topi (1999); Feeny and Rogers (1999); MacDonald and Bloch (1999); Taymaz (1997); Prince and Thurik (1995); Domowitz *et al* (1986a, 1986b); Clarke *et al* (1984); Liebowitz (1982); Encaoua and Jacquemin (1980); Duetsch (1975) and, Collins and Preston (1968). *PCM* is also analogous to the difference between price and average variable cost divided by price; and, is a proxy for the Lerner index (price minus marginal cost divided by price (for a comprehensive review of this concept, see, Lerner, 1934)).

usually failed to find support for this hypothesis (see. for example, Taymaz, 1997). As a matter of fact, Duetsch (1975) recognises the possibility of obtaining a negative coefficient on this variable when net firm entry rates are used, due to effectively blockaded entry (see also, Khemani and Shapiro, 1987). The exact effect of this variable may therefore not be determined *a priori*.

Market Demand Growth (MKD_t) is represented by real GDP growth. According to Carree and Thurik (1996, 1999) and Ilmakunnas and Topi (1999), the basic intuition is that as the economy grows, the market grows; demand for goods increases, industry profits increase, and given free entry, new firms will enter. The opposite is expected when there is a down-turn in economic activity. However, two hypotheses have been advanced in the literature on the possible influence of the general economic climate on net firm entry (see, Storey, 1991). The traditional view – also called the "pull" hypothesis – states that firms are more inclined to enter an industry when the demand is high and the state of the economy is expected to remain favourable. Thus, according to this hypothesis, a high growth rate of real GDP improves the anticipated profitability of the possible new entrants, and consequently increases the number of entries. A positive relationship is therefore expected in this scenario. However, an alternative view – known as the "push" hypothesis – argues exactly the opposite. According to this view, a fall in macroeconomic activity actually induces entry and increases the creation of new firms, since a higher unemployment rate that normally follows a 'slack' in economic activity, reduces a potential entrant's opportunity cost of starting a new business. Although the business prospects are probably not bright during a recession, unemployment or even risk of it may make self-employment appealing. In addition, a recession provides potential entrepreneurs with new opportunities, like lower labour and equipment costs, or attractive niches created by earlier business failures and withdrawals of multiproduct enterprises from less profitable activities. A downturn in economic activity may therefore be associated with increased entrepreneurship and an increase in net firm entry (see, for example, Highfield and Smiley, 1987). The precise relationship between market demand and net firm entry may therefore not be known *a priori*.

Imports intensity (MM_t), represents the growth in the ratio of manufactured imports to total merchandise imports; and, *Exports Intensity* (MX_t), represents the growth in the ratio of manufactured exports to total merchandise exports. According to the literature, it is important to take into account foreign trade in determining the structure of the domestic industry, in order to capture more accurately the extent of industry competitiveness; as it influences growth or expansion as well as exit of incumbent firms, but also entry or creation of new firms, in the domestic market (see, for example, Caves *et al*, 1980). However, the respective effect of foreign trade on domestic industry structure is not unambiguous, since it is difficult to predict the reaction of domestic firms. Increased imports intensity would increase industry concentration if threats arising from import competition induce mergers of domestic firms[75]. Further, a 'flush out' of inefficient firms that cannot effectively compete following an increase in imports intensity should reduce net firm entry. But, an increase in imports intensity may also reduce industry concentration and increase net firm entry if domestic producers were induced to improve efficiency and thereby raise the number of efficient firms; hence, increasing competition. Similarly, if an expansion in export opportunities reduces average costs because of scale economies from increased market size, producers engaged in export activities should be able to increase their market share, showing a positive relationship. This relationship is more likely if the fixed cost of entering exporting activities is high. But a negative relationship may be observed if the fixed cost of exporting activities is low. A negative relationship may also be observed if economies of scale in production or distribution are not important because a larger market size resulting from export opportunities can support more producers. While plausible in theory, empirical research on the relationship between export growth and industry concentration is limited and lacks conclusive findings (see, for example, Zhao and Zou, 2002). Whilst some studies have found a positive relationship between industrial concentration and exports intensity (see, Glesjer *et al*, 1980), others have found the opposite (see, for example, Koo and Martin, 1984). According to the foregoing, therefore, the study cannot hypothesize *a priori* on the signs on the foreign trade coefficients.

[75] Besides, as noted by Pickford (1991) in a study of domestic firms in New Zealand, the ability of imports to constrain market power is at times rather limited; particularly where the dominant firm is also the major importer of the product; thereby making it possible for these same firms to continue exercising monopoly power over pricing.

Changes in the general economic policy environment are also taken into account by including *time dummies* (D_t)[76]. In Malawi, the period 1970 to 2004 was characterised by several other policy measures, aimed at enhancing the economic development process. Apparently, most of these policy efforts were competition-enhancing in the manufacturing sector; and, also aimed at fostering efficiency in the financial system. As such, their effects cannot be ignored in the empirical investigation of the possible link between financial development and industry structure. The dummies are in the form of binary variables, which equal to 1 for each year during the respective economic reform period, otherwise zero.

4.3.3. Estimation Technique.

In light of the problems associated with purely cross-section regressions, panel techniques are used in this chapter. Compared with cross-section approaches, the panel approach has important advantages. The first benefit is the ability to exploit the time-series and cross-sectional variation in the data. Thus, moving to a panel incorporates the variability of the time-series dimension, exploiting additional variability. The second advantage is that the approach controls for the presence of unobserved industry-specific effects. Third benefit of the panel technique is that it addresses the problem of potential endogeneity of all the regressors.

Empirically, in a panel data framework (thus combined time-series and cross-section data) the model for Equations (4.2) to (4.5) and (4.7) to (4.10) above can be written in matrix-vector notation as follows:

$$y_{it} = \alpha y_{i,t-1} + x'_{it}\beta + \varepsilon_{it} \qquad (4.14)$$

$$i = 1, 2, \ldots N \quad t = 1, 2, \ldots N$$

Where the individual elements of the y (industry concentration or net firm entry) vector are denoted as y_{it}, thus industry concentration or net firm entry for industry i in

[76] The time dummies are meant to be merely indicative, as policy implementation is a continuous process with obvious overlaps between periods.

year t; and, α is a parameter to be estimated with respect to lagged (industry concentration or net firm entry) variable; x'_{it} is a (1 x k) vector of regressors, and β is a (k x 1) vector of parameters to be estimated.

However, according to the literature, when numerous individual units are observed over time, the problem of specifying the stochastic nature of the disturbances, represented by the term ε_{it} in Equation (4.14) becomes conceptually difficult. For instance, some of the 'omitted variables' may reflect factors which are peculiar to both the individual industries as well as the time periods for which observations are obtained; others may reflect industry-specific differences which tend to affect the observations for a given industry; and still other variables may represent factors which are peculiar to specific time periods. As such, if these unobservable "other effects" are not taken account of in the estimation process, and ordinary-least-squares (OLS) method is instead applied to Equation (4.14), the estimates of the β's in the equation may be both biased and inefficient (Nerlove, 1971). In order to incorporate those other causal variables, therefore, Equation (4.14) transforms to the following error component model:

$$y_{it} = \alpha y_{i,t-1} + x'_{it}\beta + \mu_i + v_{it} \tag{4.15}$$

where;

$$\varepsilon_{it} = \mu_i + v_{it} \tag{4.16}$$

and**,**

$$E[\mu_i] = E\left[v_{it}\right] = E\left[\mu_i + v_{it}\right] = 0 \tag{4.17}$$

Thus, μ_i denote the unobservable individual specific effects and is time-invariant, accounting for the special effect that is not included in the model – the fixed effects. The remainder disturbance varies with both individual and time – the idiosyncratic shock. The error of the model ε_{it} therefore becomes the sum of v_{it}, the well-behaved error component and μ_i, the individual specific effects. And it is further assumed that, μ_i and v_{it}, are independent for each i over all t.

Notably, Equation (4.15) has a lagged dependent variable to account for dynamics in the industry structure process and capture the fact that industry concentration and net firm entry are long-term processes. As such, the structure of Equation (4.15) rules out the use of certain estimation techniques. For example, Ordinary Least Squares (OLS) approach cannot be used because the estimator is biased in the presence of lagged dependent variables or industry-specific effects on the right hand side of the equation. Fixed-Effects or Within Groups (WG) estimators can account for the industry-specific effects, but will remain biased in the presence of lagged dependent variables. Furthermore, Within Groups estimator is not an appropriate technique to use in these circumstances because some components of the explanatory variables of interest – such as the external finance dependence ratios – are time-invariant and their parameters will not be identified using this estimator. To address some of these econometric problems therefore, the study uses the System – Generalized Method of Moments estimator (SYS-GMM) developed for dynamic panel data estimation (see, for example, Arellano and Bover, 1995; Blundell and Bond, 1998; Bond *et al*, 2001; and, Roodman, 2005).

The SYS-GMM was developed as a superior estimator as it controls for the industry – specific effects as well as the bias caused by the inclusion of the lagged dependent variable. Furthermore, unlike the first-difference GMM (DIF-GMM) approach discussed in Arellano and Bond (1991), the SYS-GMM approach makes it possible to identify the parameters of the time-invariant variables in the model. It combines the standard set of equations in first-differences with suitably lagged levels as instruments, with an additional set of equations in levels with suitably lagged first-differences as instruments. The basic idea behind this estimator is as follows: First, the unobserved fixed effects μ_i are removed by taking first difference of Equation (4.14) and obtaining the following equation;

$$\Delta\left(y_{it}-y_{i,t-1}\right)=\alpha\left(y_{i,t-1}-y_{i,t-2}\right)+\beta\left(x'_{it}-x'_{it-1}\right)+\Delta\mu_i+\Delta\nu_{it} \tag{4.18}$$

Second, the right hand side variables are instrumented using lagged values of regressors, and the equations in first differencing (Equation 4.18) and in levels (Equation 4.15) are jointly estimated in a system of equations. Under the assumption that the error term ε_{it} is serially uncorrelated, and the regressors X_{it} are endogenous, valid instruments for the equation in first difference are levels of series lagged two periods (Blundell and Bond, 1998). In addition, assuming that $\Delta\left(y_{it} - y_{i,t-1}\right)$ and ΔX_{it} are uncorrelated with μ_i, valid instruments for the equation in levels are lagged first differences of the series.

Third, the validity of the instruments is tested using a standard Sargan/Hansen test of over-identifying restrictions and a test for the absence of serial correlation of the residuals, since the moment conditions are valid if the error term is not serially correlated. The regressions include time dummies, which apart from their usual role of capturing deterministic trends in the data, may also serve as exogenous instruments in the model. Further, the SYS-GMM estimation can be based on either a one-step or a two-step estimator. The two-step estimator is asymptotically more efficient in presence of heteroskedasticity of the error term ε_{it}. However, Monte Carlo simulation in Arellano and Bond (1991) and Blundell and Bond (1998) shows that standard errors associated with the two-step estimates are downward biased in small samples. Historically therefore, researchers often tended to prefer making inference based on the one-step SYS-GMM estimator with standard errors corrected for heteroskedasticity, even though it is not as efficient as the two-step SYS-GMM estimator. Recently, however, Windmeijer (2005) devised a small-sample correction for the two-step standard errors. Thus, in regressions on simulated panels, Windmeijer finds that the two-step efficient SYS-GMM performs somewhat better than one-step SYS-GMM in estimating coefficients, with lower bias and standard errors. And the reported two-step standard errors, with this correction, are quite accurate, so that two-step estimation with corrected errors is currently considered to be modestly superior to robust one-step estimation. In this study, both the one-step results, as well as the two-step results are reported. However, analysis is based on the two-step SYS-GMM regression results, where the specifications are considered to be more efficient, and therefore leading to more accurate inference.

Consequently, Equations (4.2) to (4.5), and (4.7) to (4.10) above are, therefore, estimated using lags of all variables as instruments[77]. Thus, it is hypothesised that both industry concentration as well as net firm entry, adjust with delay to changes in financial development – such as increased credit access following policy changes related to financial liberalization. Similarly, growth in a firm's value-added resulting from, for instance, changes in market demand, will only lead to the firm's expansion or contraction, with a lag. The same applies to the firm's net entry as a response to foreign competition. Policy reforms are generally expected to take some time before making any impact on the manufacturing industry. The process of adjustment to changes in these factors may therefore depend both on the passage of time – which argues for including several lags of these factors as regressors – and on the difference between equilibrium concentration levels and the initial concentration levels, as well as equilibrium net firm entry and previous entry and/or exits – which argues for dynamic models in which lags of the dependent variables have also been included as regressors.

4.3.4. Data Specification.

The data composes of annual observations for the period 1970-2004 covering 20 industrial sub-sectors in the Malawian manufacturing industry. However, following Favarra (2003), Beck and Levine (2002), and Levine, Loayza, and Beck (2000), among many previous studies that also use a panel data approach, the data is averaged into sub-periods of five-year intervals[78]. As such, the dependent variables in all the models are therefore of the averaged five-year intervals. Similarly, all the explanatory variables are also averaged over the five-year intervals. Thus, using STATA 9, the

[77] The SYS-GMM estimation technique is applied to equations in levels using the *t-2*, *t-3*and *t-4* lagged right-hand side variables as instruments. Laeven (2002), Koo and Shin (2004), and Koo and Maeng (2005) separately apply a similar approach in their studies on Korean firms. Similarly, Tressel and Detragiache (2008) use up to *t-9* lagged right-hand side variables as instruments.

[78] Averaging reduces the "*T*" relative to "*N*" in the panel data. Further, according to literature, the system GMM estimator (*xtabond2*) is applicable to "small *T*, large *N*" panels. Thus if "*T*" is a significantly higher proportion of "*N*", the dynamic panel bias becomes insignificant, but the Arellano-Bond autocorrelation test may be unreliable (Roodman, 2005).

SYS-GMM estimator is applied to a panel dataset of N x T = 20 x 7 = 140 observations[79].

Summary statistics for the main variables used in this chapter are given in Table 4.1. These statistics refer to a panel with observations kept in yearly format. The top three-firm concentration measure is on average 82.2 percent, but with significant variation, from a low of 29.5 percent (e.g. in food processing sub-sector) to a high of 100.0 percent (e.g. in transport equipment sub-sector). This is consistent with observations made by Chirwa (2004) in a study of Malawian manufacturing enterprises using panel data over the period 1970-1997, where the average concentration level is 77.0 percent, with the lowest being 50.0 percent and the highest 100.0 percent. The change in the number of firms is insignificant. On average, manufactured imports constitute 74 percent of the country's total imports, indicating that domestic manufacturing firms face some competition from foreign firms. However, as a primary commodity producer the country's manufactured exports are low. Over the period, real GDP growth has been moderate, averaging about 3.8 percent. Growth in real industry value-added is 1.8 percent. As an agro-based economy, the highest share of industry value-added in total manufacturing value-added is food processing, which takes the maximum share of 44.0 percent. Average profitability of industries during the period is 18.0 percent. As a ratio to GDP, average credit to the manufacturing sector was between 0.01 percent and 0.44 percent, during the period 1970 to 2004. The average industry sub-sector requires 64.0 percent of external financing for its investment, with a low of 10.0 percent (food processing) and a high of 15.0 percent (paper and paper products).

Table 4.2 is a pairwise correlations matrix for the variables of interest, and shows that there are some important correlations among the variables. Initial concentration level is positively correlated with the concentration ratio. Similarly, previous change in the number of firms is positively correlated with net firm entry. This suggests that, for both industry concentration as well as net firm entry, there are some path

[79] Due to the small and longitudinal size of the sample, the series are assumed to be stationary without conducting unit root tests. Besides, the estimator SYS GMM uses first differenced models, and hence the unit root problem, in case it existed, is taken into account, as first differences will be stationary if the original variables are unit root non-stationary.

dependencies in these processes. The manufactured imports variable is negatively correlated with the industry concentration ratio, whilst exports show positive correlation. As shown in previous literature, there is a negative correlation between industry share and industry concentration. Growth in industry value-added is also negatively correlated with industry concentration; but, it is positively correlated with net firm entry. In addition, credit to the manufacturing sector is on average positively correlated with the level of industry concentration; whereas it appears to correlate negatively with net firm entry. This suggests that financial development may not foster competition in industry. There is also a positive relationship between external finance dependence and industry concentration. Whilst these raw correlations do not control for other industry characteristics, they nonetheless indicate that analysing the relationship between financial development and external finance dependence on industry concentration and net firm entry could well amount to different exercises.

Table 4.1: Summary Statistics of Main Regression Variables.

(Yearly Data: 1970-2004)

Variable	**Description**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
CR_{it}	3-firm Concentration Ratio	82.202	18.065	29.45	100.00
GR_{it}	Industry Value-added growth as % of Real GDP	1.787	4.555	-14.16	11.25
NFE_{it}	Change in the Number of Firms	0.003	0.174	- 0.60	3.00
SH_{it}	Industry Value-added as % of Total Man. Value-added.	0.047	0.072	0.01	0.44
PCM_{it}	Industry Price-Cost Margins (Industry Profitability)	0.183	0.135	- 0.26	0.70
MKD_t	Growth in Market Demand (Real GDP growth)	3.822	5.395	-10.24	16.73
MM_t	Manufactured Imports as % of Total Merchandise Imports	73.637	3.148	63.39	80.77
MX_t	Manufactured Exports as % of Total Merchandise Exports	8.572	2.811	4.62	15.44
FIN_t	Credit to the Manufacturing Sector as % of Real GDP	0.120	0.129	0.01	0.44
ED_i	External Finance Dependence	0.637	0.474	0.10	1.58

Table 4.2: Pairwise Correlation Matrix of the Regression Variables
(Panel Data: 5 years Average).

	CR_{it}	$CR_{i(t-1)}$	NFE_{it}	$NFE_{i(t-1)}$	GR_{it}	SH_{it}	PCM_{it}	MKD_t	MM_t	MX_t	FIN_t	ED_i
CR_{it}	1.000											
$CR_{i(t-1)}$	0.765***	1.000										
NFE_{it}	-0.115	0.012	1.000									
$NFE_{i(t-1)}$	0.075	0.011	0.193**	1.000								
GR_{it}	-0.252*	-0.098	0.045	0.119	1.000							
SH_{it}	-0.291***	-0.329***	0.174**	0.155	0.400***	1.000						
PCM_{it}	0.421**	0.169*	0.160*	0.247**	0.134*	0.181**	1.000					
MKD_t	-0.109**	-0.069***	-0.238**	0.056	0.514***	-0.001	-0.076	1.000				
MM_t	-0.195**	-0.308***	0.178**	0.003	-0.286***	-0.011	0.165*	0.623***	1.000			
MX_t	0.379***	0.382***	-0.021	0.132	0.394***	-0.010	0.005	0.319***	-0.411***	1.000		
FIN_t	0.601***	0.389***	-0.033	0.130	0.492***	0.001	0.134	0.592***	-0.186**	0.448***	1.000	
ED_i	0.139*	0.138	0.247**	0.282**	-0.003	-0.131	0.204**	0.004	-0.001	0.023	0.009	1.000

Note: This table report the correlation matrix of the main regression variables. And, ***, **, * indicate significance levels of 1, 5, and 10 percent, respectively. Definitions and data sources are provided above.

4.4. EMPIRICAL RESULTS.

4.4.1. Overall Results Diagnostics.

Applying the econometric techniques and data outlined above, the regression results on the relationship between financial development, external finance dependence and industry concentration are presented in Table 4.3. Similarly, regression results for the relationship between financial development, external finance dependence and net firm entry are presented in Table 4.4. Both in Table 4.3 as well as in Table 4.4, Columns (1), (3), (5), and (7) refer to the one-step estimates; while Columns (2), (4), (6), and (8) reports the two-step estimates. The bottom parts of the tables include the regression diagnostics.

In all the models, as depicted in Table 4.3 and Table 4.4, the *F*-tests show that the parameters are jointly significant (at the 1 percent level). Using the Hansen/Sargan tests for over- identifying restrictions we cannot reject the null hypothesis that the instruments used in all the models are uncorrelated with the residuals. Consequently, the tests suggest that the instruments used are valid. The test for AR (1) errors in the first difference equation rejects the null hypothesis of no first-order serial correlation as expected. Furthermore, as should be expected, the test for AR (2) errors suggests that we cannot reject the null of no second-order serial correlation in all the models. And, according to Arellano and Bond (1991, pp: 281-282), as long as there is no second - order autocorrelation, the GMM estimates are considered to be consistent.

The study first presents results for the industry concentration model, followed by the results for the net firm entry model. In both cases, evidence of an economy-wide effect of financial development is initially presented, using the baseline model specifications. Next, the study presents results for the differential effect of financial development across industries according to their needs for external financing – as captured through their respective external finance dependence ratios – and are estimated by applying the interaction model specifications. In both the economy-wide model regressions as well as the industry-specific model regressions, the estimations are checked for robustness by allowing for the effects of financial liberalization. This facilitates the examination of whether financial reforms have any implications over the relationship between financial development and industry structure.

4.4.2. Industry Concentration Model Results.

4.4.2.1. Baseline Model: Economy-wide Effect.

Table 4.3 Column (2) presents the two-step system GMM regression results of the first-order effect of financial development, as specified in Equation (4.2) above. The dependent variable is the logarithm of the three-firm concentration ratio. The coefficient for the initial concentration variable is positive and significantly different from zero (at 1 percent level), as per theoretical priors. The coefficient for industry growth is significant (at 10 percent level) and with expected signs as per theoretical priors; whilst the coefficient for industry share also enters significantly (at 10 percent level). The manufactured exports variable is positive and significant (at 1 percent level), while the coefficient for imports show a negative sign as expected and significant (at 1 percent level). More important for this analysis, however, is that the coefficient on the indicator of financial development is positive and statistically significant (at 1 percent level). This result suggests that, controlling for other variables; the development of the financial system induces concentration in all the industries, indiscriminately. This result is robust to the effects of financial liberalization in the regression estimates. Column (4) of Table 4.3, which relates to Equation (4.3), shows that the interaction term between the financial development variable and the liberalization dummy enters significantly (at 5 percent level), whilst the coefficient for financial development remains positive but insignificant.

4.4.2.2. Interaction Model: Industry-specific Effect.

Next, in Columns (6) and (8) of Table 4.3, the results show that the regression estimates with the inclusion of an interaction term between a ratio representing the industry's dependence on external finance and an indicator of financial development. This specification tests whether, besides an economy-wide effect, there is also a sector-specific effect of financial development. More specifically, if financial development mitigates financial constraints for firms by easing credit access, this effect should be especially noticeable on those industrial sectors where firms are highly dependent on external finance. Columns (6) therefore report the two-step system GMM regression results for the interaction model as specified under Equations (4.4). Again, the initial concentration variable is positive and statistically different from zero (at 1 percent level). Most importantly for this study, Column (6) of Table 4.3 shows that the coefficient on the interaction term between financial development and external finance dependence is positive and statistically significant (at 5 percent level). Meanwhile, in this column, the coefficient for financial development alone is not significant; thereby suggesting that financial development has no or little effect on those firms that are disproportionately less or not at all dependent on external finance. This result is robust to the inclusion of the financial liberalization effect, as Column (8) of Table 4.3 again shows the coefficient for the interaction term between financial development, external finance dependence and financial liberalization to be positive and strongly significant (at 1 percent level).

4.4.2.3. Overall Results Discussion.

The two-step regression estimates in all the models in Table 4.3 show that the coefficient on the initial concentration variable ($CR_{i(t-1)}$) is positive and statistically significant (at the 1 percent and 10 percent level). Thus, the results indicate that initially concentrated industries in the Malawi manufacturing industry either remain highly concentrated or become even more concentrated than before. Sawyer (1971) gets similar results using census data for the British manufacturing industry; and, de Melo and Urata (1986) also observe increasing industry concentration following liberalization in Chile. These findings are therefore consistent with the Bain (1966) hypothesis, which asserts that high initial industry concentration levels may increase further if the dominant firms collude to forego short-term profit gains in order to secure long-term market share. Bain argues that dominant firms will deliberately set a low ‘limit price’, with the objective of discouraging any new entrants or any incumbent firm with expansion plans, thereby perpetuating industry concentration (also see Osborne, 1964). In support of this hypothesis, Gaskins (1971) presents a model of dominant firms whose pricing policy affects the rate of entry of firms into the industry. The optimal strategy for the dominant firm, according to Gaskins (1971), may be to set a price below the entry-deterring price (i.e. Bain's 'limit price') and let its market share adjust over time, whilst discouraging any potential entrants. Gaskins argue that the dominant firm's market share and, hence, industry concentration will meanwhile continue to increase until the market price equals the 'limit price'. Long-run equilibrium will then obtain. Thus the joint profit maximizing position for oligopolists as a group may be modified toward relatively reduced short-run profits in the interests of joint long-run profit maximization as well as long-run security in the market share. A model by Kamien and Schwartz (1971) implies similar results for colluding firms facing uncertain entry. Notably, however, this contradicts another view as argued by Brozen (1970, 1971), according to which high levels of concentration are found when a firm or group of firms expand to take advantage of unanticipated change in demand or a new technology while, over time, industry concentration falls as smaller firms expand and new firms enter the industry. Thus, according to Brozen (1970, 1971), a high initial level of concentration is expected to be a temporary state, which is followed by a decline in its level as firms adjust. However, Prescott and Visscher (1980), counter-argue that Brozen's assertion may not hold in environments where access to capital or information about technology and market conditions is not guaranteed. Thus, Brozen (1970, 1971) assumes either limited or no barriers to firm entry – for instance, a situation where there is equitable access to financial resources. Certainly, in the case of the manufacturing sector in Malawi, unequal access to finance has made it difficult for a large number of firms, particularly the small and medium-scale enterprises, to expand or for new ones to enter the industry as suggested by Brozen (1970, 1971). Further, in Malawi, the price de-control policy which was implemented within the industrial de-regulation phase of the structural adjustment program could facilitate collusion by the dominant firms to set up their own 'limit-prices' in a bid to safeguarding their market share in the long-term. This, therefore, explains the positive relationship between initial concentration and subsequent concentration levels in the Malawian manufacturing sector.

The industry growth variable *GR* has a negative coefficient and is statistically significant (at 5 and 10 percent level) in all the models. The main mechanism is that fast growth encourages new entrants into the industry through higher profits and because barriers to entry may appear less formidable in a growing industry. The result is consistent with the findings by Mueller and Rogers (1984), Hart and Clarke (1980) and Mueller and Hamm (1974). The result suggests that growth in industry demand influence opportunity for expansion of fringe firms already in the market. Meanwhile, the variable *SH*, representing industry share, has a negative coefficient in all the four regressions estimates and is moderately significant in all the regressions, except in Column (8). The negative result is consistent with the finding by Rajan and Zingales (1998), who establishes that concentration, tends to be negatively associated with industry share.

The coefficients on imports intensity, *MM* are negative and significant (at 1 percent and 10 percent level) in all the regressions of Table 4.3, except in Column (8), which is positive but not significant. This is in support of similar findings by Caves *et al* (1980) that there is a negative relationship between import growth and industry concentration. This reflects the removal of all controls, which enabled other firms to enter the market and establish themselves as importers. However, the sign of the coefficients change to positive and statistically insignificant in Column (8). Despite not entering significantly, this result is supported by a hypothesis by Pickford (1991) which suggests that an increase in the level of imports, which account for competition, leads to an increase in industry concentration. In Malawi, this positive relationship phenomenon may be attributed to the long history of protection in Malawi in the form of tariffs, licensing and monopoly rights, which gave exclusive importing rights to some firms. Besides, with an exchange control regime that required prior approval from the central bank before being allocated foreign exchange to pay for imports, it was mostly the large and well-established firms that had the financial capacity and the influence that dominated the system. The coefficients for exports intensity *MX* are significant and positive in basically all regressions. Ideally, if exports are profitable, domestic firms become more competitive and a faster rate of adjustment can be expected in terms of their sizes and distribution, thereby propagating a non-concentrated industry. Further, in Malawi, even after liberalization and deregulation, the long years of pre-export licensing requirements continue to favour the large and long established firms, which already have secure markets and financial capabilities. This explains the positive coefficient on the exports intensity variable.

More important for this analysis are the sign and significance on the coefficients on the financial development, *FIN*, and the interaction term, $(FIN \times ED)$, variables. The coefficient on the indicator for financial development, *FIN*, is positive and statistically significant (at 1 percent level) in Column (2) of the baseline model. However, in Column (4) when the effects of financial liberalization are included, the coefficient for *FIN* becomes insignificant even though still positive. Meanwhile, the coefficient for the interaction term between financial development and financial liberalization, $(FIN \times FL)$, enters significantly (at 5 percent level), and it is positive. This is an interesting finding as it suggests that, controlling for other variables, the development of the financial system induces the concentration of all industries, indiscriminately. It further shows that prior to financial liberalization, financial development had no effect on industrial concentration. This result can be explained by the financial policies that were adopted prior to the reforms, such as directed credit allocation and administered interest rates which tended to favour a few selected industries. However, the results show that following the financial reforms entry barriers have been perpetuated in the form of lack of access to credit. Further, other related policies such as interest rate deregulation, and the introduction of the liquidity reserve ratio, have also contributed to the increase in entry barriers as the cost of funds has increased. This therefore explains the positive and significant coefficient on the interaction term in Column (4) of Table 4.3.

But, if financial development induces industry concentration, this effect should be especially noticeable on those industry sectors where firms are disproportionately highly dependent on external finance, than where firms need less or no external finance at all. Thus, in the industry-specific model, results in Column (6) of Table 4.3 show that the coefficient on the interaction term between financial development and the external finance dependency ratios, $(FIN \times ED)$, is positive and statistically significant (at 5 percent level); while *FIN* is not significant. The result is robust to the effects of financial liberalization as reported in Column (8), where the coefficient for the interaction term allowing for financial liberalization, $(FIN \times ED \times FL)$, is positive and enters strongly significant (at 1 percent level). This indicates that industries that rely relatively more on external finance become disproportionately concentrated with higher levels of financial development.

Table 4.3: System-GMM Estimation Results: Industry Concentration.

Variables: -	**Baseline Model**				**Interaction Model**			
	Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization		Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization	
	One Step	***Two Step***	***One Step***	***Two Step***	***One Step***	***Two Step***	***One Step***	***Two Step***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$CR_{(t-1)}$	**0.529***** *(0.147)*	**0.548***** *(0.161)*	**0.529***** *(0.146)*	**0.548***** *(0.161)*	**0.499***** *(0.132)*	**0.573***** *(0.096)*	**0.339*** *(0.175)*	**0.379*** *(0.200)*
SH	-0.058 *(0.041)*	**-0.059*** *(0.031)*	-0.058 *(0.041)*	**-0.059*** *(0.031)*	**-0.057*** *(0.034)*	**-0.059**** *(0.028)*	**-0.041*** *(0.023)*	-0.051 *(0.039)*
GR	**-0.222*** *(0.119)*	**-0.235*** *(0.136)*	**-0.222*** *(0.119)*	**-0.235*** *(0.136)*	**-0.185**** *(0.090)*	**-0.174**** *(0.079)*	**-0.113*** *(0.063)*	**-0.127**** *(0.058)*
MX	**0.129**** *(0.052)*	**0.159***** *(0.048)*	0.070 *(0.047)*	**0.078*** *(0.042)*	**0.128**** *(0.045)*	**0.178***** *(0.036)*	**0.180***** *(0.045)*	**0.201***** *(0.052)*
MM	**-0.023***** *(0.004)*	**-0.025***** *(0.004)*	-0.014 *(0.003)*	**-0.013**** *(0.004)*	**-0.013**** *(0.006)*	**-0.017**** *(0.006)*	**0.011**** *(0.005)*	0.009 *(0.007)*
FIN	**0.270***** *(0.082)*	**0.339***** *(0.082)*	0.041 *(0.092)*	0.026 *(0.087)*	-0.048 *(0.125)*	0.076 *(0.131)*	-0.108 *(0.091)*	-0.054 *(0.158)*
$FIN \times FL$			**0.165**** *(0.079)*	**0.225**** *(0.089)*				
$FIN \times ED$					**0.014***** *(0.003)*	**0.012**** *(0.004)*	**0.012**** *(0.004)*	**0.011**** *(0.005)*
$FIN \times ED \times FL$							**0.128***** *(0.024)*	**0.120***** *(0.018)*
F Test	68.93 *(0.000)*	52.51 *(0.000)*	68.93 *(0.000)*	52.51 *(0.000)*	207.85 *(0.000)*	313.88 *(0.000)*	161.95 *(0.000)*	130.29 *(0.000)*
Hansen /Sargan Test	5.01 *(0.833)*	9.45 *(0.397)*	5.01 *(0.833)*	9.45 *(0.397)*	6.76 *(0.662)*	6.39 *(0.700)*	9.41 *(0.401)*	9.70 *(0.375)*
Test for AR (1) errors	-2.50 *(0.013)*	-2.52 *(0.012)*	-2.50 *(0.013)*	-2.52 *(0.012)*	-2.64 *(0.008)*	-2.73 *(0.006)*	-1.60 *(0.110)*	-1.83 *(0.068)*
Test for AR (2) errors	-1.09 *(0.277)*	-1.09 *(0.275)*	-1.09 *(0.277)*	-1.09 *(0.275)*	-1.08 *(0.279)*	-1.26 *(0.206)*	-0.82 *(0.415)*	-0.74 *(0.458)*
No. of Industries	20	20	20	20	20	20	20	20
No. of Observations	120	120	120	120	120	120	120	120

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen / Sargan Test and Tests for AR errors are p - values for the null of instruments validity.

These findings support the observations made by Aryeetey *et al* (1997), Nissanke and Aryeetey (1998), and Nissanke (2001) in the context of situations prevalent in Malawi and most sub-Saharan African economies, particularly following financial liberalization. Aryeetey *et al* (1997) in their study of financial reforms in four sub-Saharan African economies, including Malawi, observe that commercial banks tend to concentrate their lending to traditional and established customers (often public enterprises and businesses with good cash flow – usually large and modern), and avoid those that are new and without any record. Evidently, Aryeetey *et al* establish that this lending behaviour characterize the Malawian banking system, particularly following the financial liberalization process (op. cit. pp.210-211). This lending behaviour stifles competition, thereby increasing industrial concentration. The findings are also consistent with theoretical priors suggesting that with the development of the financial system, credit or lending institutions may have the tendency to preserve relationships with their older established clients (Boot and Thakor, 2000), thereby continuing to provide privileged access to credit to a few dominant firms which grow larger, at the expense of potential new non-established entrants. However, this outcome, contradicts the orthodox view as propagated by the neo-classical theorists such as Kapur (1976, 1983) and Mathieson (1980) that financial liberalization and financial development facilitates access to credit and at reasonably lower cost. Instead, these results seem to be in tandem with the structuralists' views as advanced by Grabel (1995) and Adelman and Morris (1997), amongst others. Most importantly, these results run contrary to the predictions by Rajan and Zingales (1998) who hypothesise that financial development has cross-industry distributional consequences and maintenance of a competitive industrial sector.

4.4.3. Net Firm Entry Models Results.

4.4.3.1. Baseline Model: the Economy-wide Effect.

In Table 4.4, Column (2) report results of the first-order effect of financial development on net firm entry, as specified in Equation (4.7) above. The dependent variable for the model is the net firm entry. The coefficient for the lagged net firm entry variable is positive and significantly different from zero (at 5 percent level). However, the price-cost margins variable is significantly different from zero but with a negative coefficient; and this result does not change even after allowing for financial liberalization effects in Column (4). The coefficient for market demand is significant with a negative sign in Column (2) of Table 4.4, which remains unchanged after allowing for financial liberalization effects, in Column (4) of Table 4.4. Industry growth enters significantly (at 10 percent level) and with a positive sign as expected; and the result is robust to the inclusion of financial liberalization effects in Column (4) of Table 4.4. The manufactured imports variable is positive and significant (at 1 percent level) in Column (2) of Table 4.4; and the results remain the same even after allowing for the effects of financial liberalization in Column (4) of Table 4.4. However, in Column (4), the coefficient for the financial development proxy as the main variable of interest, is not significant; while the interaction between financial development and the liberalization dummy, as depicted under Equation (4.8), is negative and significant (at 5 percent level). The results in Column (4) suggest that financial liberalization has a negative effect on net firm entry, that on average affect all industry groups indiscriminately.

4.4.3.2. Interaction Model: Industry-specific Effect.

In Table 4.4, Columns (6) and (8) show results for the interaction term between the industry's dependence on external finance and an indicator of financial development. This specification tests whether, besides an economy-wide effect, there is also a sector-specific effect of financial development in influencing firm entry and/or firm exit. More specifically, if financial development mitigates financial constraints for firm entry by easing credit access, or if it induces firm exits due to high costs of capital, etc, this effect should be especially noticeable on those industrial sectors where firms are highly dependent on external finance. The coefficient for the lagged net firm entry variable is positive and statistically different from zero (at 1 and 5 percent level). Most importantly for this study, in Columns (6) the two-step system GMM regression results for the interaction model, as specified under Equations (4.9) is negative and statistically significant (at 5 percent level). Meanwhile, in this column, the coefficient for financial development alone is not significant; with a negative sign. The results indicate that the impact of financial development on net firm entry is not uniform across industry groups – a phenomenon that is elaborated further later. The result in Column (6) is robust to the inclusion of financial liberalization effects as shown in Column (8) of Table 4.4, which shows the coefficient for the interaction term between financial development, external finance dependence and financial liberalization to be positive and significant (at 1 percent level).

4.4.3.3 Overall Results Discussion.

All the models in Table 4.4 show a positive and significant coefficient of the lagged net firm entry variable; thereby suggesting a perpetuating effect of past net firm entry on future net firm entry. Thus, the result reflects the rate dependence phenomenon as suggested under the organizational ecology literature (Johnson and Parker, 1994; Hannan and Freeman, 1989). Further, these findings are consistent with those by Geroski (1995) and Cincera and Galgau (2005) that firm entry and firm exits tend to come in waves with periods in which there is a lot of firm entry and exit and periods when firm entry and exit decrease. Accordingly, the results in Columns (2), (4), (6), and (8) of Table 4.4, indicate that if there is a 1.0 percent increase in net firm entry rate in the previous year, it will lead to a current entry rate higher by 0.43 percent (as per Column (8)) to 0.54 percent (as per Column (6)). This result supports the 'multiplier effect' as suggested by Johnson and Parker (1994) and Hannan and Freeman (1989). Theoretically, this occurs when entry cause future entry (and retards future exits), or when exits cause future exits (and retards future entry). As argued by Gort and Komakayama (1982), the perceptions of profit opportunities by entrants are positively related to the successful experience of those that have operated in that market before.

In the Malawian manufacturing sector, policy changes have affected firms in different ways. Amongst other policy measures, the abandonment of granting monopoly rights and tax waivers, the deregulation of industrial licensing, the privatisation of public enterprises, have all differently contributed to firm entries and/or exits. Most prominent have been the changes that have followed the financial liberalization process. Whilst these policies have facilitated entry of firms into industry; in the main, the policies have also created a situation where it has become unprofitable for some of the incumbents to operate, thereby forcing them to exit. The cost of borrowing has increased following the deregulation of interest rates, and the directed credit allocation system has been abandoned; thereby exposing inefficiencies within some of the industries, which have prompted scaling down or even closures and exits. The summary exit of firms in most of the industry groups have therefore made the respective industries appear to be less lucrative, thus stimulating further exits. These results are consistent with the findings by Parker *et al* (1995)[80].

The price-cost margins variable *PCM* has a negative, moderately significant effect on the net firm entry. The variable is clearly insignificant in the industry-specific models (Columns 6 and 8 of Table 4.4). This finding is consistent with the results by MacDonald (1986), Geroski (1995), among others, who find profitability to be an insignificant determinant of net firm entry. Similarly, Dunne and Roberts (1991) find that high profits attract entry but also high profits are associated with frequent exits in the US manufacturing industries. Fotopoulos and Spence (1997b) find a similar result on Greek manufacturing. Khemani and Shapiro (1997) also find that high profit industries experience more exits. The effect is explained as high profits attracting more entrants who then displace some incumbents. The negative coefficient on this variable therefore indicates that both entry and exit are symmetrical in their response to higher price-cost margins. Further, if both entry and exit are positively related to *PCM,* then the negative sign of the net firm entry suggests that exit might be steeper than entry in its response to higher price-cost margins. In the Malawian manufacturing sector, problems of accessing credit and/or increasing cost of borrowing are possible explanations of this result, in both that this has been a deterrent to entry, and an impediment to post-entry survival and mobility. Evidently, the result suggests that in the presence of entry barriers like access to credit or increased cost of borrowing entry is less discouraged than exit is forced, probably due to subsequent exit of less qualified recent entrants or less efficient incumbents.

Net firm entry is negatively related to increase in market demand *MKD*, as measured by real GDP growth, except in Column (4) of Table 4.4. This result suggests that macroeconomic developments have been related more to exits than entries, particularly of those firms that are highly dependent on external financing for their operations. Movements in a host of macroeconomic variables explain this development. Evidently, changes in interest rates and exchange rates following the financial liberalization process affected both firms' productivity as well as market

[80] In a study of five African countries, including Malawi, Parker *et al* (1995) establish that entrepreneurs' prior experience in industry was one of the motivations for new firm start-ups.

demand. Industry growth *GR* exerts a significant and positive effect on net firm entry. This result is consistent with a similar finding by MacDonald (1986) in the study of forty-six American food industries. Similar results were also obtained by Acs and Audretsch (1986b) on US manufacturing industries, who established that growth in industry value-added remains by far the most important inducement to firm entry. Given the hypothesis that newer industries grow faster (White, 1982) these results seem important in supporting the notion that faster growing industries offer better grounds for new participants. This may imply that industry growth may be associated with higher industry profitability (Bradburd and Caves, 1982), which is not necessarily accessible by entrants at the expense of existing firms. Imports *MM* are associated with higher net firm entry before the liberalization of the financial system in Malawi. Otherwise, following financial liberalization, there has been an influx of imported manufactured goods, both second-hand as well as new. This has posed stiff competition to the domestic firms, forcing them to either down-size their operations or close-down and exit the industry.

The results for the economy-wide effect of financial development *FIN* on net firm entry in Column (2) show a negative and statistically significant coefficient (at 1 percent level). This result suggests that financial development has been associated more with firm exits than entries, for all firms indiscriminately. However, when effects of financial liberalization are allowed in the model, the coefficient for the financial development variable is negative but not significant, whilst the interaction term, between financial development and the liberalization dummy $\left(FIN \times FL\right)$ remains negative and significantly different from zero (at 5 percent level). This suggests that, somehow, the policies that were implemented during financial liberalization induced more of firm exits than firm entry. The effect is more conspicuous when industry-specific effects are considered in Columns (6) and (8), through the interaction terms. The coefficient estimate for the interaction term between financial development and the industry-specific external finance dependence ratio $\left(FIN \times ED\right)$ is negative and significantly different from zero in Column (6). This result indicates that there are more exits than entries among those firms that disproportionately depend on external finance for their operations than those that do not. The result is robust to the inclusion of financial liberalization effects, as the interaction term between financial development, external finance dependence ratio, and the financial liberalization dummy $\left(FIN \times ED \times FL\right)$ is negative and significantly different from zero.

This result suggests that whilst exits outstripped entries, among external finance dependent firms, during the pre-liberalization period, the situation got worse in the post-liberalization phase. This is confirmed through the magnitude of the coefficients of ($FIN \times ED$, 1 percent) and ($FIN \times ED \times FL$, 10 percent) in Column (8) of Table 4.4. This finding is consistent with theoretical priors suggesting that financial liberalization, working through financial development may influence industry structure, especially in those industry groups where firms are more in need of external finance. As indicated above, this is achieved through establishment and/or perpetuation of close ties between lending institutions and incumbent firms, which may be detrimental to new entrants. It is also achieved through changes to the cost of borrowing as well as unavailability of credit. Following financial liberalization, Malawian firms were affected by high cost of finance due to high interest rates which followed the deregulation process. Lending rates increased to levels between 45.0 and 50.0percent following financial liberalization, which adversely affected incumbent firms and forced them to exit.

Overall, the results in Table 4.4 do not seem to support the view that one channel through which financial development boosts aggregate economic growth is by disproportionately easing financial constraints on firms, thereby promoting entrepreneurship through the creation and entry of new firms into the industry as hypothesised by the neo-classical theorists. Finally, these findings do not render support to the hypothesis that "financial development has almost twice the economic effect on the growth of the number of establishments", as suggested by Rajan and Zingales (1998).

Table 4.4: System-GMM Estimation Results: Net Firm Entry.

Variables: -	**Baseline Model**				**Interaction Model**			
	Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization		Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization	
	One Step	***Two Step***	***One Step***	***Two Step***	***One Step***	***Two Step***	***One Step***	***Two Step***
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$NFE_{(t-1)}$	**0.536*****	**0.507*****	**0.536*****	**0.507****	**0.512*****	**0.541*****	**0.378****	**0.431****
	(0.153)	*(0.166)*	*(0.153)*	*(0.166)*	*(0.126)*	*(0.122)*	*(0.168)*	*(0.182)*
PCM	-0.142	**-0.139****	-0.142	**-0.139****	**-0.143***	**-0.142****	**-0.101***	-0.109
	(0.107)	*(0.059)*	*(0.107)*	*(0.059)*	*(0.088)*	*(0.068)*	*(0.057)*	*(0.097)*
MKD	**-0.005****	**-0.006*****	-0.002	**-0.003***	**-0.005*****	**-0.007*****	**-0.008*****	**-0.009*****
	(0.002)	*(0.002)*	*(0.002)*	*(0.001)*	*(0.002)*	*(0.001)*	*(0.002)*	*(0.002)*
GR	**0.166***	**0.192***	**0.166***	**0.192***	**0.148****	**0.147***	**0.089***	**0.090***
	(0.092)	*(0.105)*	*(0.092)*	*(0.105)*	*(0.071)*	*(0.078)*	*(0.044)*	*(0.044)*
MM	**0.022*****	**0.023*****	**0.013*****	**0.013*****	**0.013****	**0.015****	**-0.008***	-0.005
	(0.004)	*(0.004)*	*(0.003)*	*(0.003)*	*(0.006)*	*(0.006)*	*(0.005)*	*(0.007)*
FIN	**-0.241*****	**-0.286*****	-0.018	-0.013	0.007	-0.057	0.063	0.003
	(0.067)	*(0.066)*	*(0.078)*	*(0.063)*	*(0.116)*	*(0.124)*	*(0.075)*	*(0.128)*
$FIN \times FL$			**-0.160****	**-0.196****				
			(0.075)	*(0.067)*				
$FIN \times ED$					**-0.011*****	**-0.010****	**-0.010*****	**-0.009****
					(0.003)	*(0.004)*	*(0.003)*	*(0.004)*
$FIN \times ED \times FL$							**-0.111*****	**-0.103*****
							(0.020)	*(0.014)*
F Test	88.13	73.12	88.13	73.12	177.83	278.05	380.01	201.06
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*	*(0.000)*
Hansen /Sargan Test	4.37	7.04	4.37	7.04	5.50	6.96	8.05	8.52
	(0.886)	*(0.633)*	*(0.886)*	*(0.633)*	*(0.789)*	*(0.641)*	*(0.530)*	*(0.483)*
Test for *AR* (1) errors	-2.50	-2.52	-2.50	-2.52	-2.65	-2.70	-1.69	-2.02
	(0.012)	*(0.012)*	*(0.012)*	*(0.012)*	*(0.008)*	*(0.007)*	*(0.090)*	*(0.044)*
Test for *AR* (2) errors	-1.43	-1.30	-1.43	-1.30	-1.22	-1.22	-0.93	-0.93
	(0.153)	*(0.194)*	*(0.153)*	*(0.194)*	*(0.221)*	*(0.221)*	*(0.354)*	*(0.350)*
No. of Industries	20	20	20	20	20	20	20	20
No. of Observations	120	120	120	120	120	120	120	120

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen / Sargan Test and Tests for AR errors are *p* - values for the null of instruments validity.

4.4.4. Robustness Checks.

Although the foregoing SYS-GMM estimates are in tandem with some priors, it remains useful to assess their robustness, particularly on the effect of financial development. Accordingly, this section presents sensitivity tests using alternative panel data estimators, alternative combination of variables, as well as longer time period using disaggregated yearly data; and, checks whether the results change across the models.

4.4.4.1. Alternative Panel Estimators.

Tables 4.5a and 4.5b display the estimated coefficients for the industry concentration and net firm entry variables, respectively, using the following alternative estimators: Column (1) ordinary least squares (OLS) or Prais-Winstein estimator with panel-corrected standard errors (PCSE) for linear cross-sectional time series models, which computes standard errors and the variance-covariance estimates under the assumption that the disturbances are, by default, heteroskedastic and contemporaneously correlated across panels (see, Kmenta, 1997); Column (2) is the population-averaged panel-data model estimator using generalized estimating equations (GEE), which fits general linear models and allows specification of the within-group correlation structure for the panels (see, Liang and Zeger, 1986; Zeger, Liang , and Albert, 1988; Pendergast *et al* 1996); Column (3) is the Fixed Effects or Within Groups estimator (Baum, 2006). Although it is well known that in a large N small T panel these estimators give a biased estimate of the autoregressive coefficient, precise biases results have not yet been extended to the remaining parameters (i.e., β in Equation (4.13) above) when the regressors are endogenous. It is therefore perceived appropriate to compare the results across different estimators. The two-step System GMM regression results for the baseline model are however presented in Column (4) of both Tables 4.5a and 4.5b, for the sake of comparison.

The results in both Tables 4.5a and 4.5b show variations in the sizes of the coefficients and even signs for some of the control variables. However, in regard to the variable of interest *FIN*, there are minor variations in the coefficients for the financial development indicator. In Table 4.5a, the estimated parameter for the variable *FIN* has a positive coefficient and enters significantly (at 1 percent and 5 percent level) in all the estimators. Similarly, in Table 4.5b, the coefficient for the variable *FIN* is negative and significant (at 1 percent and 5 percent level) in all the estimators. Thus, overall, the statistical performance of *FIN* does not appear to change substantially across the different estimators. It remains in line with the indications from the two-step SYS-GMM estimator: financial development has a positive effect on industry concentration; and, has a negative effect on net firm entry. Both results are in conformity with the earlier findings, as per respective results in Tables 4.3 and 4.4 above; and, further confirm the contradiction against the hypotheses by Rajan and Zingales (1998).

Table 4.5a: <u>Robustness Checks: Using Alternative Panel Estimators.</u>

(5-Year Averaged Data)

Industry Concentration Model

(*Dependent Variable: CR*)

Variables:-	**Alternative Estimators**			
	(1)	(2)	(3)	(4)
	OLS (Prais-Winsten: Panel Corrected SE's)	***GEE (Population Averaged)***	***Fixed Effects***	***Two-Step System GMM***
$CR_{(t-1)}$	**0.729***** *(0.128)*	**0.836***** *(0.021)*	**0.551***** *(0.133)*	**0.548***** *(0.161)*
SH	0.000 *(0.005)*	0.000 *(0.003)*	-0.055 *(0.045)*	**-0.059*** *(0.031)*
GR	**-0.027*** *(0.016)*	-0.006 *(0.007)*	-0.027 *(0.020)*	**-0.235*** *(0.136)*
MX	**-0.038***** *(0.003)*	**-0.040*** *(0.023)*	**-0.043*** *(0.025)*	**0.159***** *(0.048)*
MM	**-0.044***** *(0.003)*	**-0.047***** *(0.008)*	**-0.040***** *(0.007)*	**-0.025***** *(0.004)*
FIN	**0.060**** *(0.024)*	**0.023*** *(0.017)*	**0.110***** *(0.034)*	**0.339***** *(0.082)*
R-squared	0.83	-	0.77	-
<u>Hansen /Sargan Test</u>	-	-	-	9.45 *(0.397)*
Test for *AR* (1) errors	-	-	-	-2.52 *(0.012)*
Test for *AR* (2) errors	-	-	-	-1.09 *(0.275)*
No. of Industries	20	20	20	20
No. of Observations	120	120	120	120

<u>Note</u>: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen Test and Tests for AR errors are *p* - values for the null of instruments validity.

Table 4.5b: Robustness Checks: Using Alternative Panel Estimators.
(5-Year Averaged Data)

Net Firm Entry Model
(*Dependent Variable:* ***NFE*)**

Variables:-	**Alternative Estimators**			
	(1)	(2)	(3)	(4)
	OLS (Prais-Winsten: Panel Corrected SE's)	***GEE (Population Averaged)***	***Fixed Effects***	***Two-Step System GMM***
$NFE_{(t-1)}$	**0.723***** *(0.107)*	**0.807***** *(0.019)*	**0.579***** *(0.127)*	**0.507***** *(0.166)*
PCM	0.000 *(0.012)*	0.001 *(0.007)*	-0.140 *(0.118)*	**-0.139**** *(0.059)*
MKD	**0.002***** *(0.001)*	**0.002*** *(0.001)*	**0.002*** *(0.001)*	**-0.006***** *(0.002)*
GR	0.018 *(0.013)*	0.002 *(0.006)*	0.020 *(0.015)*	**0.192*** *(0.105)*
MM	**0.039***** *(0.002)*	**0.041***** *(0.007)*	**0.037***** *(0.006)*	**0.023***** *(0.004)*
FIN	**-0.053***** *(0.018)*	**-0.040**** *(0.020)*	**-0.090***** *(0.029)*	**-0.286***** *(0.066)*
R-squared	0.84	-	0.78	-
Hansen /Sargan Test	-	-	-	7.04 *(0.633)*
Test for *AR* (1) errors	-	-	-	-2.52 *(0.012)*
Test for *AR* (2) errors	-	-	-	-1.30 *(0.194)*
No. of Industries	20	20	20	20
No. of Observations	120	120	120	120

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen Test and Tests for AR errors are *p* - values for the null of instruments validity.

4.4.4.2. Alternative Variables.

Tables 4.6a and 4.6b present results of the two-step System GMM regression estimates for the baseline models of industry concentration and net firm entry, respectively; but, using alternative variables – first, using the ratio of liquid liabilities to GDP, as an alternative proxy of the financial development indicator; and second, using the external finance dependence ratios as calculated by Rajan and Zingales (1998) to determine the industry-specific impact of financial development on industry concentration and net firm entry. In each case, the investigation controls for traditional industry-specific effects as well as market effects that, according to the literature, are hypothesised to influence industry concentration and net firm entry.

First, in Columns (1) and (2) of Tables 4.6a and 4.6b, as an alternative, another commonly used ‘non-credit-based’ measure of financial development – the ratio of liquid financial liabilities (*M3*) to gross domestic product (*LLY*), is instead used in the regressions. This approach follows other previous studies which have used this measure as a proxy for financial development (see, for example; Gelb, 1989; World Bank, 1989b; King and Levine, 1993a). The indicator *LLY* measures the amount of liquid liabilities of the financial system, including liabilities of banks, the central bank, and other financial institutions. Determining financial development using this approach accords well with McKinnon’s outside money model in which the accumulation of lumpy real money balances is necessary before self-financed investment can take place. Further, an increase in *LLY* should facilitate firm creation and entry. Thus, according to King and Levine (1993a), this indicator is meant to capture the overall size of the financial sector and its ability to provide broad transaction services. Ideally, an increase in *LLY* should therefore mean a more developed financial system and therefore broader transaction services availability for firms, trade related or otherwise, incumbents or new entrants. This should facilitate the incumbents firms’ growth and therefore increasing competition in the industry, leading to lower concentration. Further, this is expected to facilitate entry of prospecting new investing firms[81]. However, the results in Column (2) of Table 4.6a indicate that the coefficient for *LLY* is positive and statistically significant (at 1 percent level). This suggests that despite an increase in liquid liabilities following the financial development process, the financial systems transaction services are only accessed by a privileged few who gain comparative advantage over those that do not have such access, thereby allowing them to grow disproportionately larger and inducing industrial concentration. Similarly, Table 4.6b Column (2) results show that the coefficient for the variable *LLY* is negative and significant (at 1 percent level) thereby suggesting that the increase in liquid liabilities has not facilitated the creation of new firms, or that it induced firm exits, presumably through the intensification of relationship-based client support by the financial institutions.

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[81] Some researchers argue in the literature that during periods of credit booms, often preceding financial crises, credit over GDP may overstate the level of financial development or depth of financial system (see, for example, Kaminsky and Reinhart, 1999). This study therefore also use credit to the manufacturing sector as a ratio to total domestic credit, as an alternative proxy for financial development. However, the results (which are available on request from the author) are the same.

Experiments are also conducted to check against any methodological errors in the determination of external finance dependence ratios of the respective sectors, which have been estimated using Malawian banking system data. Accordingly, Columns (3) and (4) of Tables 4.6a and 4.6b present results of regression estimation of the interaction model; now using the industry-specific external finance dependence ratios as calculated by Rajan and Zingales (1998), and as applied in many other research studies (i.e. using the interaction term $FIN \times ED2$). Notably, however, except for slight variations in the size of the coefficients, the results remain largely the same in both tables, in terms of direction of causation.

Table 4.6a: Robustness Checks: Using Alternative Variables.
(5-Year Averaged Data)

Industry Concentration Model
(*Dependent Variable:* ***CR*****)**

	Estimating Baseline Model using Liquid Liabilities as Financial development proxy.		***Estimating Interaction Model with Rajan and Zingales (1998) external finance dependence ratios.***	
	One Step	*Two Step*	*One Step*	*Two Step*
	(1)	(2)	(3)	(4)
$CR_{(t-1)}$	**0.529***** *(0.147)*	**0.548***** *(0.161)*	**0.529***** *(0.147)*	**0.548***** *(0.161)*
SH	-0.058 *(0.041)*	**-0.058*** *(0.031)*	-0.058 *(0.041)*	**-0.059*** *(0.031)*
GR	**-0.222*** *(0.119)*	**-0.235*** *(0.136)*	**-0.222*** *(0.119)*	**-0.235*** *(0.136)*
MX	**-0.068**** *(0.032)*	**-0.088**** *(0.033)*	**0.113**** *(0.049)*	**0.137***** *(0.044)*
MM	**-0.044***** *(0.009)*	**-0.051***** *(0.009)*	**-0.064**** *(0.022)*	**-0.081***** *(0.025)*
LLY	**0.024***** *(0.007)*	**0.031**** *(0.007)*		
FIN			0.058 *(0.086)*	0.049 *(0.080)*
$FIN \times ED2$			**0.008**** *(0.004)*	**0.011**** *(0.004)*
F Test	68.93 *(0.000)*	52.51 *(0.000)*	68.93 *(0.000)*	52.51 *(0.000)*
Hansen /Sargan Test	5.01 *(0.833)*	9.45 *(0.397)*	5.01 *(0.833)*	9.45 *(0.397)*
Test for *AR* (1) errors	-2.50 *(0.013)*	-2.52 *(0.012)*	-2.50 *(0.013)*	-2.52 *(0.012)*
Test for *AR* (2) errors	-1.09 *(0.277)*	-1.09 *(0.275)*	-1.09 *(0.277)*	-1.09 *(0.275)*
No. of Industries	20	20	20	20
No. of Observations	120	120	120	120

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen Test and Tests for AR errors are *p* - values for the null of instruments validity.

Table 4.6b: Robustness Checks: Using Alternative Variables.
(5-Year Averaged Data)

Net Firm Entry Model
(*Dependent Variable:* *NFE*)

	Estimating Baseline Model using Liquid Liabilities as Financial development proxy.		***Estimating Interaction Model with Rajan and Zingales (1998) external finance dependence ratios.***	
	One Step	*Two Step*	*One Step*	*Two Step*
	(1)	(2)	(3)	(4)
$NFE_{(t-1)}$	**0.536***** *(0.153)*	**0.507***** *(0.166)*	**0.536***** *(0.153)*	**0.507***** *(0.166)*
PCM	-0.142 *(0.107)*	**-0.139**** *(0.059)*	-0.142 *(0.107)*	**-0.139**** *(0.059)*
MKD	**0.003**** *(0.001)*	**0.004***** *(0.001)*	**-0.004**** *(0.002)*	**-0.005***** *(0.002)*
GR	**0.166*** *(0.092)*	**0.192**** *(0.105)*	**0.166*** *(0.092)*	**0.192*** *(0.105)*
MM	**0.040***** *(0.008)*	**0.045***** *(0.007)*	**0.061**** *(0.022)*	**0.071***** *(0.019)*
LLY	**-0.022***** *(0.006)*	**-0.026***** *(0.006)*		
FIN			-0.034 *(0.072)*	-0.033 *(0.058)*
$FIN \times ED2$			**-0.008**** *(0.004)*	**-0.010**** *(0.003)*
F Test	88.13 *(0.000)*	73.12 *(0.000)*	88.13 *(0.000)*	73.12 *(0.000)*
Hansen /Sargan Test	4.37 *(0.886)*	7.04 *(0.633)*	4.37 *(0.886)*	7.04 *(0.633)*
Test for *AR* (1) errors	-2.50 *(0.012)*	-2.52 *(0.012)*	-2.50 *(0.012)*	-2.52 *(0.012)*
Test for *AR* (2) errors	-1.43 *(0.153)*	-1.30 *(0.194)*	-1.43 *(0.153)*	-1.30 *(0.194)*
No. of Industries	20	20	20	20
No. of Observations	120	120	120	120

Note: Estimates of the intercept are not reported for economy of space. Significant at 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses. The Hansen Test and Tests for AR errors are *p* -values for the null of instruments validity.

Overall, despite some notable differences in the coefficients of the control variables, a comparison with the original estimates as depicted in Tables 4.3 and 4.4, the results in Tables 4.6a and 4.6b above indicate that using alternative variables has no material effect on the estimated impact of financial development on industry structure.

4.4.4.3. Alternative Period of Estimation.

A key caveat of using panel data is that estimation is normally based on data averaged over five-year periods. When the *T* size of the panel is reduced through averaging, however, the properties of some panel estimators are also affected. The problem with this methodology particularly arises as we seek to assess whether the connection between financial development and industry structure is sustainable in the long-run. To the extent that five years does not adequately proxy for long-run variations in industry structure, the regression results obtained through the panel methods may have to be tested further for robustness by using alternative estimation methods that are based on lower-frequency data. Next, therefore, the study estimates the relationship between financial development and industry structure – industry concentration as well as net firm entry using yearly data as opposed to five-year averaged data.

Notably, the model in Equation (4.15) includes as one of the regressors a lagged dependent variable. In this case, using the usual approach to estimating a fixed-effects or the least squares dummy variable estimator (LSDV) model – as depicted in Equations (4.2) to (4.5) and (4.7) to (4.10) above – generates a biased estimate of the coefficient. Nickel (1981) derives an expression for the bias of α in Equation (4.15) when there are no exogenous regressors, showing that the bias approaches zero as $T \to \infty$. Thus, the LSDV estimator performs relatively well when the time dimension of the panel is 'large'. However, there exist several estimators that have been proposed to estimate Equation (4.15) when T is 'not large'. Anderson and Hsiao (1981) propose two instrumental variable procedures. To remove the fixed effect, Equation (4.15) is first differenced to obtain;

$$\left(y_{it} - y_{i,t-1}\right) = \alpha\left(y_{i,t-1} - y_{i,t-2}\right) + \beta\left(x'_{it} - x'_{it-1}\right) + \left(\nu_{it} - \nu_{i,t-1}\right) \tag{4.19}$$

In the differenced equation, however, the errors $\left(\nu_{it} - \nu_{i,t-1}\right)$ are now correlated with the one of the independent variables $\left(y_{i,t-1} - y_{i,t-2}\right)$, and they recommend instrumenting for $\left(y_{i,t-1} - y_{i,t-2}\right)$ with either $y_{i,t-2}$ or $\left(y_{i,t-2} - y_{i,t-3}\right)$ which are uncorrelated with the disturbance in Equation (4.19) but correlated with $\left(y_{i,t-1} - y_{i,t-2}\right)$. Arellano (1989) shows that using the lagged difference as an instrument results in an estimator that has a very large variance. Arellano and Bond (1991) and Kiviet (1995) confirm the superiority of using the lagged level as an instrument with simulation results, which is the basis for the Anderson Hsiao estimator, given as;

$$\delta_{AH} = \left(Z'X\right)^{-1} Z'Y \tag{4.20}$$

where, Z is a $K \times N\left(T-2\right)$ matrix of instruments, X is a $K \times N\left(T-2\right)$ matrix of regressors, and Y is a $N\left(T-2\right) \times 1$ vector of dependent variables.

However, as indicated above, the appropriateness of the estimator between the fixed effects or LSDV estimator and the Anderson and Hsiao estimator depends on the time dimension of the panel; whether T is 'large' or 'not large'. Since the literature does not provide the qualifying time dimension for a panel to be considered 'large' or 'not large', this study estimates using both methodologies, for the sake of completeness.

Table 4.7a: Alternative Estimation Results Using Yearly Data (1970-2004).

Industry Concentration Model

(*Dependent Variable:* ***CR*)**

Variables: -	Baseline Model				Interaction Model			
	Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization		Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization	
	Fixed Effects	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$CR_{(t-1)}$	**0.632***** *(0.031)*	**0.671***** *(0.042)*	**0.617***** *(0.031)*	**0.657***** *(0.040)*	**0.581***** *(0.031)*	**0.618***** *(0.040)*	**0.573***** *(0.031)*	**0.608***** *(0.040)*
GR	**-0.040***** *(0.007)*	**-0.037***** *(0.008)*	**-0.045***** *(0.007)*	**-0.042***** *(0.008)*	**-0.033***** *(0.007)*	**-0.030***** *(0.008)*	**-0.037***** *(0.007)*	**-0.035***** *(0.008)*
SH	**0.267**** *(0.105)*	**0.265*** *(0.146)*	**0.245**** *(0.104)*	**0.241*** *(0.146)*	**0.242**** *(0.101)*	**0.233*** *(0.141)*	**0.269***** *(0.102)*	**0.268**** *(0.136)*
MX	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*	0.001 *(0.002)*
MM	**-0.004**** *(0.002)*	-0.004 *(0.002)*	**-0.005**** *(0.002)*	**-0.005**** *(0.002)*	**-0.004**** *(0.002)*	**-0.005**** *(0.002)*	-0.008 *(0.003)*	**-0.008**** *(0.003)*
FIN	**0.003***** *(0.001)*	**0.003*** *(0.002)*	**0.003**** *(0.001)*	0.002 *(0.001)*	-0.001 *(0.001)*	-0.001 *(0.001)*	-0.001 *(0.001)*	-0.001 *(0.001)*
$FIN \times FL$			**0.005***** *(0.002)*	**0.005**** *(0.002)*				
$FIN \times ED$					**0.006***** *(0.001)*	**0.006***** *(0.001)*	**0.005***** *(0.001)*	**0.005***** *(0.001)*
$FIN \times ED \times FL$							**0.022**** *(0.011)*	**0.022***** *(0.013)*
F Test	173.05 *(0.000)*	-	158.64 *(0.000)*	-	171.04 *(0.000)*	-	156.67 *(0.000)*	-
R-squared	0.71	-	0.71	-	0.72	-	0.73	-
No. of Industries	20	20	20	20	20	20	20	20
No. of Observations	680	680	680	680	680	680	680	680

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5% **, and 10% *. Robust Standard Errors are in parentheses.

Table 4.7b: Alternative Estimation Results Using Yearly Data (1970-2004).

Net Firm Entry Model

(*Dependent Variable:* ***NFE*****)**

Variables: -	Baseline Model				Interaction Model			
	Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization		Estimates *not* allowing for the effects of Financial Liberalization		Estimates allowing for the effects of Financial Liberalization	
	Fixed Effects	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**	**Fixed Effects**	**Anderson-Hsiao**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$NFE_{(t-1)}$	**0.428***** *(0.034)*	**0.453***** *(0.037)*	**0.431***** *(0.035)*	**0.455***** *(0.038)*	**0.424***** *(0.034)*	**0.448***** *(0.037)*	**0.419***** *(0.034)*	**0.443***** *(0.038)*
PCM	**-0.132**** *(0.043)*	**-0.132**** *(0.052)*	**-0.134**** *(0.043)*	**-0.134**** *(0.052)*	**-0.120**** *(0.043)*	**-0.118**** *(0.054)*	**-0.119**** *(0.043)*	**-0.118**** *(0.054)*
MKD	-0.005 *(0.007)*	-0.004 *(0.008)*	-0.005 *(0.007)*	-0.004 *(0.008)*	-0.007 *(0.007)*	-0.007 *(0.009)*	-0.007 *(0.007)*	-0.007 *(0.009)*
GR	**0.140***** *(0.016)*	**0.136***** *(0.019)*	**0.141***** *(0.016)*	**0.138***** *(0.020)*	**0.148***** *(0.016)*	**0.156***** *(0.021)*	**0.159***** *(0.017)*	**0.156***** *(0.021)*
MM	**0.011**** *(0.005)*	**0.011*** *(0.006)*	**0.011**** *(0.005)*	**0.012*** *(0.006)*	**0.011**** *(0.005)*	**0.022**** *(0.009)*	**0.022***** *(0.007)*	**0.022**** *(0.009)*
FIN	-0.001 *(0.003)*	-0.001 *(0.004)*	-0.001 *(0.003)*	-0.001 *(0.004)*	-0.004 *(0.004)*	-0.005 *(0.004)*	-0.005 *(0.004)*	-0.005 *(0.004)*
$FIN \times FL$			-0.003 *(0.004)*	-0.003 *(0.005)*				
$FIN \times ED$					**0.005**** *(0.002)*	**0.007**** *(0.003)*	**0.008***** *(0.003)*	**0.007**** *(0.004)*
$FIN \times ED \times FL$							**-0.079***** *(0.027)*	**-0.078**** *(0.037)*
F Test	41.71 *(0.000)*	-	37.53 *(0.000)*	-	36.50 *(0.000)*	-	35.82 *(0.000)*	-
R-squared	0.37	-	0.37	-	0.37	-	0.38	-
No. of Industries	20	20	20	20	20	20	20	20
No. of Observations	680	680	680	680	680	680	680	680

Note: Estimates of the intercept are not reported for economy of space. Significant at the 1% ***, 5%**, and 10%*. Robust Standard Errors are in parentheses.

Tables 4.7a and 4.7b show results for the fixed effects as well as the Anderson Hsiao estimators for industry concentration and net firm entry, respectively. The results are predominantly similar to those obtained using five-year averaged data. In Table 4.7a, the coefficient for the variable of interest *FIN* is positively related to industry concentration and statistically significant (at 1 percent level using the fixed effects estimator and at 10 percent using the Anderson Hsiao estimator). The results are robust to the inclusion of financial liberalization effects as well as when considerations are made regarding industry-specifics; in particular external finance dependence. Both Columns (7) and (8) of Table 4.7a show positive coefficients that are statistically significant (at 1 percent and 5 percent level).

4.5. CONCLUSION.

Recent empirical studies have adequately established that financial development characterised by a competitive financial system, matters for economic growth. However, subsequent research efforts focus on the details that facilitate this relationship. Of the various attributes of the financial system, efficient and equitable allocation of credit for firms' investment, by banks and other lending institutions, is likely to have a qualifying impact on the finance-growth nexus. Mitigating firms' financing constraints, by easing their access to credit, and by extension, facilitating their entry and the development of a competitive industry sector is, in my opinion, one such attribute.

This study has therefore investigated a new dimension of analysis of the finance and economic growth relationship. The findings in the study suggest a nontrivial impact of financial development on industry concentration. Following investigations conducted through regression estimations, there is evidence that financial development has a first-order positive effect on industry concentration. A number of sensitivity tests performed on the baseline regression model confirm that a positive relationship between financial development and industry concentration indeed exists and is robust to changes in the estimation method. This confirms the theoretical prediction that despite financial liberalization and financial development, the amount of credit available to the economy as a whole, does not necessarily increase. However, whilst the study finds this effect to be applicable economy-wide, it also finds evidence that financial development has a heterogeneous effect across industries. In particular, evidence from a cross-industry panel indicates that, controlling for industry fixed effects, firms in sectors more in need of external finance become disproportionately more concentrated with the development of the financial system. This result is consistent with theoretical priors suggesting that with the development of the financial system, banks and other financial institutions may concentrate lending to fewer firms, with whom they have already established long lasting relationships, thus restricting credit access to newer entrants; thereby increasing concentration in those industries.

The results have obvious policy implications for Malawi and other developing countries that have equally embraced financial liberalization policies. Clearly, the findings of this study show that, in Malawi, the economic reform efforts taken in the past, which included the development of the financial system through financial liberalization, with the objective of constraining monopoly power in the manufacturing sector and thereby improve competition in the domestic market, have not produced the expected results. These results further contradict the arguments by Rajan and Zingales (1998). Following their landmark study, Rajan and Zingales claim that financial development affects growth in both the average size of existing establishments and in the number of new establishments in industries dependent on external finance (though disproportionately the former). Thus, according to Rajan and Zingales, with the development of financial markets, more firms will be created; reducing the average size of firms; and, existing firms will be able to grow faster, increasing the average size of firms. However, the results in this investigation do not support this view.

One caveat with the foregoing analysis though is that it is restricted to the static short-term industry situation and does not consider questions related to the dynamics of the industry's life cycle or long-term evolution. In this regard, therefore, it may be necessary, for a well informed policy debate, to further investigate whether the relationship between financial development and industry structure changes its intensity with time; thus, whether there are variations between the short-run and long-run. Further, it may also be necessary to examine whether the nature and causes of any such changes as well as the related period that might be required to undergo the adjustments, applies uniformly across all industries. These issues, and more importantly the possible prevalence of heterogeneity across industries, are therefore examined in the next chapter.

Appendix 4.1: **Stochastic Model of Industry Concentration: Gibrat's Law.**

Stochastic models suggest that the size distribution of firms is not the outcome of systematic forces but rather the result of a large number of random influences affecting all firms. Thus, regardless of past history and initial size, actual growth rates will differ over any particular period simply because some firms will have more 'luck' than others. Repeated over some period, this process will create a small number of firms that will attain position of dominance; thereby lead to increase in industry concentration. Accordingly, in its simplest form, the principle that the growth of firms is an independent random variable is therefore known as Gibrat's Law or the 'Law of Proportionate Effect' (L.P.E.). This phenomenon has been described in many ways by different researchers (amongst them, Hart and Prais, 1956; Champernowne, 1953; and Simon and Bonini, 1958). However, the description by Hart and Prais (1956) is the most common; where they take the proportionate growth of a firm to be an independent random variable,

$$U_t = \frac{x_{i,t}}{x_{i,t-1}} \tag{4.1.1}$$

where, x_{it} denotes the size of firm i at time t. Growth is represented as a stochastic process in continuous space and discreet time. Dropping the subscript i, Hart and Prais re-write the above equation as,

$$X_t = X_{t-1} + \varepsilon_t = \sum_{j=0}^{\infty} \varepsilon_{t-j} \tag{4.1.2}$$

where, X_t denotes log size at time t, and $\varepsilon_t = \log U_t$. It can then be seen that the model is a so-called 'random walk' in log size, and that the value of the process at time t is the sum of an infinite series of independent random shocks. According to Hart and Prais, it then follows from the Central Limit Theorem that X_t will be Normally Distributed when t is large, and hence that the size distribution of firms will have the Log-Normal distribution. Thus, the speed at which industry concentration increases is positively related to the variation of growth rates (i.e., to the variance of the random variable ε_t).

Appendix 4.2: Firm Entry/Exit: The Profitability Nexus.

Industrial organisation theory suggests profitability to be the main motivation behind firm entry/exit, such that positive profits attract future entry into industry while losses encourage exits (see, e.g. Dunne *et al*, 1988; Geroski and Jacquemin, 1985; Beesley and Hamilton, 1984; Hause and Du Rietz, 1984; and, Orr, 1974). Accordingly, a firm i 's decision to enter the industry is determined by its assessment/perception of expected post-entry profits π^{e}_{i}; and, cost of experimentation or the initial investment required to enter the market, F, (see, for example, Geroski, 1995); thus,

$$\boldsymbol{E_i = \beta\,(\pi^{e}_{i} - F) + \varepsilon_i} \qquad (4.2.1)$$

where, E_i represents entry or exit decision of firm i. For simplicity, it is assumed that F is equal for all potential entrants within the same market. From a static point of view with perfect competition among rational and homogenous agents, entry will therefore occur as long as the discounted value of expected return from investment is higher than the entry costs, i.e. if $\pi^{e}_{i} > F$. As firm entry is bound to undermine collusive tendencies within the industry – and therefore depress the incumbents' price setting power – profits slowly decline as entry increases. In equilibrium, expected post-entry profits net of entry costs would tend to be zero ($\pi^{e}_{i} - F = 0$) for all firms, and entry decisions, E_i, will only depend on stochastic variations without any systematic component. As such, in a world of static equilibrium and perfect competition – with positive entry cost but no strategic interaction – the baseline conjecture is to expect no significant differences in the average profitability and entry opportunities between firms. Competitive entry will occur as long as the discounted value of expected returns to investment is higher than the entry cost. Meanwhile the exit decisions of incumbent firms depend negatively on profitability as the likelihood to exit increases with lower (actual) profits or losses, i.e. when $\pi^{a}_{i} < F$ (where π^{a} represents 'actual' profits). However, in equilibrium, supernormal profits are competed away. Consequently, firms do not differ systematically in terms of average profitability. The start-up cost, or cost experimentation, becomes an effective barrier to entry (see, Bain, 1956; Schmalensee, 1989; Slade, 2004). Meanwhile, sustainability of firm profitability is hypothesised to depend on industry structure.

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Appendix 4.3: <u>Determination of Firms' External Finance Dependence: Spearman Rank-Order Correlation Coefficient.</u>

Despite its wide applicability, the Rajan and Zingales (1998) methodology for determining the proxy for a firms' external finance dependence has sometimes been questioned in the literature in terms of its applicability as an indicator for other countries. Specifically, the underlying assumption that the same technological reasons that make a particular industry in the USA more dependent on external finance than other industries in the USA also make this particular industry more dependent on external finance in all other countries in the world, has been contested. Notably, Demirguc-Kunt and Maksimovic (1998) argues that it is important to allow for differences among countries in the amount of external financing needed by firms in the same industry. Many developing countries, for instance, support certain industries through subsidies, for strategic reasons, such as trade or food security. These industries may be less dependent on external finance than without those subsidies.

In view of the foregoing arguments, therefore, whilst adopting the Rajan and Zingales (1998) methodology, this study instead uses data for three-digit ISIC level industries' credit as extended by the Malawi banking system for the period 1996-2002, and calculates external finance dependence ratios for Malawian firms, as the fraction of expenditures not financed with internal cash-flow from operations. Thus, *total capital expenditure* <u>minus</u> *cash-flow from operations* <u>divided by</u> *total capital expenditure*, to determine Malawian manufacturing industry-specific external finance dependence ratios**.** Next, using the Spearman's Rank-Order test, a comparison is made between the ratios calculated using Malawi banking system data and those calculated by Rajan and Zingales (1998) in order to determine if the two rankings are significantly different.

The Spearman Rank-Order Correlation Coefficient (r_s) is a measure of association between two variables, which requires that both variables be measured in at least an ordinal scale so that the objects or individuals under study may be ranked in two ordered series (Siegel and Castellan, 1988; Gibbons, 1985). The formula for the determination of the coefficient is given as follows;

$$r_s = 1 - \frac{6\left(\sum D_i^2\right)}{N\left(N^2 - 1\right)} \qquad (4.3.1)$$

where; 6 is a constant, *D* refers to the difference between a subjects' ranks on the two variables; and, *N* is the number of subjects. Given the two rankings on external finance dependence ratios, (where the lowest value is ranked as number one); first as determined by Rajan and Zingales (1998) - (RZ) and second as calculated using bank loans data for Malawi - (MW), the above formula is therefore used to investigate the relationship between the two rankings.

Manufacturing Sub-Sector	ED (rz) Ratio	*Rank (X)*	ED (mw) Ratio	*Rank (Y)*	D_i *(X - Y)*	D_i^2
Tobacco manufacturing	-0.45	1	1.53	20	-19	*361*
Leather	-0.14	2	0.15	4	-2	*4*
Footwear	-0.08	3	0.37	9	-6	*36*
Clothing and Apparel	0.03	4	0.43	10	-6	*36*
Non-Metal Products	0.06	5	0.22	5	0	*0*
Beverages	0.08	6	1.18	16	-10	*100*
Food	0.14	7	0.10	1	6	*36*
Paper Products	0.17	8	1.32	18	-10	*100*
Textiles	0.19	9	0.59	13	-4	*16*
Printing and Publishing	0.20	10	1.01	15	-5	*25*
Rubber	0.23	11	0.13	3	8	*64*
Furniture	0.24	12	0.34	8	4	*16*
Fabricated Metal	0.24	13	0.26	6	7	*49*
Industrial Chemicals	0.25	14	1.26	17	3	*9*
Wood and Sawmill	0.28	15	0.11	2	13	*169*
Transport Equipment	0.36	16	1.42	19	-3	*9*
Machinery – General	0.60	17	0.31	7	10	*100*
Other Chemicals	0.75	18	0.93	14	4	*16*
Machinery – Electrical	0.95	19	0.53	11	8	*64*
Plastic Products	1.14	20	0.55	12	8	*64*
					$\sum D_i^2$ =	*1274*

From the foregoing the value of r_s is therefore computed as follows;

$$r_s = 1 - \frac{6\left(\sum D_i^2\right)}{N\left(N^2 - 1\right)} = 1 - \frac{6(1274)}{20\left(20^2 - 1\right)} = 1 - \frac{7644}{7890} = 0.031 \qquad (4.3.2)$$

Thus, assuming the RZ rankings are denoted as X_1, X_2, X_3 …X_N, and the MW rankings represented by Y_1, Y_2, Y_3,…Y_N the Spearman Rank - Order Correlation Coefficient may be used to determine the relationship between the X's and the Y's. And, a perfect correlation between the two rankings would be considered only if the rankings are equal, that is if $X_i = Y_i$ for all '*i*'s, thus if each industry sub-sector was ranked equally in both calculations. Next, is testing the null hypothesis that the two rankings are not associated (i.e. they are independent), and the observed value of r_s differs from zero only by chance. Thus we test the hypothesis H_0: there is no association between the ranking as determined by RZ and that by MW, against the hypothesis H_1: there is association between the two rankings (two-tailed test). As the value of the calculated r_s is *0.031*, with $N = 20$ industry sub-sectors, referring to the table on Critical Values of r_s (Siegel and Castellan, 1988, Table Q, pp. 360-361), the calculated Spearman Rank-Order Correlation Coefficient lies outside the significance region. Thus, we can conclude that the two rankings are significantly different from each other. This is further confirmed through the following computer-generated test results;

Spearman EMW ERZ, stats (rho p)
Number of obs = 700
Spearman's rho = 0.0436
Test of Ho: EMW and ERZ are independent
Prob > |t| = 0.2490

This result therefore means that the two rankings may not be used interchangeably without adverse implications on our analysis. However, notwithstanding this statistical test result, there still exists some similarity between the two rankings. For instance, external finance dependence ratios for non-metal products, leather products and transport equipment exhibit no or insignificant differences in their rankings between the two calculations. Accordingly, whilst the study bases its investigations on the Malawian calculated external finance dependence ratios, the Rajan and Zingales (1998) ratios are also applied for robustness checks and completeness of the investigations.

CHAPTER 5.0: FINANCIAL LIBERALIZATION AND INDUSTRY RESPONSE HETEROGENEITY.

5.1. INTRODUCTION.

The main objective of financial liberalization policy is to induce greater flexibility for economic agents, such as investing firms, in their choice of competitive strategies through the facilitation of access to financial resources for investment. Arguably, depending on changes in the financial institutions lending behaviour, before and after financial liberalization; as well as characteristics and capabilities of individual firms within the respective industries, the outcome of these competitive strategies is bound to have implications that vary from industry to industry. Accordingly, whereby industry groups with efficient firms grow or expand by investing to enhance capabilities, productivity and quality, thereby attracting new firm entries; instead, those industries that are characterised by less efficient firms contract, and ultimately register more firm exits. This should eventually lead to changes in the configuration of the economy-wide industry structure.

This chapter adopts a disaggregated approach to investigate heterogeneity in implications of financial liberalization on industry structure. This industry-specific analysis is consistent with the argument by Sutton (1994) who contends that economists and business historians can fruitfully interact to increase knowledge of industry evolutionary processes by focusing at studies that are structured at a single industry level. The approach is further in tandem with the theory that suggests that changes in industry structure will be affected by the attributes of the individual industry in question that are operationalizable in terms of the levels of different types of sunk costs (see, for example, Ghemawat and Kennedy, 1999). This is also consistent with the argument by Dedola and Lippi (2005) that distributional effects of financial sector policy can most easily be detected by exploiting the wide disaggregated cross-industry variations[82]. Accordingly, it may therefore be argued that

[82] Implications of variations in industry-specific characteristics on the differences in response to policy changes have been reported by, for instance, Barth and Ramey (2001) in a study of the US manufacturing; and, Peersman and Smets (2002) in a study of industries in seven euro countries.

the hypothesised distributional effects of financial liberalization policies should most easily be detected by exploiting the wide disaggregated cross-industry variations. Any observed heterogeneity of experience across industry groups should therefore suggest a different industry-specific approach for future policy reforms.

As provided in the literature, financial liberalization implies increases in the role of market forces, which should, one way or another influence the level of competition, and ultimately the structure that evolves within the respective industry group. However, the precise direction of this relationship between different industry groups is not unambiguous. The effect may cause concentration to fall in industry groups where regulation had induced it to be artificially high and to rise in industry groups where it had been artificially low. Similarly, the process may induce new firm entry and/or firm exits, differently between different industry groups. According to literature, the creation of new firms is by many considered to be a crucial source of industrial development and economic growth, and its relation to the availability and cost of capital is also straightforward. However, these processes are hypothesised to be mostly dependent on underlying industry-specific characteristics; thereby suggesting that there should be differences across industries in the manner the respective industry structures develop following financial liberalization. It is further hypothesised that the precise effect of financial liberalization policy should mostly be dependent upon whether the industry is financially constrained or not, as well as the extent to which the respective firms depend on external financing for their operations. These perspectives therefore remain to be empirically investigated further in this chapter in order to inform this debate. Currently, limited empirical literature seeks to examine these issues directly using a disaggregated industry-specific approach.

5.2. CONCEPTUAL FRAMEWORK AND METHODOLOGY

5.2.1. Conceptual Background.

According to literature, implementation of financial liberalization policies should lead to the transformation of industry structures strictly through the behavioural responses from the individual industry-specifics – in respect of both incumbent firms as well as new entrants, and large-scale or small-scale – to the new competitive environment. Such policies shape market structures and allow greater scope for normal competitive processes so that industry dynamics should progressively be determined by individual industry-specific characteristics rather than external influence. And, as indicated previously in this study, changes in industry concentration and net firm entry, underpin changes in industry structure. As such, these are useful summary statistics that provide some indications of the extent to which a particular industry group differs from the competitive benchmark, following policy changes.

Arguably, whilst changes brought about by financial liberalization policy may have an impact on industry structure, in one way or another, the impact may be different across different industry groups. Generally, changes brought about by financial liberalization may allow some incumbent firms to increase their market dominance – through disproportionately increasing their share of value-added in the industry – thereby causing concentration to increase and reducing competition. In other industry groups, these very financial policy changes may erode the advantages of incumbency, resulting in increased entry of new investing firms and increasing competition. The precise impact of this policy change should therefore vary from industry to industry, and may not be charted in advance. Meanwhile, however, whilst the precise effects of financial liberalization on the real sector remain inconclusive, others like Kaminsky and Schmukler (2008) and Loayza and Ranciere (2006) also contend that the reason for this inconclusive evidence is that the effects of financial liberalization are time varying – with short run and long run effects.

Further, frictions or imperfections in the financial system suggest that uncertainty and sunk costs, among other factors, exacerbate financing constraints. By definition, according to Almeida *et al* (2004), among others, a firm is considered as financially constrained if it retains cash out of its cash flow. Financing constraints affect investments decisions of industry incumbents as well as new firms[83]. Precisely, the immediate response of potential entrants and incumbents to a relaxation of financial constraints – as financial liberalization is hypothesised to achieve – could be increased investment, employment, research and development, imports and exports activity, in

[83] See, for example, Cabral and Mata (2003); Gentry and Hubbard (2000); Cooley and Quadrini (2001); Fairlie (1999); Holtz-Eakin and Rosen (1999); and, Fazzari *et al* (1988)

various combinations. However, for each industry, the extent of this responsiveness should therefore be dependent on the industry-specific characteristics. For instance, large-scale firms where operations are relatively more external finance dependent may also have the relative advantage of growing or expanding disproportionately larger than small-scale firms that are equally external finance dependent. Similarly, the influence of financial constraints on firm entry and exit in external finance dependent industries may vary with possible entrants' access to credit markets. Overall, financial institutions lending pattern following financial liberalization is pivotal to these processes. Hence, the need to investigate the extent to which the hypothesised distributional characteristic of financial liberalization is uniformly reflected in the individual industry groups.

5.2.2. Methodology.

Empirical studies of industry structure have mostly focused on the analysis of cross-section data with industries as the unit of observation. While this approach yields general implications for industrial organisation theory, little detail on the relationships and the structure of individual industries results. As such, whilst investigating the link between financial development and industry structure using an aggregated approach might generally be acceptable in the industrial organisation literature, it may nonetheless obscure specific effects and relationships. Thus, assuming homogeneity across industry groups implies that industries respond in a similar manner to policy changes. Yet, any change process is not likely to be uniform across industrial groups. As Curry and George (1983) observes; "...our understanding of the determinants of changes in [industry structure] has not been greatly enhanced by cross-section analysis of large number of industries... More fruitful approaches are the study of individual industries and the detailed analysis of individual causes of change" (ibid, p.227). A few examples of these characteristics should perhaps suffice to elaborate on the foregoing.

In studies of industrial concentration, for instance, often overlooked is the fact that while the overall industry may not be highly concentrated at national level, many of the individual industries could be dominated by a few large chains. Further, the concentration levels in the respective industries may be a result of a different combination of factors, which may not apply uniformly across all industries. In a study of the US manufacturing industry, Mueller and Hamm (1974) observe that whereas average concentration of industries shows an increase, the average conceals much greater variation between industry groups. In fact, Blair (1972) previously analysed the same sample of US industries, and the results had shown variations between industries. George (1975) and Sawyer (1971) separately establish that, on average, the five-firm concentration ratio for the United Kingdom shows an increase between 1953 and 1963; but both observe that this development is mostly due to only two-thirds of the sample of industries, as concentration in the rest show a decline. Weiss (1983), Caswell (1987), and Nissan (1998) separately study and conclude that mergers explain the increase in aggregate industrial concentration in the United States. However, O’Neill (1996) examines the same relationship in more detail and concludes that the trends in mergers results in rising concentration in only some sectors of the economy, and that, otherwise, aggregate concentration in the US economy shows an overall decline during the period under study. This has important implications for, say, competition policies, as it sheds light on key determinants of concentration trends in particular industries.

Similar variations are observed in studies regarding firm entry and exit. Most of the literature has tended to view market participants; both new entrants as well as incumbents, as equally placed in making decisions each period to enter, exit, or remain in the industry (see, Bresnahan and Reiss, 1991). However, as Toivanen and Waterson (2005) note, this assumes that all market participants are the same, and ignores differences among firms and the related sunk entry costs. Further, as noted by Feinberg (2007) this literature assumes that all firms have access to the same technology and same input prices, so have identical costs. Yet, empirical research reveals extensive variations between firms in regard to the entry and exit patterns and determinants. As argued by Fotopoulos and Spence (1998), perceived height of entry barriers is a notion related to the special characteristics of those who perceive it; such that, not all types of firms perceive entry barriers in the same way. Dunne *et al* (1988) also find that there is significant variation in the firm entry, firm exits, and size patterns of different categories of entrants as response to changes in the market environment. Their findings provide evidence of heterogeneity in firm entry and exit patterns across industries; thereby suggesting that there are industry-specific characteristics that cause variations in firm entry and exit rates, and also in their determination. Dunne *et al* specifically observe that this variation in the intensity of the selection process by which incumbents are displaced by new entrants is explained by variation in profitability and growth, and by variation in the height of entry and exit barriers. In a study on Greek manufacturing industries, Droucopoulos and Thomadakis (1993) further find considerable differences in the effect of entry barriers for firms when size-class market shares are examined. Geroski (1991b) also report fairly unstable inter-industry variation over time on entry for seventy-nine three-digit UK manufacturing industries. Geroski compares inter-industry correlation coefficients of entry measures, including net firm entry, and establish that the proportion of total variation accounted by differences in industry specifics is 21.0 percent. Audretsch and Mahmood (1994) track through eleven thousand US manufacturing firms over a ten-year period and similarly observe that the start-up and entry size of firms varies substantially across manufacturing sectors.

Overall, the foregoing case studies – on both industry concentration as well as net firm entry – albeit not exhaustive, demonstrate that there is likely to be some heterogeneity in industry-specific characteristics which chart their responsiveness to policy changes in the market, thereby influence the structure of the industry, differently across industry groups. Consistent with these priors, therefore, there is no *a priori* basis to assume that the effect of financial liberalization on industry structure is uniform across all industry groups. Accordingly, the use of aggregated data, as observed by Levchenko (2005), and Broner and Ventura (2006), may in some cases lead to results that overshadow the most important effects of financial liberalization, and in others produce estimates that are not informative about the implications for the individual average establishment. Instead, disaggregated industry-specific approach facilitates a deeper understanding of how financial liberalization typically affects the different individual agents within the structure of an industry and across industry groups. As Weiss (1983) argues, each ‘explanatory variable’ comes with its own set of strengths and weaknesses, which might not uniformly explain changes in industry structure across all industries. More recently, a similar observation is made by Peneder (2008), on the entry and exit of firms in any industry. Peneder argues that firms may not be homogenous as they do not perceive entry barriers and other economic determinants in the same way; and therefore differ in their competitive strengths and weaknesses. This, according to Peneder, is usually demonstrated, for instance, when competitive entrants displace incumbent firms that do not meet the elevated market standard.

Accordingly, considering the obvious differences that may exist across industries, the study focuses its investigations on changes in the individual industry structures. Arguably, such a disaggregated approach should facilitate the exploration of specificities of individual industry groups. This should particularly facilitate testing of whether financial liberalization induces higher level of competition – through a reduction in concentration; and, whether this process induces the creation of new firms – more in some industries and less in others. The approach should also facilitate an industry-specific investigation on whether financial liberalization eases financing constraints; particularly more in those industries where firms are relatively highly dependent on external financing than in those that rely more on internally generated cash flow, as suggested by Rajan and Zingales (1998).

5.3. A FRAMEWORK FOR EMPIRICAL ANALYSIS.

5.3.1. Model Specifications.

The study, as per the foregoing, first examines heterogeneity in the effect of financial liberalization on the evolution of industry structure, *viz*; industry concentration and net firm entry – in aggregated form, and then followed by disaggregated industry specific examinations. Next, the study investigates further cross-industry heterogeneity by examining the financial liberalization effect on financing constraints for the firm, particularly with respect to their extent of external financing dependency.

The empirical investigation therefore involves testing of whether there is evidence of any distributional effects of financial liberalization on industry structure; and, in particular, whether such effects are uniform across all different industry groups. A way to test this is to augment an industry structure regression model – where, the dependent variable is either industry concentration or net firm entry, as measures of industry structure – with an interaction term between a measure of financial development and a financial liberalization dummy. The financial liberalization effects are therefore hypothesised to give results that vary from industry to industry.

Determination of the foregoing heterogeneity is expected to be achieved by initially establishing an all encompassing sector response to policy changes using an aggregated economy-wide approach, followed by a specific focus on single-industry investigations for twenty industry groups, with each examined over a 35 year period. Subsequently, the aggregated result forms a benchmark against which individual industry groups are measured in order to establish policy response heterogeneity across various industry groups, following financial liberalization.

The following model structures are therefore used in this chapter;

$$CR_{it} = \beta_0 + \beta_1 FIN_t + \beta_2 \left(FIN \times FL\right)_t + \zeta_j X_{ijt} + \omega_{it} \tag{5.1}$$

$$NFE_{it} = \beta_0 + \beta_1 FIN_t + \beta_2 \left(FIN \times FL\right)_t + \delta_j X_{ijt} + \mu_{it} \tag{5.2}$$

where, CR_{it} and NFE_{it} represent industrial concentration and net firm entry, respectively; at time t in industry i, which is now hypothesised to be a function of financial development FIN_t, an interaction term between financial development and the financial liberalization dummy $\left(FIN \times FL\right)_t$, as well as a number of explanatory variables, X_{ijt}, pertaining to the fundamentals in the respective models, and as specified earlier in the study; whilst ω_{it} and μ_{it}, are the usual error terms.

5.3.2. Estimation Techniques.

5.3.2.1. Evolution of Industry Structure.

The impact of financial liberalization on industry structure dynamics may take effect both in the short-run as well as in the long run, particularly as firms in the respective industry groups adjust to new opportunities and risks. Accordingly, the underlining notion of equilibrium in this approach is intertemporal, as the path of the equilibrium process is influenced not only by the current value of fundamental determinants but also by expectations about the future evolution of these variables. Besides, as observed by Kaminsky and Schmukler (2008) among others, financial liberalization is followed by pronounced 'booms' and 'crashes' in the short-run; thereby supporting the models in which financial liberalization triggers risky behaviour and excesses in the financial market. Contrastingly though, Kaminsky and Schmukler (2008) find that in the long run, financial cycles become less pronounced; thus, the financial institutions and the overall financial market improve and tend to stabilise. Similarly, Loayza and Ranciere (2006) establish that financial liberalization can both generate short-run instability and higher long-run growth. These characteristics have some effect on financial institutions' lending behaviour, with implications on the real sector of the economy. Accordingly, by focusing on the effects at different time horizons, the study sets the basis for an explanation of the apparent contradictory effects of financial liberalization on industry structure. Besides, by distinguishing the effects based on time horizons, the approach should provide an additional dimension for examining heterogeneity between the industry groups. As indicated earlier, there is no reason to expect that the effect of financial liberalization policy on industry concentration or net firm entry should be the same or even similar in different industry groups. Accordingly, it is perceived important to employ an estimation methodology that incorporates slow adjustment and allows for different short-run and long run effects.

In the literature, two econometric techniques that account for sectoral heterogeneity: the Random Coefficient (RC) and the Mean Group (MG) models, by Swamy (1970) and Pesaran and Smith (1995), are initially examined. These two estimators differ only on the basis of their assumptions on the nature of heterogeneity – whilst the MG estimator assumes that sector-specific deviations from the mean are deterministic, the RC estimator assumes they are stochastic. Thus, the basic concept of the RC estimator is that the intercepts and the slopes of the regressions are random variables. As a result, MG implements a simple arithmetic averaging of sector specific estimates, whereas RC requires a generalized least squares procedure that optimally accounts for the stochastic nature of heterogeneity. Hsiao and Pesaran (2004, p.12) shows that the two estimators are algebraically equivalent in the limit. This suggests that analytical results drawn on the basis of deterministic heterogeneity, become valid in the limit, even if heterogeneity is actually stochastic (see, *Appendix* 5.1 for more).

Nonetheless, considering the importance of heterogeneity, Hsiao and Pesaran suggest that – as the difference between these estimators is akin to that between fixed effect and random effect, and can be tested accordingly – a Hausman (1978) type test of the difference between MG and RC estimators be done, particularly where both *N* and *T* are sufficiently large, such as is the case in this study – in order to determine which of the two is consistent and efficient. However, in reported test results on whether MG or RC provides a better representation of data, the joint Hausman test statistic is 30.21*(0.000)* and is distributed $\chi^2(6)$, and therefore the MG estimator is preferred[84]. Following Pesaran and Smith (1995) and Pesaran, Smith, and Im (1996), the Mean Group estimator is derived from the fully heterogeneous coefficient model, which imposes no cross-industry parameter restrictions and can be estimated on an industry-by-industry basis, provided that the time-series dimension of the data is sufficiently large. When the cross-industry dimension is also large, the mean of short- and long-run coefficients across industries can be consistently estimated by the unweighted average of the individual industry coefficients, which is the MG estimator[85].

Accordingly, following others in the literature (see, for example, Law, 2007; Byrne and Davis, 2005; Hogan, 2004; Asteriou and Monastiriotis, 2004), using the Mean Group (MG) estimator as the basic econometric technique, the study first estimates an encompassing baseline model of short-run and long-run effects of financial liberalization on industry structure using a panel of cross-industry and time series as observations. Next, since this econometric methodology allows the industry-by-industry estimation of both short-run as well as long-run effects of financial liberalization on industry structure, the study analyses the industry-specific

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[84] Besides the Hausman test, the Random Coefficient estimator is not preferred on the grounds that it does not provide for dynamic operators in its estimation; yet, both industry concentration as well as net firm entry are dynamic processes. Accordingly, static specifications would be erroneous as they are unlikely to capture essential features of the dynamic processes (see, Hsiao and Pesaran , 2004; Pesaran and Smith, 1995)

[85] Pesaran and Smith (1995), show that the Mean Group estimator gives consistent estimates of the true cross-industry average effect. Further, Pesaran *et al* (1996) conduct Monte Carlo simulations and find that the finite sample bias is smaller for Mean Group estimator for all sample sizes (they apply a panel of the size *N*=24 and *T*=32, which they describe as ‘quite large’, ibid. p.1; which is more or less the same as the sample size used for this study, *N*=20, *T*=35).

relationships in order to establish the extent of response heterogeneity. Apart from examining the behaviour of each variable in the respective industry groups following financial liberalization, this also involves the use of results from the aggregated economy-wide estimates as a benchmark, and subsequently comparing the dispersion of each explanatory variable from this benchmark. Further, the investigation focuses on the financing constraints reducing effects of financial liberalization, particularly whether this hypothesis is uniformly applicable across industry groups. Arguably, this approach should facilitate determination of response heterogeneity across industry groups following financial liberalization.

The empirical framework to evaluate the effect of financial liberalization on industry structure is based on a dynamic model of the form;

$$y_{it} = \rho_i y_{i\,(t-1)} + x'_{it}\beta_i + \mu_{it} \qquad i = 1, 2, \ldots, N; \quad t = 1, 2, \ldots T \tag{5.3}$$

where, x_{it} is a $K \times 1$ vector of exogenous variables, ρ_i is the coefficient on the lagged dependent variable, and the error term μ_{it} is assumed to be independently, identically distributed over *t* with mean zero and variance σ_i^2, and is independent across *i*. Next, let $\theta_i = \left(\rho_i, \beta'_i\right)'$, where it is assumed that θ_i is independently distributed across *i* with;

$$E\left(\theta_i\right) = \bar{\theta} = \left(\bar{\rho}_i, \bar{\beta}'\right)' \tag{5.4}$$

$$E\left[\left(\theta_i - \bar{\theta}_i\right)\left(\theta_i - \bar{\theta}\right)'\right] = \Delta \tag{5.5}$$

Rewrite $\theta_i = \bar{\theta} + \alpha_i$, Equations (5.4) and (5.5) are equivalent to;

$$E\left(\alpha_i\right) = 0, \;\; E\left(\alpha_i \alpha'_j\right) = \begin{cases} \Delta & if \;\; i = j, \\ 0 & if \;\; i \neq j. \end{cases} \tag{5.6}$$

Pesaran and Smith (1995) and Hsiao and Pesaran (2004) indicate that whilst maintaining the assumption that $E\left(\alpha_i\, x'_{it}\right)=0$, it may no longer be assumed that $E\left(\alpha_i\, y_{i(t-1)}\right)=0$. Through continuous substitutions,

$$y_{i\,(t-1)} = \sum_{j=0}^{\infty}\left(\bar{\rho}+\alpha_{i1}\right)^{j} x'_{i\,(t-j-1)}\left(\bar{\beta}+\alpha_{i2}\right)+\sum_{j=0}^{\infty}\left(\bar{\rho}+\alpha_{i1}\right)^{j}\mu_{i\,(t-j-1)} \tag{5.7}$$

It follows that $E\left(\alpha_i\, y_{i(t-1)}\right)\neq 0$.

Pesaran and Smith (1995) observe that the violation of the independence between the regressors and the individual effects α_i implies that pooled least squares regression of y_{it} on $y_{i(t-1)}$ will yield inconsistent estimates of $\bar{\theta}$, even for T and N sufficiently large. Pesaran and Smith note that as $T\rightarrow\infty$, the least squares regression of y_{it} on $y_{i(t-1)}$ and x_{it} yield a consistent estimator of $\theta_i, \hat{\theta}_i$. They suggest a Mean Group estimator of $\bar{\theta}$ by taking the average of $\hat{\theta}_i$ across *i*,

$$\hat{\bar{\theta}}_{MG} = N^{-1}\sum_{i=1}^{N}\hat{\theta}_i \tag{5.8}$$

When the regressors are strictly exogenous and the error terms are independently distributed, an unbiased estimator of the covariance matrix of $\hat{\bar{\theta}}_{MG}$ is computed as;

$$Cov\left(\hat{\bar{\theta}}_{MG}\right) = N^{-1}\,\hat{\Delta} \tag{5.9}$$

where,

$$\hat{\Delta} = \frac{1}{N-1}\sum_{i=1}^{N}\left(\hat{\theta}_i - N^{-1}\sum_{j=1}^{N}\hat{\theta}_j\right)\left(\hat{\theta}_i - N^{-1}\sum_{j=1}^{N}\hat{\theta}_j\right)' \tag{5.10}$$

Pesaran and Smith (1995) and Pesaran *et al* (1996) show that the Mean Group estimator is consistent when both N and $T\rightarrow\infty$. Further, Pesaran *et al* (1999) and Pesaran and Shin (1999) demonstrate that this estimator yields super-consistent estimators of the long-run parameters even when the regressors are I (1).

Notably, the main hypothesis of the Mean Group estimator is to allow the slope coefficients to vary across cross-section units (for example, industry groups, in the case of this study) both in the short-run as well as in the long-run. However, an alternative approach due to Pesaran *et al* (1999) is the Pooled Mean Group (PMG) estimator, which can be thought of as weighted average of individual group estimators, with weights proportional to the inverse of their variance. Unlike the MG estimator, the PMG estimator only allows for heterogeneous short-run coefficients but constrains long-run parameters to be the same across units, i.e. $\theta_i = \theta$. Thus, the PMG estimator averages the short-run industry parameters and pools the long-run parameters, thereby combining the efficiency of the pooled estimation while avoiding the inconsistency problem of pooling heterogeneous dynamic relationships. Nonetheless, for the analysis in this chapter, the advantage of using the MG estimator and not the PMG estimator is that it permits for heterogeneous short-run as well as long-run adjustments across industry groups to changes following financial liberalization. It is probably unreasonable to assume that, in the long-run, the dynamic effects of industry concentration or net firm entry are the same across industry groups. Besides, Blackburne and Frank (2007), amongst others, note that the hypothesis of homogeneity of the long-run policy parameters in PMG estimation cannot be assumed *a priori*. This, according to Blackburne and Frank, is due to the fact that, often the hypothesis of slope homogeneity is rejected empirically. Accordingly, in PMG, the 'pooling' across industries yields efficient and consistent estimates only when the restrictions are true. Otherwise, if the true model is heterogeneous, the PMG estimates are inconsistent; the MG estimates are consistent in either case. The poolability restriction of the long-run parameters is therefore tested using a Hausman type test (Hausman, 1978) applied to the difference between the MG and PMG estimators; and the calculated joint Hausman statistic rejects the hypothesis of homogeneity in the long-run parameters (see *Appendix* 5.2). For this study, therefore, the MG estimator is preferred. As expected, both industry concentration and net firm entry are long-term phenomena. Further, the direct effects of financial liberalization as well as related shocks take some time to make any impact. Accordingly, it would only make sense that the results also measure long-run heterogeneity – hence, the MG estimator.

Next, since this econometric methodology – the MG estimator – allows the industry by industry estimation of both short-run as well as long-run effects of financial liberalization on industry structure, the study analyses the industry-specific relationships in order to establish the extent of response heterogeneity. The behaviour of each variable in the respective industry groups is therefore examined. Accordingly, as a specific test for heterogeneity, the study also examines the degree of dispersion across industries by estimating how far each of the estimated coefficients is from the mean. Thus, following Boyd and Smith (2000), the study calculates the standardised coefficient score (*Z*-Score) given the value of the coefficients as determined by the Mean Group estimator. The following is therefore estimated for each variable;

$$Z(\beta) = \frac{(b_i - \mu_\beta)}{s(b_i)} \tag{5.11}$$

where, $\mu_\beta = \frac{b_i}{N}$, $s(b_i)^2 = \frac{(b_i - \mu_\beta)^2}{(N-1)}$;

thus, $Z(\beta)$ measures whether the variable coefficient is an outlier in the distribution of all the b_i. Standardised values greater than 1 therefore indicate a wide dispersion of individual industry values relative to the common value suggested by the mean group estimator. Thus, outliers are shown, either if they are more than one standard deviation from the mean. Where the standard deviations are large, this should indicate an economically significant divergence. Increased dispersion from the mean should therefore suggest presence of a significant degree of heterogeneity between the industries.

5.3.2.2. Financing Constraints.

In an attempt to unravel further the effects of financial liberalization on industry, the study next examines the extent to which this policy ameliorates firms' financing constraints. As established in the literature, there exists a strong relationship between firms' financial health and investment (see, for example, Hubbard, 1998). And, according to Love (2003), firms' financing constraints are generally attributed to capital market imperfections, stemming from such factors as asymmetric information and incentive problems, which result in difference between the costs of internal and external financing. Love (2003) therefore draws, within the financing constraints theory, the factor $\Theta_t = \left(\dfrac{1+\lambda_{t+1}}{1+\lambda_t} \right)$, which is the relative shadow cost of external finance during period *t* and period *t +1*. Thus, Θ_t is a function of the stock of liquid assets, especially stock of cash; where, λ_t is the shadow cost of external financing in period *t*, reflecting information- or contracting-related frictions that are exogenous to the firm (see, for example, Jensen and Meckling, 1976; Myers and Majluf, 1984; Hart, 1995). If the shadow cost of external funds is higher in period *t* than it is in period $t+1$ (i.e. $\lambda_t > \lambda_{t+1}$), then $\Theta_t < 1$ which makes current period funds more expensive to use than the next period funds, thereby inducing the firm to postpone or even reduce its investment. In this case the firm is said to be 'financially constrained', and Θ_t is the (degree of) financial constraint. Thus, in a perfect capital market, $\lambda_t = \lambda_{t+1} = 0$ for all *t* and hence $\Theta_t = 1$ and the firm is never constrained. Love (2003) contends that with capital markets imperfections, λ_t depends on a vector of state variables and other firm- and/or industry-specific characteristics, all of which may influence a firms' financing constraints. Gilchrist and Himmelberg (1998) argue that a change in 'financials' and 'fundamentals' should influence firms' financing constraints.

Accordingly, following several previous studies[86], in this study, it is argued that financial liberalization should reduce firms' financing constraints – as this will lead to an improvement in the functioning of financial markets and allow for easier access to external funds for firms – thereby result in an increase in cash stock for investment. As indicated earlier in this study, the presumption of the orthodox view on financial liberalization suggests that freeing interest rates from controls that keep them artificially low, would increase the supply of loanable funds, and alleviate problems of credit constraints (see McKinnon, 1973; Shaw, 1973). In turn, this process should induce more competition in the industry through the provision of equitable growth opportunities as well as creation and entry of new investing firms, particularly in those industry groups where firms are relatively more dependent on external financing

[86] See, for example, Laeven (2003); Galindo, Schiantarelli and Weiss (2001); Bekaert, Harvey, and Lundbald (2005); and, Henry (2000b).

for their operations, as argued by Rajan and Zingales (1998). Nonetheless, whatever the macro effect may be, it is not conclusive that financial liberalization will necessarily relax financing constraints for all firms. Arguably, even after the elimination of administrative constraints, information problems remain and it is possible that certain firms may face a rise in the premium they pay for external finance. Further, as argued earlier in the study, apart from increasing cost of capital, there are tendencies by the financial institutions to credit ration and only facilitate credit access to a selected client base; particularly those with whom they have longstanding relationships. In view of the inconclusiveness of this debate therefore there is a need to investigate further the effects of financial liberalization on financing constraints in order to inform the debate.

Following Love (2003), the financing constraint factor is parameterised as a linear function of the cash stock, and presented as;

$$\Theta_{it} = \alpha_{0i} + \alpha_n Cash_{i\,(t-1)} \tag{5.12}$$

where, α_{0i} is an industry-specific level of financing constraint, which enters in the industry fixed effect, α_n is the industry-specific cash coefficient, and $Cash_{i(t-1)}$ is cash stock (lagged one period, since decisions for period *t* investment is dependent on how much cash a firm has before embarking on the investment). This, according to Love (2003), has a direct effect on investment in the presence of asymmetric information. It allows firms to undertake projects, which they would pass if they do not have any internal funds.

However, in this study, the cash coefficients $\hat{\alpha}$ are instead replaced with the industry-specific coefficients for the interaction term between the financial development indicator and the financial liberalization dummy $(FIN \times FL)$, obtained in the first-stage regression estimations of Equations (5.1) and (5.2), for each industry (respectively presented in Table 5.3 and Table 5.6, below). Next, these industry-specific coefficients are regressed on industry-specific index of financial dependency, using Malawi data but based on the methodology by Rajan and Zingales (1998). This industry-specific measure represents the extent to which firms in industry '*i*' will rely on financial resources outside their own internally generated cash flow. And, as argued by Rajan and Zingales (1998), this measure varies from industry to industry, since, due to technological reasons, industries differ in their dependence on external finance. In this study this concept is used to determine industry-specific level of financial development and to distinguish between industry groups with respect to their degree of financial dependence. In this framework, the industry’s sensitivity of investment to the level of internal funds – thus, the industry’s financing constraint – is allowed to vary with the industry-specific ratio of external finance dependency (*FDep*). The following model is therefore estimated;

$$\hat{\alpha}_i = b_0 + b_1 FDep_i + \varepsilon_i \tag{5.13}$$

The main hypothesis now is that, with financial liberalization, industries whose firms are relatively more external finance dependent should become less constrained financially. The following results are therefore expected: (i) b_1 □ 0, when the coefficients applied are from the industrial concentration model results; and, (ii) b_1 □ 0 when the coefficients applied are from the net firm entry model results. Thus, it is expected that the first stage regression estimates of the cash coefficients, $\hat{\alpha}_i$ from the industry concentration model and the net firm entry model, are negatively and positively related, respectively, to the index of external finance dependency $FDep_i$. The second-stage regressions in Equation (5.13) are therefore estimated by OLS; separately, for the industry concentration model and the net firm entry model.

5.3.3. Data Specification.

The main requirement to implement the mean group (MG) estimator is to have a large *N*, large *T* panel (see, Hsiao and Pesaran, 2004; Pesaran *et al*, 1996; Pesaran and Smith, 1995). Accordingly, this chapter use three-digit industry data for twenty industrial groups of the Malawian manufacturing sector observed annually over a 35-year period (1970-2004). Thus, instead of averaging the data, the study estimates short-run and long-run effects using a panel of data with annual observations, where, *N*=20 and *T*=35; thus, 700 observations. The first estimates use aggregated annual panel data to obtain the average economy-wide results, followed by disaggregated estimation of the twenty individual industrial groups. As such, the data from which the twenty individual industry results are obtained cover 35 observations of each variable. The individual industry results are therefore obtained within a panel context. The STATA version 9.2 command for estimating dynamic heterogeneous panels, *xtpmg* (applying the *Mean Group* mode*)*; created by Blackburne and Frank (2007) is used to conduct the regression estimates.

In order to determine whether the model specifications are statistically adequate, the time-series properties of the data are also investigated, with the results presented in Table.5.1. The IPS test for unit roots in panel data indicates that the variables with cross-section as well as time dimension, *viz*; industry concentration, net firm entry, price-cost margins, industry growth, and industry share, are all stationary. The test rejects unit root at the 1 percent level of significance in net firm entry and price cost margins; and, on industry concentration and industry share, the unit root test is rejected 5 percent; whilst on value-added growth it is rejected at 10 percent. Further, the ADF unit root test for single time series indicates that the growth in market demand, and imports intensity as well as the growth in the financial development proxy are all stationary, at 5 percent; whilst exports intensity is stationary at 1 percent. These results therefore suggest that inferences resulting from estimation of the models are not spurious. The variable definitions and data sources are as provided in the previous chapter of this research study.

Table 5.1: Tests for Non-stationarity of Series

Variable	**Level**	**First Difference**	**Test Type**
CR_{it}	-1.884**	-3.504***	IPS
NFE_{it}	-2.730***	-4.585***	IPS
PCM_{it}	-2.490***	-3.699***	IPS
GR_{it}	-1.797*	-3.594***	IPS
SH_{it}	-1.962**	-3.769***	IPS
MKD_t	-3.518**	-4.726***	ADF
MX_t	-5.499***	-7.302***	ADF
MM_t	-3.085**	-4.103***	ADF
FIN_t	-3.029**	-3.965***	ADF

Note: IPS indicates the Im-Pesaran-Shin test (Im *et al*., 2003) for unit roots in panel data. ADF is the Augmented Dickey-Fuller test (Dickey and Fuller, 1979) for unit roots in single time series. For each test the null hypothesis is non-stationarity, and the alternative is that the variable was generated by a stationary process. The panel data test statistics are *z* distributed under the null. ***, **, * indicate significance levels of 1, 5, and 10 percent, respectively.

5.4. EMPIRICAL RESULTS ON EVOLUTION OF INDUSTRY STRUCTURE.

5.4.1. Overall Results Assessment.

Tables 5.2 and 5.5 below show respective results on the aggregated economy-wide estimations of long- and short-run parameters linking financial liberalization, financial development, and other industry structure determinants – for the industry concentration model as presented in Equation (5.1), and the net firm entry model as depicted in Equation (5.2). Further, as explained in the section on econometric methodology, the study test the null hypothesis of long-run slope homogeneity through the Hausman (1978) test, based on the comparison between Mean Group and the Pooled Mean Group estimators. The Hausman statistic, which is distributed χ^2, and the corresponding *p*-value, for all the coefficients of the explanatory variables jointly, is 27.03 (*0.0001*) for the industry concentration model, and 21.97 (*0.0012*) for the net firm entry model (see, *Appendix* 5.3(a) and (b)). Hence, the null hypothesis of homogeneity of slopes in the long-run is rejected for all variables jointly, in both models. Thus, the Mean Group estimator – the consistent estimator under the null hypothesis – is preferred. Accordingly, in both models, analysis focuses on those parameters obtained with the Mean Group estimator. However, for comparison purposes, the study also presents the results obtained with the Pooled Mean Group estimator.

Overall, except for the coefficient of the main variable of interest $\left(FIN \times FL\right)$, the Mean Group estimation results reveal that the signs of most of the coefficients in both models are consistent with theory. Further, as presented in Table 5.3 for the industry concentration model and Table 5.6 for the net firm entry model, the results exhibit considerable heterogeneity in the patterns across industries in both models. This may be observed by considering the differences across the industry groups, in the size of and signs on the coefficients, as well as in the different levels of significance, both in the short-run as well as in the long-run. Generally, the results show that for most of the industry groups, the estimated variables in the respective models contribute significantly to the short run as well as long run evolution of industry concentration and net firm entry; albeit, differently for different industry groups and time spans.

Further, whilst some of the variables are not statistically significant determinants of industry concentration or net firm entry in the aggregated results, they turn out to be statistically significant determinants of these industry structure measures in most of individual industry groups when the results are disaggregated. More detailed heterogeneity is evident in the analysis of dispersion of respective variable coefficients from the mean, as represented in Table 5.4 for the industry concentration model, Table 5.7 for the net firm entry model.

5.4.2. Industry Concentration.

Table 5.2 shows that, in the long-run, the coefficients for both the industry share *SH* variable, and industry value-added growth *GR* variable have negative signs and are statistically significant determinants of industry concentration. Similar results are observed in the short-run. Meanwhile, the international trade variables, manufactured imports *MM* and manufactured exports *MX* show no relationship with industry concentration, in the long-run. However, the short-run, the coefficient for the manufactured imports variable turns out to be a statistically significant determinant of industry concentration, with a positive sign; thereby suggesting that the effect of imports on competition in the industry is mostly in the short-run. These are generally standard results from the empirical industry organisation literature, and it is reassuring that this study is able to reproduce them using this methodology.

Most important for this study, the results show that the interaction term between the financial development indicator and a financial liberalization dummy $\left(FIN \times FL\right)$ is positively and significantly linked to industry concentration both in the short-run as well as in the long-run. Notably, the coefficient for the financial liberalization interaction term $\left(FIN \times FL\right)$ variable is a statistically significant determinant of industry concentration, both in the short- and long-run. Interestingly, the Mean Group estimation results in Table 5.2 are not significantly different from those obtained through the Pooled Mean Group estimator; thereby confirming the robustness of the findings. These findings further confirm the results reported earlier in this study (in Chapter 4) that, on average, and contrary to theoretical predictions, industry concentration increased following financial liberalization. Thus, contrary to the claims that deregulation creates a more competitive environment, thereby lowering industry concentration, this is not supported by the results of this study, as the results in Table 5.2 provide evidence that industry concentration increases following financial liberalization – and this effect is evident both in the short- and log-run. Nonetheless, as argued by Weiss (1983) average results such as these are bound to obscure variations between industry groups due to differences in industry-specific characteristics. A disaggregated approach is therefore necessary.

Table 5.2: Long-Run and Short-Run Effect of Financial Liberalization on Industry Concentration.

Variables: Dependent Variable – Industry Concentration ***(CR)***	**Mean Group**		**Pooled Mean Group**	
	Coefficient	*Std. Error*	*Coefficient*	*Std. Error*
Long-Run Coefficients:				
SH	**-0.213*** **	**0.067**	**-0.261*** **	**0.025**
GR	**-0.182*** **	**0.052**	**-0.272*** **	**0.024**
MM	-0.010	0.012	**-0.025*** **	**0.008**
MX	0.022	0.022	0.004	0.003
FIN	-0.028	0.020	-0.002	0.002
$FIN \times FL$	**0.152*** **	**0.026**	**0.149*** **	**0.012**
Error-Correction Coefficient (ϕ_i)	***-0.668*** ***	***0.044***	***-0.476*** ***	***0.056***
Short-Run Coefficients:				
$\Delta\ SH$	**-0.042** **	**0.019**	**-0.069*** **	**0.020**
$\Delta\ GR$	**-0.075*** **	**0.018**	**-0.086*** **	**0.016**
$\Delta\ MM$	**0.221*** **	**0.020**	**0.193*** **	**0.021**
$\Delta\ MX$	-0.005	0.010	-0.001	0.008
$\Delta\ FIN$	0.002	0.004	-0.010	0.009
$\Delta\ FIN \times FL$	**0.046*** **	**0.009**	**0.065*** **	**0.009**
Hausman Test (χ^2) *statistic,* p*-value*	27.03 (0.0001)			

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1.0, 5.0, and 10.0 percent levels, respectively. Hausman test of no difference between Mean Group and Pooled Mean Group estimates (*see Appendix* 5.3a*)*

Next, focusing on the industry by industry estimation results, Table 5.3 shows that the long-run coefficients of the share of the industry in total manufacturing sector *SH*, are negative and statistically significant determinants of industry concentration in thirteen of the twenty industry groups; except for leather, footwear, wood and sawmill, and pharmaceuticals, where this variable is not a significant determinant of industry concentration. However, the negative relationship suggests that in the thirteen industries, new entrants may steal market share from the leading firms through market expenditure on, for instance, advertising (see, for example, Kambhampati, 1996, pp.55-59; and, Ratnayake, 1999, p.1054, on similar findings). In fact, this result is consistent with the hypothesis that the larger the share of an industry, the lower the entry barriers (Jacquemin *et al*, 1980, p.134). Significant presence of relatively large multinationals and a long history of being granted monopoly rights characterise the tobacco manufacture, clothing and apparel, and transport equipment industries; hence, the positive and significant coefficients of the industry share variable in these industry groups. And, as expected, the short-run coefficients are not significant in the majority of the industry groups (except in furniture, industrial chemicals, and general machinery industries), presumably because the effect of expanding or contracting industry shares is likely to take some time before making any impact on concentration levels. Similarly, the long-run coefficient for the industry value-added growth variable *GR* has negative signs as hypothesised, and is statistically significant in all, except in the tobacco manufacturing and footwear industries. However, in the short-run, the coefficient for the industry growth variable is a statistically significant determinant of industry concentration only in four of the twenty industry groups – showing a negative relationship in food processing, fabricated metal, and general machinery, as hypothesised in the theory; but, a positive relationship in industrial chemicals. The result of a positive relationship between growth in industry value-added and concentration is more in line with Levy (1985) who hypothesise that the growth effect on concentration could be positive if the large incumbent firms in the industry can expand rapidly to expected demand growth. As expected, with the high capital requirements in the three industry groups, prospecting investors may only be able to exploit new opportunities in the market in the long-run. Meanwhile the incumbents take advantage of such situations and expand further; thereby increasing concentration in the short-run.

Contrary to the insignificance of the foreign trade variables in the aggregated long-run results reported in Table 5.2, these variables show to be statistically significant determinants of industry concentration in most individual industry groups; albeit with mixed effects. For instance, the long-run coefficient for the imports intensity, *MM*, variable has the expected negative sign and is a statistically significant important determinant of industry concentration in four industry groups (leather, furniture, non-metal and general machinery industries); thereby suggesting that import competition reduces concentration in these industry groups by acting as an actual or potential threat to domestic monopoly. However, again in the long-run, results show the coefficient for the same imports intensity variable to have a positive sign in four of the twenty industry groups (wood and sawmill, industrial chemicals, pharmaceuticals, and transport equipment industries), thereby suggesting that imports intensity influences an increase in concentration in these industries. This mostly arises from the fact that the dominant firms in these industries are also the major importers of the products and can therefore still exercise monopoly power. This is consistent with the findings by Pickford (1991) in a study for New Zealand manufacturing industries.

Similarly, the coefficient for the exports intensity variable, *MX*, has different signs in different industries, which also show variations between the short-run and the long-run. Generally, however, the coefficients for the exports intensity variable has a negative sign and is also a statistically significant determinant of industry concentration in the majority of industry group, both in the short-run as well as in the long-run. This result is consistent with the findings by Zhao and Zou (2002) on Chinese manufacturing sector, and Koo and Martin (1984) on US manufacturing. Notably, the bulk of Malawi's manufactured exports are made through structured trade protocols – for example, the African Growth Opportunities Act (AGOA) of the USA (textiles exports), the 'Everything-But-Arms' (EBA) of the EU (any commodity), ACP/EU (sugar) – all of which demand adherence to set standards and codes (see, for example, World Bank, 2004b), and mostly facilitated by specially designed structures by government, such as the Malawi Export Promotion Council, the Export Processing Zones, etc. Hence, the negative and statistically significant relationship between exports intensity and industry concentration in most of the Malawian manufacturing industry groups is explained through these arrangements[87].

Turning to the variables of interest; first, financial development, *FIN*, and next the interaction term between financial development and the financial liberalization

[87] Through government intervention, these structured trade protocols provide guaranteed export markets for a broad range of export commodities that facilitate wide participation; thereby inducing more competition.

dummy, $(FIN \times FL)$, the results across the twenty industries in Table 5.3 show different effects in different industry groups and time spans. Notably, in the majority of the industry groups, both in the short-run as well as in the long-run, the coefficient for the financial development variable has a negative sign, as hypothesised in the theory, suggesting that financial development has distributional effects on the industry. This notwithstanding, the variable is not statistically significant in explaining industry concentration in most of the industry groups, and even where there is evidence of some effect, it is not persistent. For instance, in some industries (food processing, wood and sawmill, printing and publishing, industrial chemicals, pharmaceuticals, general machinery), the results show that the financial development variable *FIN* is a statistically significant determinant of industry concentration only in the short-run; while in others (tobacco manufacturing, footwear, plastic, non-metal, transport equipment), the effect in the respective industries is noted in the long-run only. It is only in the electrical machinery industry where the effects of financial development remain to be a statistically significant determinant of industry concentration, regardless of the time span.

Variations in industry responsiveness to financial development are particularly observed when the financial development variable is interacted with the financial liberalization dummy; which is specifically designed to capture the effects of the financial reforms on competition in the manufacturing industries. The industry concentration equation estimation results show that the interaction term $(FIN \times FL)$ is a statistically significant variable in explaining industry concentration in the majority of the industries; albeit differently in different industry groups and time spans. Of significance to this study is the finding that whilst the short-run results show the financial liberalization interaction term variable to be influencing an increase in industry concentration in five of the industries; in the long-run results, the coefficient for this variable has a positive sign and is a statistically significant determinant of industry concentration in fourteen of the twenty industry groups. Except for four industry groups (food processing, printing and publishing, general machinery, electrical machinery) where the coefficient for the interaction term $(FIN \times FL)$ is significant and has the same sign both in the short-run and long-run, in the rest of the industry groups, there are marked variations between industries as well as within the respective industry groups, in terms of the direction of relationships and timeframe. This suggests that, consistent with the observations by Kaminsky and Schmukler (2008) and also Loayza and Ranciere (2006), financial liberalization has time varying implications, which also differ between the different industry groups, presumably due to the widespread degree of heterogeneity in the underlying parameters. Some industries with a positive coefficient for $(FIN \times FL)$ in the long-run tend to have a negative coefficient in the short-run, and *vice-versa*. Notably, the quantitative effects of the financial liberalization interaction term on the respective industry groups are in all cases, non-uniform, suggesting variations both within as well as across industry groups. For instance, among those industries where the financial liberalization interaction term $(FIN \times FL)$ is a significant determinant of industry concentration, the magnitude of the long-run coefficient vary between -0.077 for paper and printing , to 0.798 for the transport equipment industries. Similar quantitative variations may be observed in the short-run coefficients for this variable, which range between -0.366 for transport equipment, and 0.563 for the fabricated metal industry.

Following a methodology by Boyd and Smith (2000) and Athreye and Kapur (2006), and as specified under Equation (5.11), Table 5.4 details considerable heterogeneity in the patterns across industries. The results in this table show the extent of heterogeneity through the dispersion of the values of the variable coefficients relative to the group average as presented in Table 5.2. Standardised values greater than 1 (shown in bold typeface) indicate a wide dispersion of individual industry values relative to the common value suggested by the Mean Group estimator. For each coefficient at least two industries are outside the range indicated by the Mean Group Estimator. Accordingly, the average long-run coefficient for the financial liberalization interaction term $(FIN \times FL)$ is 0.152, which is higher than that for the short-run, recorded at 0.046. This suggests that the full impact of financial liberalization on industry concentration will be more in the long-run than in the short-run. Notably, three and five industry groups are more than one standard deviation from the mean, in the short-run and long-run, respectively. Further, it is found that industries that deviate from the mean are not necessarily the same for each coefficient, thereby confirming the extent of heterogeneity between the industry groups.

Table 5.3: <u>Long- and Short-Run Effect of Financial Liberalisation on Industry Concentration in Individual Industry Groups.</u>
(Annual Data: 1970-2004)

Variables: Dependent Variable – Industry Concentration (CR)	**Industry 1** *Food Processing*	**Industry 2** *Beverages*	**Industry 3** *Tobacco Manufacture*	**Industry 4** *Textiles*	**Industry 5** *Clothing & Apparel*	**Industry 6** *Leather*	**Industry 7** *Footwear*	**Industry 8** *Wood & Sawmill*	**Industry 9** *Furniture*	**Industry 10** *Paper & Products*
Long-Run Coefficients:										
SH	**-1.367****	**-0.562*****	**0.021*****	**-0.744*****	**0.012*****	2.509	-0.005	-0.467	**-0.456*****	**-0.634*****
GR	**-1.079*****	**-0.535*****	1.443	**-0.718*****	**-0.076***	**-0.236****	1.990	**-0.501*****	**-0.509*****	**-0.667*****
MM	-0.016	-0.016	-0.014	-0.007	-0.021	**-0.039****	-0.170	**0.048***	**-0.016***	-0.018
MX	0.022	**-0.091*****	0.009	-0.001	**-0.034****	-0.322	-0.630	**0.920****	**-0.109*****	-0.026
FIN	-0.230	0.010	**-0.021***	0.032	-0.002	0.087	**-0.182*****	-0.008	-0.006	-0.005
$FIN \times FL$	**0.117***	**0.077*****	-0.240	**0.716*****	0.017	**0.109*****	**0.420***	**0.231*****	**0.067*****	**-0.077***
Error-Correction Coefficient (ϕ_i)	***-0.371****	***-0.888******	***-0.679******	***-0.626******	***-0.820*****	***-0.765******	***-0.531*****	***-0.648******	***-0.889******	***-0.609******
Short-Run Coefficients:										
$\Delta\ SH$	-0.243	0.149	0.172	0.030	0.003	-0.116	0.035	-0.097	**0.177***	- 0.020
$\Delta\ GR$	**-0.276***	0.186	-0.083	0.033	-0.219	-0.024	-0.229	-0.008	0.152	-0.087
$\Delta\ MM$	0.211	0.205	0.153	**0.415***	0.202	0.306	0.303	**-0.032****	0.210	0.205
$\Delta\ MX$	**-0.015****	0.215	**-0.011***	-0.008	-0.001	-0.026	-0.002	**-0.616*****	**0.252****	**-0.024***
$\Delta\ FIN$	**-0.029****	-0.004	-0.008	0.111	0.145	-0.047	-0.046	**-0.030****	0.005	-0.010
$\Delta\ FIN \times FL$	**0.104*****	**-0.025***	-0.015	0.102	-0.004	**-0.037****	**-0.019****	-0.022	**-0.021***	0.115

<u>Note</u>: (i) Estimates of the intercept are not reported for economy of space. (ii) "***"; "**"; and "*" indicates statistical significance at 1 percent, 5 percent, and 10 percent level, respectively.

Table 5.3: ***<u>Long- and Short-Run Effect of Financial Liberalisation on Industry Concentration in Individual Industry Groups.</u>***
(Annual Data: 1970-2004)

Variables: Dependent Variable – Industry Concentration (CR)	Industry 11 *Printing & Publishing*	Industry 12 *Industrial Chemicals*	Industry 13 *Other Chemicals*	Industry 14 *Rubber*	Industry 15 *Plastic*	Industry 16 *Non-Metal Products*	Industry 17 *Fabricated Metal*	Industry 18 *Machinery-General*	Industry 19 *Machinery-Electrical*	Industry 20 *Transport Equipment*
Long-Run Coefficients:										
SH	-0.716***	-0.156***	-0.045	-0.475***	-0.341***	-0.637***	-0.470*	-0.104***	-0.352**	0.723**
GR	-0.678***	-0.177***	-0.177*	-0.456***	-0.355***	0.400***	-0.543**	-0.161**	-0.361**	-0.241***
MM	-0.006	0.012*	0.111***	-0.029	-0.020	-0.039*	0.042	-0.004	-0.048*	0.043**
MX	0.013	-0.290***	-0.688*	-0.006	0.594***	0.341	0.025	-0.181**	-0.012	-0.360**
FIN	-0.020	-0.015	-0.008	0.010	-0.052***	-0.086***	-0.034	0.011	-0.022*	-0.020***
$FIN \times FL$	0.069**	0.051**	0.182**	0.099***	0.008	0.125**	-0.268	-0.014*	0.071*	0.798***
Error-Correction Coefficient (ϕ_i)	*-0.613****	*-0.833****	*-0.594***	*-0.684****	*-0.599****	*-0.616****	*-0.415***	*-0.949****	*-0.436***	*-0.787****
Short-Run Coefficients:										
$\Delta\ SH$	-0.053	0.041*	0.008	0.079	-0.027	0.074	-0.265	-0.309***	-0.122	-0.347
$\Delta\ GR$	-0.077	0.066**	-0.047	0.016	-0.045	0.074	-0.340*	-0.558***	-0.115	0.087
$\Delta\ MM$	0.224	-0.003	-0.011	0.312	0.414**	0.523**	-0.023*	0.208	0.619**	-0.017
$\Delta\ MX$	-0.005	0.200**	0.318*	-0.004	-0.393***	-0.445**	-0.020**	0.128**	0.007	0.343*
$\Delta\ FIN$	-0.024*	0.010*	0.017*	-0.004	0.002	-0.009	-0.004	-0.011**	-0.031***	0.012
$\Delta\ FIN \times FL$	0.071**	0.016	0.015	-0.026*	0.011**	-0.022	0.563**	-0.029***	0.512***	-0.366*

<u>Note</u>: (i) Estimates of the intercept are not reported for economy of space. (ii)"***"; "**"; and "*" indicates statistical significance at 1 percent, 5 percent, and 10 percent level, respectively.

Table 5.4: ***Deviations from the Mean Group Estimator in the Industry Concentration Model for Twenty Industry Groups.***

Variables: Dependent Variable – **Industry Concentration** (CR)	**Mean Group Estimator**	**Industry 1** *Food Processing*	**Industry 2** *Beverages*	**Industry 3** *Tobacco Manufacture*	**Industry 4** *Textiles*	**Industry 5** *Clothing & Apparel*	**Industry 6** *Leather*	**Industry 7** *Footwear*	**Industry 8** *Wood & Sawmill*	**Industry 9** *Furniture*	**Industry 10** *Paper & Products*
Long-Run Coefficients:											
SH	-0.213	**-1.51**	-0.46	0.81	-0.69	0.79	**2.56**	0.27	-0.33	-0.32	-0.55
GR	-0.182	**-1.24**	-0.49	**2.25**	-0.74	0.75	-0.08	**2.01**	-0.44	-0.45	-0.67
MM	-0.010	-0.11	-0.61	-0.07	0.06	-0.20	-0.54	**-2.01**	**1.10**	-0.61	-0.14
MX	0.022	0.00	-0.31	-0.03	-0.06	-0.15	-0.94	**1.66**	**2.45**	-0.36	-0.13
FIN	-0.028	**-2.89**	0.55	0.10	0.86	0.37	1.65	**-2.21**	0.29	0.32	0.33
$FIN \times FL$	0.152	-0.14	-0.30	0.36	**2.28**	-0.45	-0.17	**1.08**	0.32	-0.34	**-1.03**
Error-Correction Coefficient (ϕ_i)	-0.668	**1.83**	**-1.36**	-0.07	0.26	-0.94	-0.60	0.84	0.12	**-1.37**	0.36
Short-Run Coefficients:-											
$\Delta\ SH$	-0.042	**-1.31**	**1.24**	**1.39**	0.46	0.29	-0.48	0.50	-0.36	**1.42**	0.14
$\Delta\ GR$	-0.075	**-1.13**	**1.46**	-0.05	0.60	-0.81	0.28	-0.86	0.37	**1.27**	-0.07
$\Delta\ MM$	0.221	-0.06	-0.09	-0.37	**1.06**	-0.10	0.46	0.45	**-1.38**	-0.06	-0.09
$\Delta\ MX$	-0.005	-0.04	0.91	-0.02	-0.01	0.02	-0.09	0.01	**-2.52**	**1.06**	-0.08
$\Delta\ FIN$	0.002	-0.67	-0.13	-0.22	**2.32**	**3.04**	**-1.05**	**-1.03**	-0.69	0.06	-0.26
$\Delta\ FIN \times FL$	0.046	0.30	-0.37	-0.31	0.29	-0.26	-0.43	-0.34	-0.35	-0.35	0.35

Note: Mean Group Estimator $\beta = \frac{1}{n}\sum_i \theta i$. **Bold** figures indicate coefficients are outliers.

Table 5.4: <u>Deviations from the Mean Group Estimator in the Industry Concentration Model for Twenty Industry Groups.</u>

<u>Variables:</u> Dependent Variable – **Industry Concentration (CR)**	**Mean Group Estimator**	**Industry 11** *Printing & Publishing*	**Industry 12** *Industrial Chemicals*	**Industry 13** *Other Chemicals*	**Industry 14** *Rubber*	**Industry 15** *Plastic*	**Industry 16** *Non-Metal Products*	**Industry 17** *Fabricated Metal*	**Industry 18** *Machinery-General*	**Industry 19** *Machinery-Electrical*	**Industry 20** *Transport Equipment*
Long-Run Coefficients:											
SH	-0.213	-0.66	0.07	0.22	-0.34	-0.17	-0.55	-0.34	0.14	-0.18	**1.22**
GR	-0.182	-0.69	0.01	0.01	-0.38	-0.24	0.81	-0.50	0.43	-0.25	-0.08
MM	-0.010	0.08	0.42	**2.29**	-0.35	-0.18	-0.54	0.99	0.12	-0.71	**1.00**
MX	0.022	-0.02	-0.85	**-1.94**	-0.08	**1.56**	0.87	0.01	-0.55	-0.09	**-1.04**
FIN	-0.028	0.12	0.19	0.29	0.55	-0.34	-0.83	-0.09	0.56	0.09	0.12
$FIN \times FL$	0.152	-0.34	-0.41	0.12	-0.21	-0.58	-0.11	**-1.70**	-0.67	-0.33	**2.61**
Error-Correction Coefficient (ϕ_i)	-0.668	0.34	**-1.02**	0.46	-0.10	0.42	0.32	**1.56**	**-1.74**	**1.43**	-0.74
Short-Run Coefficients:											
$\Delta\ SH$	-0.042	-0.07	0.54	0.32	0.78	0.09	0.75	**-1.45**	**-1.74**	-0.52	**-1.98**
$\Delta\ GR$	-0.075	-0.01	0.79	0.15	0.51	0.17	0.83	**-1.48**	**-2.70**	-0.23	0.90
$\Delta\ MM$	0.221	0.02	**-1.22**	**-1.27**	0.65	0.90	**1.65**	-0.90	-0.50	**2.17**	**-1.30**
$\Delta\ MX$	-0.005	0.00	0.85	**1.33**	0.01	**-1.60**	**-1.81**	-0.06	0.55	0.05	**1.44**
$\Delta\ FIN$	0.002	-0.56	0.17	0.31	-0.13	-0.01	-0.24	-0.13	-0.28	-0.71	0.21
$\Delta\ FIN \times FL$	0.046	0.13	-0.16	-0.16	-0.37	-0.18	-0.35	**2.66**	-0.39	**2.40**	**-2.12**

<u>Note</u>: Mean Group Estimator $\beta = \frac{1}{n}\sum_i \theta i$. **Bold** figures indicate coefficients are outliers.

5.4.3. Net Firm Entry.

Table 5.5 repeats the Mean Group estimation with net firm entry as the dependent variable, as represented under Equation (5.2). The table presents estimates for the long-run and short-run parameters. According to the results, the coefficient for industry profitability *PCM* is insignificant. The insignificance of profits as an explanatory variable in the net firm entry equation is consistent with results in many other studies, and the finding alludes to entrepreneurs' own expectations and over-confidence (see, for example, Geroski, 1995; Camerer and Lovallo, 1999). These findings are similar to those obtained by Dunne and Roberts (1991) on United States manufacturing industries. In the literature, lack of significance of the profit variable in the net firm entry model is mostly explained by the prevalence of entry barriers (see, for example, Duetsch, 1975; and, Fotopoulos and Spence 1998). In this case, financial constraints may explain why entry might have been overshadowed by exits in some of the industry groups. Further, presence of significant sunk costs increases the incentive for incumbents to retaliate through under-pricing, with negative effect on net firm entry. Similarly, on average, the industry value-added growth variable *GR* has no effect on net firm entry, presumably suggesting the presence of entry barriers for prospecting firms; while market demand *MKD* variable emerges as a statistically significant determinant of net firm entry in both time spans. Meanwhile, the coefficient for manufactured imports *MM* has a negative sign in the short-run, only to change to a positive sign in the long-run. Thus, in the short-run, increased competition from imports must have led to exits, particularly of those firms that were in the fringes. However, the long-run result testifies to the effect that, on average, increased import opportunities induced domestic producers to improve efficiency, thereby raise the number of efficient firms and therefore increased entry. This is consistent with Bernard *et al* (2003) who highlights that imports induce the exit of the least efficient firms, leaving only the most productive higher mark-up firms in the market.

However, as in the industry concentration model, the results for the main coefficients, financial development *FIN*, and the interaction of financial development and a financial liberalization dummy $\left(FIN \times FL\right)$, show that, on average, the short-run policy changes associated with financial development and/or financial liberalization do not have significant effects on firms' entry and exit decisions. In contrast, in the long-run, the results show that, on average, financial development and financial liberalization, leads to more exits than entries. The coefficient for the interaction term between financial development and the financial liberalization dummy $(FIN \times FL)$, is significant with a negative sign, thereby suggesting that, following financial liberalization, there are more firm exits than firm entries in the industry. This contradicts the theoretical predictions as suggested by the literature; in particular, the neoclassical theorists. This result is also not consistent with the argument by Rajan and Zingales (1998) that financial development will lead to an increase in the number of new establishments in industry. Instead, this finding confirms findings reported earlier in this study, that financial liberalization does not induce firm creation nor does it facilitate firm entry. Thus, contrary to the orthodox view, financial liberalization heightens entry barriers and discourages competition. However, given that the process of financial liberalization is bound to have non-uniform effects across industry groups, it is expected that there will be response heterogeneity to this policy change.

Table 5.5: Long-Run and Short-Run Effect of Financial Liberalization on Net Firm Entry.

Variables: Dependent Variable – Net Firm Entry (NFE)	**Mean Group**		**Pooled Mean Group**	
	Coefficient	*Std. Error*	*Coefficient*	*Std. Error*
Long-Run Coefficients:				
PCM	-0.623	0.508	**0.793*** **	**0.141**
MKD	**-0.343*** **	**0.106**	**-1.169*** **	**0.195**
GR	0.056	0.149	-0.003	0.096
MM	**0.464** **	**0.186**	**1.851*** **	**0.256**
FIN	**0.487** **	**0.206**	-0.006	0.020
$FIN \times FL$	**-0.128***	**0.073**	**-0.665*** **	**0.107**
Error-Correction Coefficient (ϕ_i)	***-0.577*** ***	***0.063***	***-0.259*** ***	***0.091***
Short-Run Coefficients:				
$\Delta\ PCM$	-0.041	0.060	**-0.227** **	**0.109**
$\Delta\ MKD$	**0.600*** **	**0.198**	**0.644*** **	**0.205**
$\Delta\ GR$	0.095	0.079	**0.104***	**0.063**
$\Delta\ MM$	**-0.523*** **	**0.178**	**-0.673*** **	**0.176**
$\Delta\ FIN$	-0.003	0.008	**0.098*** **	**0.034**
$\Delta\ FIN \times FL$	-0.110	0.082	**-0.083** **	**0.039**
Hausman Test (χ^2) *statistic,* p*-value*	21.97 (0.0012)			

<u>Note</u>*:* Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1.0, 5.0, and 10 percent levels, respectively. The Hausman test of no difference between Mean Group and Pooled Mean Group estimates (*see Appendix 5.3b)*

Tables 5.6 show the industry-by-industry estimation results for the net firm entry model, as specified under Equation (5.2). Similar to the observations made on the industry concentration model estimations, the net firm entry results exhibit considerable heterogeneity in the patterns across industries, as may be observed through the variations in the signs on the coefficients as well as the different levels of significance, both in the long-run as well as in the short-run. Despite some insignificant results on some of the explanatory variables in the short-run, in the long-run results are as hypothesised.

As hypothesised in the literature, the long-run effect of profitability *PCM*, on net firm entry is positive and statistically significant in eight industry groups (food processing, beverages, leather, wood and sawmill, rubber, plastic, fabricated metal, transport equipment); thereby confirming that profitability acts as an incentive for entry in these industries. This result is consistent with a similar finding by Ilmakunaas and Topi (1999), who argue that profitability of an industry determines its attractiveness for new firms to enter. Surprisingly though, the results also show that the coefficient for the profitability variable has a negative sign and is a statistically significant determinant of net firm entry in five of the twenty industry groups (footwear, paper and products, printing and publishing, other chemicals, non-metal). This negative effect, which is consistent with findings by Khemani and Shapiro (1987) and Fotopoulos and Spence (1998), is explained as high profits attracting more entrants who then displace some incumbents. Generally though, the variability in the direction of the relationship is somehow odd considering the primary importance of this variable in theoretical work. Nonetheless, the differences are a reflection of the inherent industry specificities; in particular, fixed 'sunk' costs, and access to financial resources.

Growth in market demand *MKD* has a disproportionate effect on different industry groups, in the long-run. In ten out of the twenty industry groups the coefficient of this variable is positive; but, it is a statistically significant of net firm entry in five of the groups (beverages, furniture, paper and products, industrial chemicals, fabricated metal). However, the coefficient for the market demand variable has a negative sign in ten industry groups; albeit, statistically significant in five of the groups; thereby not supporting the theoretical importance of growth in market demand, in inducing firm entry. Generally, therefore, the link between net firm entry and market demand does not seem to be very strong, suggesting that factors such as institutional barriers to entry – which are, in principle, not related to the changes in the level of economic activity – may be playing a larger role in explaining the level and the dynamics of these net entry rates. Relatedly, in the Malawian manufacturing, varied reasons further explain this unexpected outturn. First, facing decreasing demand, due to economic downturn, firms with relatively high irrecoverable capital commitment (sunk costs), may decide to terminate a number of employees in order to bound overheads, instead of exit from the industry. This might also offer an explanation for the insignificant results found on this variable in some of the industry groups. Evidently, massive 'lay-offs' have dogged the tobacco and textile industries in Malawi for a long-time following financial liberalization. Second, new firm creation might be facilitated during downturns because prospective firm proprietors would otherwise have faced serious hazards of being unemployed and because of greater supply of cheaper labour (see, for example, Storey, 1991) and cheaper second-hand equipment released due to demand shortages leading to closure of many firms (see, Binks and Jennings, 1986a). This reasoning may be applicable in those industry groups where the coefficient for market demand is significant but negative (such as in; clothing and apparel, leather, rubber, non-metal products, general machinery, electrical machinery, and transport equipment industries); and, conforms to what Highfield and Smiley (1987) describe as an "opportunistic" scenario. In their time series analysis for United States manufacturing Highfield and Smiley observe that sluggish macroeconomic conditions and high growth in unemployment rate relate to higher rates of new firm creation.

The industry value-added growth variable *GR* shows mixed results in the net firm entry estimation. According to the long-run results, the variable is a statistically significant determinant of net firm entry in fourteen industry groups – with a positive coefficient in eight industry groups (food processing, beverages, tobacco manufacturing, leather, footwear, furniture, paper and products, industrial chemicals). Contrastingly, the coefficient has a negative sign in six industry groups (textiles, clothing and apparel, other chemicals, rubber, general machinery, transport equipment). The positive coefficient is consistent with findings by Taymaz (1997, p.106) and Ilmakunaas and Topi (1999, p.285), and it is explained by the fact that high profit opportunities manifest themselves as a response to rapid industry growth. It is therefore expected that new firms will prefer to enter rapidly growing industries. Industries that are growing slowly, or declining, are likely to create a particularly difficult “displacement problem” for new entrants. However, when an industry registers remarkable growth, new firms face a less difficult displacement problem, which has the effect of reducing entry barriers. Note that in the long-run, the growth variable represents anticipated growth as distinct from (short-run) unanticipated growth (see, Lucas, 1967). However, according to Levy (1985), even when growth is anticipated, there may be different rates of expansion by large than by smaller entrants because of different costs of acquiring capital or accessing financial resources. However, a negative coefficient is also expected under two possible conditions: first, where the opportunities created by industry expansion are being exploited by expansion of already established firms, rather than new entrants; and second, when industry growth prospects result in an overreaction of potential entrants which leads to higher firm turnover and thus eventually to lower net firm entry (see, e.g. Bresnahan and Reiss, 1991; Taymaz, 1997; Ilmakunaas and Topi, 1999). In the Malawian manufacturing the former explanation is more plausible. Considering the oligopolistic structures that prevailed prior to the financial liberalization process, partly perpetuated through governments deliberate policy of granting monopoly rights to protected sectors, in some instances the already established firms indeed took advantage of the opportunities created by the financial reforms. This discouraged any entry by new prospecting investors; a situation aggravated by inequitable lending practices by the financial institutions, increase in the cost of borrowing, as well as exchange rate volatility, following the deregulation process.

The coefficient on the imports intensity variable, *MM*, shows mixed effects both in the long-run as well as in the short-run. As reflected in the aggregated results, under the industry-specific approach, results in the long-run show that the coefficient for the imports variable has a positive sign, thereby suggesting that imports intensity is associated with an increase in new firm entry; but, it is a statistically significant determinant of net firm entry only in two out of the twenty industry groups (footwear, printing and publishing). Theoretically, an increase in imports intensity may increase net firm entry only if domestic producers were induced to improve efficiency and thereby raise the number of efficient firms; hence, increasing competition. However, contrary to the observations made under the aggregated results, industry-specific results reveal that this option does not seem to have been evident in many of the industry groups in the Malawian manufacturing. In fact, Chirwa (2004) observes that increased import intensity in the Malawian manufacturing could be an indication of inefficiencies in the domestic industry relative to firms abroad. As such, firms may exit not because of foreign competition but due to inefficiencies. Arguably, lack of credit access as well as increasing cost of capital explains the increase in inefficiency in the industry.

On the effects of financial development *FIN*, and the financial liberalization interaction term, $(FIN \times FL)$, as the variables of interest, the results are, notably, mixed as expected. Like in the industry concentration model estimations, the contributions of these variables vary between the short-run and the long-run, as the variable coefficients change signs for different industry groups. The effect of *FIN* on net firm entry is ambiguous. The long-run results show that, across the twenty industries, the coefficients are negative in eight industry groups (textiles, clothing and apparel, wood and sawmill, furniture, paper and products, other chemicals, non-metal, electrical machinery); and, except for clothing and apparel, and other chemicals, *FIN* is a statistically significant determinant of net firm entry in these industry groups. This suggests that in these industries, financial liberalization has led to relatively more firm exits than entries. In the rest of the industry groups where *FIN* has a positive coefficient, it is statistically significant in seven industries (food processing, leather, footwear, industrial chemicals, rubber, plastic, fabricated metal). These differences are further noted on the effects of financial development following financial liberalization.

The long-run coefficient for the interaction term between financial development and the financial liberalization dummy $(FIN \times FL)$, is positive and significant in four of the twenty industry groups (food processing, non-metal products, general machinery, and electrical machinery); thereby suggesting that financial liberalization has induced more entry and creation of new firms in these industries. It has been observed that despite the discontinuation of directed credit policies, which in Malawi mostly favoured the agro-processing industries prior to financial liberalization, some of the remaining government policies and development agendas indirectly continue to act in favour of certain industry groups, after financial liberalization. For instance, in a bid to promote food security in the economy, the food processing industry gets relatively more financial favours from the system, either through donor programs or directly through government credit programmes, all of which is processed through the domestic financial institutions; hence, the positive coefficients. However, the coefficient for the interaction term is negative and statistically significant in eight industry groups (tobacco manufacturing, textiles, leather, paper and products, printing and publishing, pharmaceuticals, rubber, fabricated metal); an indication that there have been more firm exits than entries in these industries, following financial liberalization.

In the short-run estimation results, however, the effects of both *FIN* as well as $(FIN \times FL)$ on net firm entry are different from the long-run effects for most industry groups. Both the coefficient signs as well as the significance have tended to vary from industry to industry; and, between the short-run and long-run within the same industry. Like in the industry concentration model, among those industries where the financial liberalization interaction variable has emerged to be a significant determinant of net firm entry, the coefficient magnitude varies widely between the industry groups. In the long-run the range of the magnitude of the coefficient is between -0.900 for fabricated metal and 0.378 for non-metal products; whilst in the short-run the range is between -1.063 for electrical machinery, and 0.208 for rubber industries. Further, like in the industry concentration model, some industries with a positive (negative) coefficient in the short-run, change to negative (positive) in the long-run. This confirms the contrasting effects of financial liberalization as argued by Kaminsky and Schmukler (2008), but also Loayza and Ranciere (2006).

More detailed heterogeneity is exhibited in Table 5.7, following specifications of Equation (11), which examines the dispersion of the coefficient values relative to the Mean Group average as reported under Table 5.5. As in the industry concentration model, standardized values greater than 1 (shown in bold typeface) are an indication of how far that particular coefficient is from the benchmark as suggested by the Mean

Group estimator. Accordingly, there is considerable dispersion between the variable coefficients; thereby confirming heterogeneity as hypothesised by Peneder (2008). Further, as Geroski (1995) observes, structural variables often employed to assist inference on the determination of inter-industry structure of net entry measures – such as profitability and other entry barriers – may not be stable in time. In the Malawian manufacturing it is clearly evident through Table 5.7 that there exists a lot of instability in the significance, the signs, as well as the magnitude of the estimated variable coefficients for the key determinants of net firm entry over time within industry groups, but also between the industry groups. Notably, in the log-run, the average coefficient for $\left(FIN \times FL\right)$, the interaction term, is -0.128, and seven out of the twenty industry groups (food processing, clothing and apparel, footwear, plastic, non-metal, fabricated metal, and electrical machinery) are more than one standard deviation from the mean. However, in the short-run, the average coefficient for this variable is slightly lower, at -0.110. This suggests that the impact of the interaction term is, on average, higher in the long-run than it is in the short-run. Here too, five out of the twenty industry groups (printing and publishing, rubber, fabricated metal, electrical machinery, and transport equipment) are outside the range. These dispersions from the mean group estimator clearly suggest presence of a significant degree of heterogeneity between the industry groups.

Overall, the most notable finding is that, whilst there are changes in the number of competitors following financial liberalization, it is also interesting to note that the responsiveness of net firm entry is so variable across the industry groups. Fairly unstable inter-industry variation over time on net firm entry has been reported in previous work for Germany (Wagner, 1994), and the United Kingdom (Geroski, 1991b). In a study of Lower Saxony in Germany, Wagner (1994) finds that net firm entry differs for the various groups of firms, and that there are also variations between industries in a year. Similarly, whilst studying firm entry in the United Kingdom manufacturing, Geroski (1991b) establish large cross-section differences in net entry rates. Besides, Geroski (1995) observe that, while net firm entry “can be an important influence on the evolution of industry structure ... it is so only selectively” (p.437). Arguably, in Malawi, the response heterogeneity of net firm entry across industry groups is due to the inequitable access to capital for firms’ investments.

Table 5.6: <u>Long- and Short-Run Effect of Financial Liberalisation on Net Firm Entry in Individual Industry Groups.</u>
(Annual Data: 1970-2004)

Variables: Dependent Variable – Net Firm Entry (NFE)	**Industry 1** *Food Processing*	**Industry 2** *Beverages*	**Industry 3** *Tobacco Manufacture*	**Industry 4** *Textiles*	**Industry 5** *Clothing & Apparel*	**Industry 6** *Leather*	**Industry 7** *Footwear*	**Industry 8** *Wood & Sawmill*	**Industry 9** *Furniture*	**Industry 10** *Paper & Products*
Long-Run Coefficients:										
PCM	**0.045***	**1.944****	0.530	-2.455	-1.006	**0.262****	**-3.071****	**0.051*****	0.144	**-2.945*****
MKD	-1.673	**0.920****	-1.523	0.168	**-0.453***	**-1.015***	-1.055	-0.915	**0.187***	**0.359****
GR	**1.390*****	**0.947***	**0.118****	**-0.607****	**-0.302****	**0.123*****	**0.256****	-0.182	**0.111*****	**0.550*****
MM	0.078	0.014	-0.009	-0.142	-0.015	0.812	**2..126***	0.546	0.600	1.716
FIN	**0.112***	0.542	0.712	**-0.385***	-2.009	**1.723*****	**1.148*****	**-0.066****	**-0.023***	**-1.235****
$FIN \times FL$	**0.305***	-0.211	**-0.175*****	**-0.092****	0.319	**-0.084*****	-0.452	0.077	-0.032	**-0.274****
Error-Correction Coefficient (ϕ_i)	***-0.860*****	***-0.754*****	***-0.572*****	***-0.531*****	***-0.267****	***-0.411*****	***-0.257*****	***-0.392*****	***-0.548****	***-0.369*****
Short-Run Coefficients:										
$\Delta\ PCM$	0.019	0.455	0.034	**0.659***	**0.015***	-0.220	**0.541****	-0.508	0.072	0.045
$\Delta\ MKD$	0.841	0.971	-0.087	-1.005	**0.046****	-0.980	**-0.027****	1.921	1.955	**-0.101*****
$\Delta\ GR$	-0.595	0.670	-0.018	**-0.632****	-0.026	**-0.630***	**-0.230*****	**-0.160***	0.730	0.870
$\Delta\ MM$	0.009	-0.599	**-1.010***	-0.560	-0.410	**-1.006***	**-1.020****	-0.710	**-0.914***	-1.011
$\Delta\ FIN$	**-0.157***	0.007	**0.020****	0.089	**0.040****	-0.006	**0.067****	-0.032	-0.006	**0.088*****
$\Delta\ FIN \times FL$	0.052	0.026	-0.004	0.030	**-0.041***	**0.017*****	0.015	**-0.113****	-0.004	**0.071****

<u>Note</u>: (i) Estimates of the intercept are not reported for economy of space. (ii) "***"; "**"; and "*" indicates statistical significance at 1 percent, 5 percent, and 10 percent level, respectively.

Table 5.6:* *Long- and Short-Run Effect of Financial Liberalisation on Net Firm Entry in Individual Industry Groups.
(Annual Data: 1970-2004)

Variables: Dependent Variable – Net Firm Entry (NFE)	**Industry 11** *Printing & Publishing*	**Industry 12** *Industrial Chemicals*	**Industry 13** *Other Chemicals*	**Industry 14** *Rubber*	**Industry 15** *Plastic*	**Industry 16** *Non-Metal Products*	**Industry 17** *Fabricated Metal*	**Industry 18** *Machinery-General*	**Industry 19** *Machinery-Electrical*	**Industry 20** *Transport Equipment*
Long-Run Coefficients:										
PCM	**-1.761*** **	-1.009	**-2.334** **	**0.235** **	**1.876*** **	**-2.664** **	**1.120***	0.019	**-1.914** **	**0.483** **
MKD	-0.954	**0.542*** **	0.055	0.245	0.016	**-1.663** **	**0.144*** **	**-0.036*** **	**-0.200** **	**-0.016** **
GR	-0.271	**0.395** **	**-0.152** **	**-0.492** **	0.090	-0.011	-0.053	**-0.072** **	-0.044	**-0.680*** **
MM	**2.185***	-0.019	0.098	0.183	0.119	-0.023	0.041	0.005	0.042	0.917
FIN	1.052	**1.083***	-0.027	**1.093***	**0.167** **	**-0.158** **	**0.098***	1.004	**-0.164*** **	1.045
$FIN \times FL$	**-0.315***	-0.239	0.080	**-0.344** **	-0.629	**0.378** **	**-0.900***	**0.014*** **	**0.254*** **	-0.245
Error-Correction Coefficient (ϕ_i)	***-0.919*** ***	***-0.390*** ***	***-0.617*** ***	***-0.813*** ***	***-0.981*** ***	***-0.433*** ***	***-0.898*** ***	***-0.697*** ***	***-0.468*** ***	***-0.344** ***
Short-Run Coefficients:										
$\Delta\ PCM$	-0.703	0.006	-0.047	-0.046	**-1.623** **	**0.697** **	0.864	-0.007	**0.559** **	-0.730
$\Delta\ MKD$	-0.810	**-0.119***	-1.710	**-0.560***	-0.800	**1.096*** **	**-0.137** **	-0.812	**0.094*** **	-0.009
$\Delta\ GR$	-0.391	**-0.105** **	0.630	0.852	0.303	0.080	**-0.836** **	**0.043*** **	0.051	0.041
$\Delta\ MM$	**-0.551** **	-0.502	-1.012	-0.036	-0.033	-0.010	-0.025	-1.001	-0.029	**-0.029***
$\Delta\ FIN$	**-0.011***	-0.016	0.016	0.018	**-0.134***	**0.089*** **	**-0.132** **	-0.101	**0.099*** **	0.011
$\Delta\ FIN \times FL$	0.353	**-0.074***	**0.115***	**0.208** **	-0.059	**-0.218** **	-0.918	**0.006** **	**-1.063** **	**-0.493***

Note: (i) Estimates of the intercept are not reported for economy of space. (ii) "***"; "**"; and "*" indicates statistical significance at 1 percent, 5 percent, and 10 percent level, respectively.

Table 5.7: Deviations from the Mean Group Estimator in the Net Firm Entry Model for Twenty Industry Groups.

Variables: Dependent Variable – Net Firm Entry (NFE)	**Mean Group Estimator**	**Industry 1** *Food Processing*	**Industry 2** *Beverages*	**Industry 3** *Tobacco Manufacture*	**Industry 4** *Textiles*	**Industry 5** *Clothing & Apparel*	**Industry 6** *Leather*	**Industry 7** *Footwear*	**Industry 8** *Wood & Sawmill*	**Industry 9** *Furniture*	**Industry 10** *Paper & Products*
Long-Run Coefficients:											
PCM	-0.623	0.42	**1.63**	0.73	**-1.17**	-0.24	0.56	**-1.56**	0.43	0.49	**-1.48**
MKD	-0.343	-0.98	**1.65**	**-1.54**	0.67	-0.90	-0.88	-0.93	-0.75	0.69	0.92
GR	0.056	**2.70**	0.90	0.13	**-1.34**	-0.72	0.14	0.41	-0.48	0.11	**1.90**
MM	0.464	-0.53	-0.61	-0.65	-0.83	-0.65	0.48	**2.27**	0.11	0.19	**1.71**
FIN	0.487	-0.48	0.07	0.29	**-1.11**	**1.94**	**1.57**	0.84	-0.70	-0.65	**-2.19**
$FIN \times FL$	-0.128	**1.34**	-0.26	-0.14	0.11	**1.38**	0.14	**-1.00**	0.63	0.30	-0.45
Error-Correction Coefficient (ϕ_i)	-0.577	**-1.23**	-0.77	0.02	0.20	**1.34**	0.72	**1.39**	0.80	0.13	0.90
Short-Run Coefficients:											
$\Delta\ PCM$	-0.041	0.10	-0.71	0.13	**1.20**	0.10	-0.31	**1.00**	-0.80	0.19	0.15
$\Delta\ MKD$	0.600	0.33	0.50	-0.93	0.55	-0.75	0.51	-0.85	**1.79**	**1.83**	-0.95
$\Delta\ GR$	0.095	**-1.36**	**1.13**	-0.22	**-1.44**	-0.24	**1.06**	-0.64	-0.50	**1.25**	**1.53**
$\Delta\ MM$	-0.523	**1.26**	-0.18	**-1.15**	-0.09	0.27	-0.90	**-1.18**	-0.68	-0.93	**-1.16**
$\Delta\ FIN$	-0.003	**-2.01**	0.12	0.29	**1.19**	0.55	-0.04	0.91	-0.38	-0.04	**1.18**
$\Delta\ FIN \times FL$	-0.110	0.17	0.40	0.31	0.41	0.20	0.37	0.36	-0.01	0.31	0.53

Note: Mean Group Estimator $\beta = \frac{1}{n}\sum_i \theta i$. **Bold** figures indicate coefficients are outliers.

Table 5.7: <u>Deviations from the Mean Group Estimator in the Net Firm Entry Model for Twenty Industry Groups.</u>

Variables: Dependent Variable – Net Firm Entry (NFE)	**Mean Group Estimator**	**Industry 11** *Printing & Publishing*	**Industry 12** *Industrial Chemicals*	**Industry 13** *Other Chemicals*	**Industry 14** *Rubber*	**Industry 15** *Plastic*	**Industry 16** *Non-Metal Products*	**Industry 17** *Fabricated Metal*	**Industry 18** *Machinery-General*	**Industry 19** *Machinery-Electrical*	**Industry 20** *Transport Equipment*
Long-Run Coefficients:											
PCM	-0.623	-0.72	-0.25	**-1.09**	0.55	**1.59**	**-1.30**	**1.11**	0.41	-0.82	0.70
MKD	-0.343	-0.80	**1.16**	0.52	0.77	0.47	**-1.73**	0.64	0.40	0.19	0.43
GR	0.056	-0.66	0.69	-0.42	**-1.11**	0.07	-0.13	-0.22	-0.26	-0.20	**-1.49**
MM	0.464	**2.35**	-0.66	-0.50	-0.38	-0.47	-0.66	-0.58	-0.63	-0.58	0.62
FIN	0.487	0.72	0.76	-0.65	0.77	-0.41	-0.82	-0.49	0.66	-0.83	0.71
$FIN \times FL$	-0.128	-0.58	-0.34	0.64	-0.67	**1.54**	**1.56**	**-2.38**	0.44	**1.18**	-0.36
Error-Correction Coefficient (ϕ_i)	-0.577	**-1.48**	0.81	-0.17	**-1.02**	**-1.83**	0.62	**-1.39**	-0.52	0.47	**1.01**
Short-Run Coefficients:											
$\Delta\ PCM$	-0.041	**-1.14**	0.08	-0.01	-0.01	**-2.72**	**1.27**	**1.56**	0.06	**1.03**	**-1.18**
$\Delta\ MKD$	0.600	0.88	**-1.64**	0.90	-0.90	0.27	0.67	-0.99	0.29	-0.68	-0.82
$\Delta\ GR$	0.095	-0.96	-0.40	**1.06**	**1.49**	0.41	-0.03	**-1.84**	-0.10	-0.09	-0.11
$\Delta\ MM$	-0.523	-0.07	0.05	**-1.16**	**1.41**	0.90	**1.49**	0.90	**-1.13**	**1.44**	0.90
$\Delta\ FIN$	-0.003	-0.11	-0.18	0.24	0.27	**-1.71**	**1.53**	**-1.98**	-0.98	0.98	0.18
$\Delta\ FIN \times FL$	-0.110	**1.25**	0.10	0.66	**1.03**	0.15	-0.32	**-2.36**	0.34	**-2.78**	**-1.12**

<u>Note</u>: Mean Group Estimator $\beta = \frac{1}{n}\sum_i \theta i$. **Bold** figures indicate coefficients are outliers.

5.5. EMPIRICAL RESULTS ON INDUSTRY FINANCING CONSTRAINTS.

Table 5.8 reports the results of estimating Equation (5.13) based on the industry concentration model, as well as the net firm entry model. In both models, the external financing dependency variable is statistically significant (at 5.0 percent level), in the short-run as well as in the long-run. Interestingly though the sign on the coefficient for the financing dependency variable, is positive in the regression where coefficients from the industry concentration model results are applied; and negative where the coefficients from the net firm entry model are applied. Notably, in both models, the extent of financing constraints as experienced by firms is more in the long-run than in the short-run, as suggested by the relatively higher magnitudes of the long-run coefficients for *FDep* variable when compared to those for the short-run. This confirms the time-varying effects of financial liberalization as observed by Kaminsky and Schmukler (2008) and Loayza and Ranciere (2006)[88]. These results suggest that industries with firms that rely more on external finance become more financially constrained, following financial liberalization; thereby inducing more industry concentration, as well as more firm exits relative to entries. This finding therefore contradicts the orthodox view on the financing constraints reducing effects of financial liberalization as advanced by Laeven (2003), or Galindo, Schiantarelli, and Weiss (2001), amongst many others. Thus, the results do not support the view that financial liberalization increase the supply of loanable funds, and alleviate problems of credit constraints, which, in turn, induce more competition in the industry.

Table 5.8: Financing Constraints and External Finance Dependency: OLS estimation

	Industry Concentration Model		Net Firm Entry Model	
	Short-run	*Long-run*	*Short-run*	*Long-run*
FDep	**0.280**** *(0.117)*	**0.376**** *(0.171)*	**-0.163**** *(0.072)*	**-0.185**** *(0.080)*
R^2	0.29	0.32	0.31	0.21

Note: ***, **, * indicate significance levels of 1, 5, and 10 percent, respectively heteroskedasticity adjusted standard errors in parentheses.

[88] According to Love (2003), despite the advantages of this approach, the standard errors of this second-stage regressions may not be asymptotically correct, since the dependent variable is estimated in the first-stage regressions (i.e. in this case Eqs. (1) and (2); thereby suggesting results from this methodology may arguably be viewed as 'informal' and therefore only complimentary to the formal inference performed in the first part of this empirical investigation. Nonetheless, Davidson and MacKinnon (2003) observe that as it is the dependent variable that is a generate variable (i.e. it is not a regressor); hence, the error term may take account of the fact that it is not measured directly. As such, with the strong significance, these results are considered robust.

5.6. OVERALL RESULTS ANALYSIS.

Overall, for both the industry concentration model as well as the net firm entry model, it is worth noticing that although in some of the industry groups some regressors are not significant, the majority of the control variables have the expected sign. The only exception, and of particular relevance to this study, is the behaviour of the coefficient for the interaction term between the financial development indicator and a financial liberalization dummy $\left(FIN \times FL\right)_t$, which, in the long-run, is predominantly significant with a positive sign in the industry concentration estimation, and significant but with a negative sign in the net firm entry model estimation. However, apart from exhibiting considerable heterogeneity in the patterns across industries, generally the results show that in some of the industry groups, the short-run average relationship regarding the interaction term take different directions compared to those depicted in the long-run relationships; and, the related coefficients are not significant in the majority of the industry groups. This suggests that, in most industry groups, short-term policy changes as a result of financial liberalization do not have significant effects on the short-term behaviour of industry concentration or on firms' entry and/or exit decisions. Accordingly, comparing the long-run and short-run estimates within each industry group, a first broad conclusion is that the sign and significance of the relationship between industry concentration, net firm entry, and financial liberalization, depends on whether their movements are temporary or permanent.

Some recent theories on the aftermath of financial liberalization attempt to explain the contrast between the short-run and long-run effects of this policy change. In the financial intermediation literature, Grabel (1995) and Crotty (1993) observe that financial liberalization induces speculative investment following 'boom-euphoric' expectations and/or competitive pressure to engage in profit-seeking activities. In such circumstances therefore, Dell'Ariccia and Marquez (2004a, 2004b) argue that many 'new' and 'untested' projects request financing; and, the financial lending institutions do not have strong incentives to screen its pool of applicants, such that, in the short-run, except for a few long established clients, there will either be too much credit or the majority will not have access to credit. Accordingly, Dell'Ariccia and Marquez

(2004a, 2004b) view financial liberalization as a period marked by lending volatility, as the credit institutions' screening incentives are not at par with the rapid growth for credit demand, from both incumbent firms as well as new prospecting investors. Hence the increasing incidents of counterintuitive results and lack of significance of the financial liberalization term in the short-run for both models. Over time, however, as most potential borrowers are tested, lending institutions' screening incentives and practices are restored and – either through credit rationing and/or traditional lending relationships – normal lending resumes and stabilise in the long-run. Then, whereas the short-run of financial liberalization is marked with volatility and temporary and insignificant relationships, in the long-run financial liberalization is bound to reflect its true and permanent effects on competition in the industry. Accordingly, a statistically significant long-run relationship between financial liberalization and industry structure is predicted; and that, instead, in the short-run, the relationship may not be significant as it may not be clear through which channels this might occur.

However, Wynne (2002) asserts that the difference between the long-run and short-run effects of financial liberalization is due to the fact that it takes time and effort for firms to build financial reputation and public knowledge about the quality of their investment projects. This is mostly critical due to the intrinsic asymmetry of information between potential borrowers and creditors. Firms create 'information' capital only gradually through higher survival rate and wealth accumulation. Following financial liberalization, this information is used in the allocation of capital, and there are inevitable risks of credit misallocation, which may not yield the expected or significant result. In the long-run though, good and reputable firms emerge, with 'proper' credit allocation and significant results.

Further, the financial lending institutions in developing countries like Malawi tend to serve the short end of the market. This has been evident even in periods following financial liberalization. As Nissanke (2001) and Aryeetey *et al* (1994) observe, the unstable and high-risk political and economic environments that are characteristic of most of the countries in the Sub-Saharan Africa, influence the composition of private investment. Most prefer investing in short-term and liquid assets to the high yield and long-term investments. As such the implications of financial liberalization may be different between the short run and the long run, with most of the impact expected, but not necessarily confined, to the former time span. Nonetheless, whilst financial liberalization efforts are designed to address these problems, the results from this study reveal that the short-run and long-run differences take different patterns in different industry groups as evidenced by the differences in the signs and levels of significance for both industry concentration as well as net firm entry.

The foregoing is quite plausible as constraints to entry and exit, such as access to credit and/or prevalence of sunken capital imply that industries respond differently between the short- and long-run, to policy changes such as financial liberalization. For instance, manufacturing prices usually adjust slowly to changes in costs in the long-run, as the process is in the most part determined by structural variables that do not change rapidly over time (see, for example, Bloch and Olive, 1996). For instance, until the early 1990s, most of the Malawian industries, such as the beverages, clothing and apparel, and textiles, utilized material inputs sourced cheaply through high tariff protection, and also enjoyed financial success through a history of being granted monopoly rights and therefore being treated preferentially in the financial credit markets. Besides, these industries have mostly been characterised by foreign-owned large-scale firms, which are considered creditworthier by the lending institutions than small-scale operators (see, Mhoni, 2002). And, as observed by Lall (1979) a multinational's presence in a domestic industry may influence the industry's responsiveness through its aggressive conduct and possession of intangible assets. Similarly, Caves (1996) and UNCTAD (1997) indicate that performance of multinational enterprises is relatively superior due to advantages arising from firm-specific assets, access to a wider array of financial resources and their ability to reap economies of scale. This enables them to respond differently to changes in their operational environment between the short-run and long-run, compared to those industries that are wholly locally owned. Notably, in a study on Malawian manufacturing enterprises, Chirwa (2004) establish that technical efficiencies are 12.0 percentage points higher in enterprises in which majority shareholding is attributed to multinational corporations.

Finally, these results further confirm the earlier findings from the aggregated data that financial liberalization has no competition-inducing effects on industry that, on average, applies to all industry groups indiscriminately. The effect is further evident when the dimension of the intensity of external financial dependence is introduced in the firms' financing constraints analysis. This finding is consistent with the theoretical prior that, following financial liberalization, financial lending institutions prefer to lend to the large and established firms with whom they have lending relationships, as opposed to the new, small and relatively un-established firms. Accordingly, this enables the large firms to grow disproportionately larger and therefore attain more market power, which leads to higher concentration. Similarly, these lending practices act as entry barriers to new investors and an impediment to the creation of new firms; thereby adversely affecting competition in the industry.

5.7. CONCLUSION.

In this chapter, the study investigates the relationship between financial liberalization and industrial structure in individual industry groups. Specifically, the study focuses on the distributional characteristics of financial liberalization in the industrialization process using disaggregated data methodology. The disaggregated data contains useful information that enables the understanding of industry specifics, and therefore facilitates the study of heterogeneity across industries. The process entails an examination of the responsiveness of respective industry-specifics to financial development policy changes, in the short-run and long-run; and, is a cardinal scientific interest for understanding the evolution of structures in respective industries.

The central finding of the study is that financial liberalization has ambiguous effects on industry structure; thus, there exists significant cross-industry heterogeneity of policy effects. These results are consistent with the predictions by Weiss (1983), and Peneder (2008). The effects are positive for some industries and, surprisingly negative for others, and differently between the short-run and the long-run, thereby suggesting that the effects of financial liberalization differ considerably across industries and with time. The results display no obvious pattern as per orthodox predictions, regarding the competition enhancing effects of financial liberalization. Specifically, whilst the interaction term variable between financial development and the financial liberalization dummy has greater significance in explaining patterns of industry structure in the period following the reforms, the study findings do not conform to the predictions in the majority of the industry groups. The study results fail to support the orthodox predictions on the distributional effects of financial liberalization.

On industry concentration, the results show that following financial liberalization, while concentration show increasing trends in most industry groups, it is also declining in others; albeit, in sixteen of the estimated twenty industry groups, the financial liberalization coefficients in the industrial concentration equation interestingly have positive values, and even those with signs in the expected direction, only two are significantly within range with respect to statistical significance. In regard to net firm entry, the financial liberalization interaction term coefficient has a negative sign in fifteen industry groups, and statistically significant in eight of them. In the rest of the industries, financial liberalization has had no significant effect at all. These results suggest the ineffectiveness of financial liberalization to induce competition among the twenty industry sectors in Malawi. This is much in contrast with the orthodox view as propagated by the neo-classical theorists regarding the effect of financial liberalization in promoting competition in the market. More specifically, the results contradict the predictions by Rajan and Zingales (1998), which suggest that financial development enhances competition. Further, the study results do not support the arguments by Rajan and Zingales that the number of establishments in those industries where the need for external finance is disproportionately high, increases following financial development. Instead, as evidenced through the study results, in most of the industries, concentration increased and the number of firms declined following financial liberalization.

Finally, the results clearly support a notion of structural diversity across industrial sectors, in tandem with the old intuition of ‘structuralist’ approaches to industrial analysis from the 1950s and 1960s (Bain, 1956). Most importantly, the results provide compelling empirical evidence supporting the hypothesis that financial liberalization has varied profound impact in the industry dynamics. As in Weiss (1983), Barth and

Ramey (2001) and Dedola and Lippi (2005), and Peneder (2008), among many others, it may be argued that the results in this study corroborate their hypotheses that industry-specific factors – for example, those that systematically relate to capital requirements, durability, industry demand features, firm or industry size, and the extent of financing constraints – lead to policy response heterogeneity. As such, the observed heterogeneity – the fact that implications of financial liberalization for industry structures differ across industry groups – makes a strong case for industry-specific approach to public policy.

Appendix 5.1: A Brief on Random Coefficients Estimator versus Mean Group Estimator.

Following Swamy (1970), Pesaran and Smith (1995), and Hsiao and Pesaran (2004), the RC estimator is defined as a weighted average of the OLS estimators $\hat{\theta}_i$, with weights inversely proportional to their covariance matrices. In particular, the best linear unbiased estimator of the mean coefficient vector is given by;

$$\hat{\bar{\theta}}_{RC} = N^{-1} \sum_{i=1}^{N} W_i \, \hat{\theta}_i$$

The weighting scheme is given by $W_i = \left[\sum_{i=1}^{N} \left(\Delta + \Sigma_{\hat{\theta}_i} \right)^{-1} \right]^{-1} \left(\Delta + \Sigma_{\hat{\theta}_i} \right)^{-1}$ where,

$$\Delta = \frac{1}{N-1} \sum_{i=1}^{N} \left(\theta_i - \theta_{MG} \right) \left(\theta_i - \theta_{MG} \right)' - \frac{1}{N} \sum_{i=1}^{N} \Sigma_{\hat{\theta}_i} \; ; \qquad \text{and,} \qquad \Sigma_{\hat{\theta}_i} = \sigma_i^2 \left(X_i' X_i \right)^{-1}.$$

Accordingly, $\Delta + \Sigma_{\hat{\theta}_i}$ captures the dispersion of the industry-specific estimates, such that W_i will optimally act to associate a large weight to sectors where the estimates are precise. Further, as presented by Hsiao and Pesaran (2004), the RC and the MG estimators are in fact algebraically equivalent for T sufficiently large, namely;

$$\lim_{T \to \infty} \left(\hat{\bar{\theta}}_{RC} - \hat{\bar{\theta}}_{MG} \right) = 0 .$$

Hausman Test of no difference between RC an MG estimates.

hausman mg rc, equation(1:1)

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	mg	rc	Difference	S.E.
SH	-.2128	-.1537123	-.0590877	.0581905
GR	-.1820969	-.1493175	-.0327795	.0430349
MM	-.0099084	.0237722	-.0336807	.0089588
MX	.0215605	.0041885	.017372	.0188161
FIN	-.027718	-.0125658	-.0151522	.0143735
FIN_FL	.1521348	.1389382	.0131966	.0184153

b = consistent under Ho and Ha; obtained from xtpmg

B = inconsistent under Ha, efficient under Ho; obtained from xtrc

Test: Ho: difference in coefficients not systematic

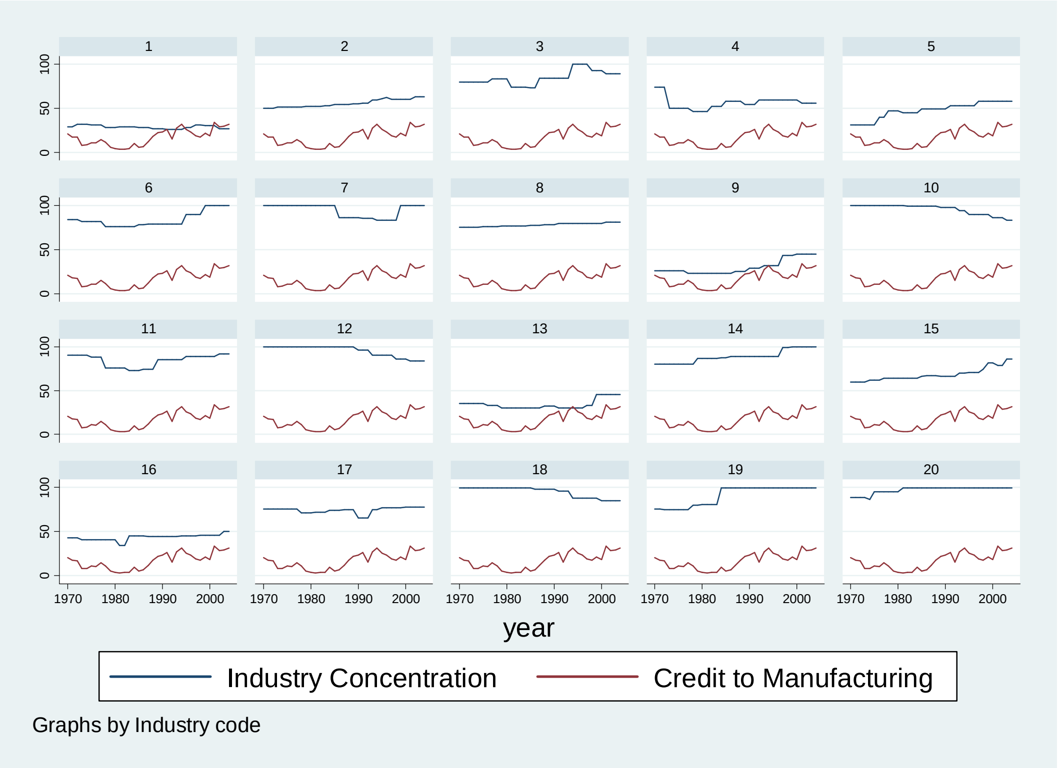
chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)

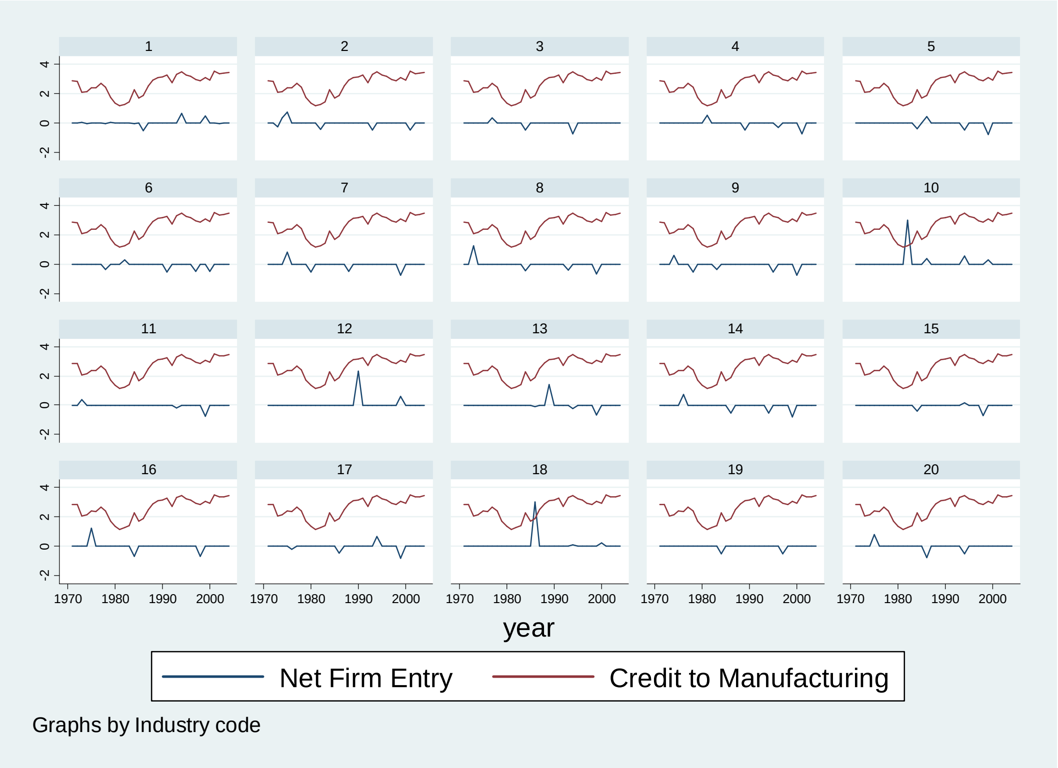
= 30.21

Prob>chi2 = 0.0000

Appendix 5.2: Graphs by Industry Code.

1.Food Processing	6.Leather Products	11.Printing and Publishing	16.Non-Metal Products
2.Beverages	7.Footwear	12.Industrial Chemicals	17.Fabricated Metal
3.Tobacco Manufacture	8.Wood and Sawmill	13.Pharmaceuticals	18.Machinery-General
4.Textiles	9.Furniture	14.Leather Products	19.Machinery-Electrical
5.Clothing and Apparel	10.Paper and Products	15.Plastic Products	20.Transport Equipment





Appendix 5.3: Hausman test of no difference between Mean Group and Pooled Mean Group Estimates:

(a). Industry Concentration Model.

hausman mg pmg

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt (diag (V_b-V_B))
	mg	pmg	Difference	S.E.
SH	-.2128	-.2614023	.0486023	.0620765
GR	-.1820969	-.2720443	.0899473	.0458777
MM	-.0099084	-.0247858	.0148773	.0094322
MX	.0215605	.0038228	.0177376	.0218834
FIN	-.027718	-.0024159	-.0253022	.020114
FIN_FL	.1521348	.1487945	.0033404	.0230138

b = consistent under Ho and Ha; obtained from xtpmg

B = inconsistent under Ha, efficient under Ho; obtained from xtpmg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 27.03

Prob>chi2 = 0.0001

(b). Net Firm Entry Model.

hausman mg pmg

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	mg	pmg	Difference	S.E.
PCM	-.623195	.7938348	-1.41703	.4880369
MKD	-.3427984	-1.168671	.8258722	.
GR	.0561001	-.0025659	.058666	.1143839
MM	.4638695	1.85098	-1.38711	.
FIN	.486682	-.0056478	.4923298	.205069
FIN_FL	-.1283573	-.6651551	.5367978	.

b = consistent under Ho and Ha; obtained from xtpmg

B = inconsistent under Ha, efficient under Ho; obtained from xtpmg

Test: Ho: difference in coefficients not systematic

chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B)

= 21.97

Prob>chi2 = 0.0012

CHAPTER 6.0: FINANCIAL LIBERALIZATION, FIRM SIZE AND INDUSTRY PERFORMANCE.

6.1. INTRODUCTION.

Financial liberalization, as one of the most profound policy reforms in recent years, is hypothesised to transform firms' output and input markets, thereby altering their incentives for profit-maximization and/or cost-minimisation. Nonetheless, whether such performance-enhancing consequences of financial liberalization vary across firms of different sizes is an empirical question, which this chapter attempts to investigate. As observed by Beck *et al* (2005), whilst firm size is considered to be a very important factor in how firm growth is constrained by different factors, current literature remains inconclusive about how the state of a country's financial institutions affect firms of different sizes (see, Beck *et al,* 2001b). Some theories of industrial organisation argue that financial development is particularly beneficial to large firms. Others predict that financial development is especially important for lowering transaction costs and informational barriers that hinder small firm growth. Further, in the literature, among many other researchers, Getler and Rose (1994) claims that financial liberalization has failed to meet the hypothesised efficiency gains in a number of countries, because accompanying a general rise in interest rates, following the deregulation process, has been a rise in the cost of capital for a substantial class of borrowers – particularly, small-sized enterprises. It is also argued that the elimination of subsidized credit programs, as another key feature of financial liberalization process, has led to increases in the financing constraints of those firms that previously benefited from the directed credit system; particularly since financial institutions continue to be characterised by credit rationing and relationship-based lending patterns, which have often been in favour of large-sized firms. Arguably, these developments are therefore likely to also have a profound influence on firm performance; albeit, differently for different firm sizes. Accordingly, at the firm or industry level, the effect of financial liberalization on the performance of different sizes of firms is theoretically ambiguous – hence, the need for further empirical investigation.

Apart from assessing the afore-mentioned theoretical dispute, policy considerations also motivate this study. If, for instance, financial liberalization benefits small-size enterprises more than large-size ones, then even if financial liberalization helps all firms, large firms might oppose reforms that diminish their comparative power[89]. However, instead of focusing on political lobbying by firms, this study specifically examines the question whether financial liberalization indiscriminately impacts firms' profitability and real output growth, regardless of their size. Notably, governments and development agencies, both in the developed as well as developing economies, spend a lot of resources subsidizing small-scale firms – who are perceived to be 'marginalized' in terms of accessing financial resources in the financial system – with the expressed goals of, *inter alia*, inducing the performance of the smaller-size firms; thereby encouraging equitable entrepreneurship and balanced economic growth (see, Beck *et al*, 2008). As a matter of fact, in terms of public policies, the World Bank (1994b, 2002, 2004a) argues that small-size firms foster competition, innovation, and employment to a greater degree than large firms; and, has therefore devoted a lot of resources promoting small-sized firms[90]. This is because it is believed that the small-scale enterprise sector is crucial for job creation, economic development and poverty alleviation, and that small entrepreneurs face greater financial constraint. Similarly, as observed by Pagano and Schivardi (2003), many advanced economies feature programs of public subsidies that target small-size firms, based on the thesis that they are essential for innovation but may face financing constraints due to credit market imperfections. Yet, notwithstanding all this policy effort, some research studies suggest that subsidizing small-scale firms does not have these hypothesised beneficial effects (see, for example, Beck *et al* 2005). As such, results from this study should contribute in guiding future public policy. In particular, if financial liberalization impacts on the performance of small sized firms in the same way it does on large size firms, then future policy option may necessitate a shift away from subsidising the

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[89] A large literature examines the political economy of financial policies (see, for example, Perotti and von Thadden, 2006; Pagano and Volpin, 2005; Rajan and Zingales, 2003; Kroszner and Strahan, 1999; and, Kroszner and Stratmann, 1998)

[90] According to the World Bank Group Review of Small Business Activities (2002), the Bank had approved about US$10.0 billion in Small and Medium Enterprises support programs during the period between 2000 and 2005; of which, about US$1.5 billion was approved in 2005 alone.

small-scale enterprises; and, instead, concentrate on the development of the financial system, as argued by Beck *et al* (2007) and Levine (2005).

6.2. SMALL FIRM VERSUS LARGE FIRM SIZE INDUSTRY DYNAMICS.

One of the most consistent and striking empirical phenomena in industrial organisation economics is the persistence of an asymmetric size distribution of industries that are comprised of a relatively small number of large firms and heavily skewed toward a large number of small firms[91]. However, a commonly held view is that, large-size firms or firms with high market shares possess certain advantages over small-size firms or those firms with low market shares (see, for example, Gale, 1972). A firm may obtain a large market share – implicitly large relative to the industry average firm size – due to efficiency advantages, derived from either its ability to learn from experience or ability to produce a given quantity at a lower cost than its rivals (see, Malerba, 1992). And, as argued by Feeny and Rogers (1999), if a firm achieves larger market share or size, this suggests that economies of scale can occur in cost components such as capital; thereby reinforcing efficiency advantages. However, others like Woo and Cooper (1981), and Hamermesh *et al*, (1978), do not agree with this view, arguing that low market share or small firm size is not always associated with inferior performance. Similarly, Chen and Hambrick (1995) and Tushman and Romanelli (1985) contend that small-size firms are flexible and have niche-filling capabilities, which translates into efficiency, as they are relatively quicker in responding to the dynamics of economic environments. Further, according to the theory of strategic niches, small-size firms will actually exhibit higher levels of profitability by occupying product niches in strategic groups that are inaccessible to their larger counterparts (see, for example, Audretsch *et al*, 1999)[92].

The foregoing perceived differences, between large- and small-size firms, often go along with differences in scales of activity; and, hence, variation in performance

[91] According to Audretsch *et al* (1999), this skewed firm size distribution has been found to persist across industries, countries, and overtime with remarkable tenacity.

[92] Also, in a study of Taiwanese industries, Yang and Huang (2005) find that small-size firms have more flexible operations with lower capital-labour ratios and innovative activities. These attributes are found to enhance the efficiency of the small-size firms.

levels. As Porter (1979), and Bradburd and Ross (1989) separately note, these systematic differences lead to variations in price-cost margins and output growth between large and small firms, as changes in the economic environment impact on firms of varying sizes differently. Focus of this study extends from these perspectives. In particular, whilst some theories imply that financial development disproportionately enhances the performance of small firms than large firms, others suggest the opposite.

According to Beck *et al* (2005), large-size firms are most likely to tax the resources of an underdeveloped financial system, since they are more likely than smaller-size firms to depend on long-term financing and on larger loans. It is therefore possible that financial development can disproportionately reduce the effect of institutional obstacle on the largest firms. Further, Haber *et al* (2003) as well as Greenwood and Jovanovic (1990) argue that if fixed costs prevent small firms from accessing financial services, then improvements to the financial system will disproportionately benefit large firms. Further, according to Laeven (2003), large firms are likely to perform better than smaller firms, following financial liberalization. This, as Laeven (2003) argues, is because large-size firms are less financially constrained than small-size firms, as lenders are likely to have more information about large firms, to whom most credit will therefore be directed. Those borrowers are also likely to have relatively more collateral wealth. Size considerations may also affect the directed credit programs at subsidized rates, because such programs often favour exporting firms, which are often large firms, and because large firms often have stronger political as well as financing connections   As such, lending institutions, especially in poor developing countries, such as Malawi, prefer to be dealing with their large and well-established clients, as opposed to the small and usually newly established firms[93]. Evidently, Wagner (1999, p. 259) observes that the bulk of firms exiting from the industry due to financial constraints tend to be new and small-scale enterprises. Similarly, Audretsch and Elston (2002) and Evans and Jovanovic (1989) observe that small-scale newcomers usually face liquidity constraints that precipitate closure and exit. Forbes (2003) also finds that smaller size firms experience significant financial constraints and these constraints decrease as firm size increase. Furthermore, Love

[93] See, for example, Aryeetey *et al* (1994); Aryeetey (1996); Nissanke and Aryeetey (1998); Nissanke (2001), for a comprehensive review on this issue; particularly for sub-Saharan African countries.

(2003) establishes that small size firms are disproportionately more disadvantaged in less financially developed countries than are large size firms. According to this view therefore, larger-sized firms are arguably less likely to be financially constrained and should perform disproportionately better, following financial development than smaller-sized firms.

In contrast, however, an opposing prediction is made by Cestone and White (2003), Aghion and Bolton (1997), Banerjee and Newman (1993), and Galor and Zeira (1993), which suggests that financial development eases financial constraints, and enhances the performance of small size firms more than larger sized firms. According to this view, if smaller, less wealthy firms face higher credit constraints than large firms face – due to greater information barriers or high fixed costs associated with accessing financial systems – then financial development that ameliorates market frictions will exert an especially positive impact on smaller firms. Moreover, Beck *et al* (2005) observe that large-size firms internalize many of the capital allocation functions carried out by financial markets and intermediaries. As such, financial development should disproportionately benefit small size firms. Further, Berger *et al* (2001) and Petersen and Rajan (2002) find that small size firms are more likely to depend on the domestic financial market than larger size firms. Accordingly, any policy changes in the domestic financial markets – such as financial liberalization – should benefit smaller size firms more than large size firms. For instance, in a study of Mexico, Gelos and Werner (1999) find that financial constraints are eased during financial liberalization, but only for small size firms and not for large size firms. Guiso *et al* (2004) also find that financial development benefits small-scale more than large-scale firms in Italy. Laeven (2003), study thirteen liberalizing developing countries and finds that financial liberalization affects small-scale and large-scale firms differently. Laeven argue that financial liberalization causes variations in the cash-flow sensitivity of investment which should affect small- and large-size firms differently. While smaller-sized firms become less financially constrained after financial liberalization, larger-sized firms tend to be more financially constrained as financial liberalization proceeds. Similar observations are made by Beck *et al* (2008) that financial development exerts a disproportionately positive effect on small firms than on large firms. Accordingly, this suggests that smaller-sized firms should perform disproportionately better following financial liberalization, compared to larger-sized firms.

The foregoing, therefore, demonstrates that the debate on the exact impact of financial liberalization on firms of different sizes remains inconclusive. Accordingly, it may further be argued that the effects of financial liberalization on industry performance may be sensitive to whether it is the large-size firms which exploit this policy change to enhance their performance through higher price-cost margins and output growth, thereby further increase their market shares; or, whether smaller-size and relatively newer firms exploit the opportunities created by these financial reforms to enter and build up capacity, as well as enhanced performance, thereby claim part of the market and pose effective competition in the industry. However, this phenomenon needs to be investigated further, within the context of the documented orthodox 'performance-inducing' attributes of financial liberalization – and, therefore, forms the basis of this study. Specifically, if the price-cost margins as well as output growth of "small-firm industries" – industries naturally composed of small size firms for technological reasons – increase disproportionately faster than in "larger-firm industries", following financial liberalization, this suggests that financial liberalization boosts the performance of small-firm industries more than large-firm industries. In contrast, the study might find that financial liberalization disproportionately boosts performance of large-firm industries or that financial liberalization fosters balanced performance.

Accordingly, in order to achieve the foregoing, the study explicitly considers whether the structural break – in terms of policy as well as increased competitiveness, following the implementation of the financial liberalization policy – change the impact that the market structure, or specifically firm's size, has on price-cost margins and real output growth. Notably, however, there has been scanty research on the relationship between firm size and industry performance for the developing countries of the sub-Saharan African region. Yet, these countries present different challenges and opportunities for testing. For instance, as was established to be the case by Tybout (2000) and Audretsch *et al* (1999), for many economies such as Malawi, the manufacturing economic history underlines a duality characterised by a large number of small-scale firms, and by a small number of large-scale firms[94]. However, in Malawi, following the implementation of financial liberalization policies, the manufacturing sector has been characterised by an increase in firm closures and exits – more particularly of small-scale enterprises than large sized enterprises. Whilst economic theory predicts different welfare outcomes for different firm sizes through price and non-price behaviours, this study is motivated by the need to assess how such behaviours change with financial liberalization in the Malawian manufacturing sector. To the author's knowledge, this is the first study on the explicit modelling between firm size and industry performance, following financial liberalization in Malawi.

6.3. EMPIRICAL FRAMEWORK.

The study follows the approaches by Cowling and Waterson (1976), Clarke and Davies (1982), Machin and van Reenen (1993), where the conjectural variation of industry performance – specifically, profitability and real output growth – is modelled as being influenced by relative firm sizes, as well as by financial liberalization. This facilitates the testing of whether financial liberalization has disparate effects on price-cost margins and real output growth between industries that are, for technical reasons, characterized by predominantly small-firms, and those industries with large-firms.

6.3.1. Theoretical Background.

Economic literature on industry performance has focused heavily on the role of industry concentration and market share (see, for example, Hay and Morris, 1991). The potential influence of these two variables on industry performance arises directly from the economic theory of the firm and the structure-conduct-performance paradigm. The paradigm suggests that industry performance depends on its conduct, which, in turn, depends upon the market in which it operates. Thus, a positive market share-profitability underlies the positive concentration-profitability relationship found empirically. The theoretical background to market share distinguishes dynamic factors

[94] This duality, inherited from the colonial period had, hitherto, been sustained and reinforced by government intervention (see, for example UNCTAD, 2006).

from static factors. Dynamic factors are those, which lead to improved firm efficiency, and thus higher market share. Static factors are those, which reinforce efficiency advantages once a large market share has been achieved. Accordingly, in the theoretical literature[95], the profitability of a firm in the basic model of oligopoly is given as;

$$\frac{(P - MC_i)}{P} = \frac{s_i}{\varepsilon}\left(1 + \frac{dQ_i}{dq_i}\right) \tag{6.1}$$

where, P is price, MC is marginal cost, ε is the market elasticity of demand, s_i is firm i's market share, q_i is firm i's output, and Q_i is industry output excluding i's production. This equation is derived from assuming the firm maximises profit. The derivative $\frac{dQ_i}{dq_i}$ is called a firm's conjectural variation; thus, the output reactions of the firm's rivals to its output change (see, Scherer and Ross, 1990, p.230). In the *Cournot-Nash* model[96], the effect of a change in output by one firm on industry output is assumed to be one for one since firms output is unchanged (hence $\frac{dQ_i}{dq_i} = 1$). This means a firm's profit is related to its market share and the elasticity of demand. Thus, the profit margin of the *i*th firm as a proportion of its price is given by;

$$\frac{(P - MC_i)}{P} = m_i = \frac{s_i}{\varepsilon} \tag{6.2}$$

where, ε is the market elasticity of demand, s_i is firm i's market share.

In the literature, Feeny and Rogers (1999), Demsetz (1973a, b), and Brozen (1971), among many other researchers, suggest that a positive relationship between profits and market share at a firm level will imply a positive profit-concentration relationship at the industry level. In further explanation, Scherer and Ross (1990) also observe that highly concentrated industries have high profits due to individual firms' high market

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[95] See, for example, Scherer and Ross (1990, pp.227-233); and Hay and Morris (1991, pp.209-212).

[96] In *Cournot-Nash* equilibrium, each firm considers the output of all the other firms and sets its own output in a way that maximizes its profits when selling to a price-responsive demand curve. In equilibrium, each firm is producing at its profit-maximizing output, given the output of all the other firms (see, Tirole, 1988, for a comprehensive review of the *Cournot-Nash* concept).

shares. Accordingly, the industry price-cost margin will be the sum of the individual firms' profit margins, each weighted by the firm's market share (s_i), and yields;

$$\frac{(P-\delta MC)}{P} = \sum_{i=1}^{i=n} m_i s_i = \sum_{i=1}^{i=n} \frac{s^2{}_i}{\varepsilon} = \frac{H}{\varepsilon} \qquad (6.3)$$

where, δMC is the weighted average of the sellers marginal costs, and H is the Herfindahl-Hirschman index $\left(\sum_{i=1}^{i=n} s^2{}_i = H \right)$ [97]. This suggests that, in an unconcentrated industry or where industries are characterised by firms with small market shares, then profitability will be low; whilst in a concentrated industry, or industries with predominantly large market share firms, profits will be higher. Thus, in the literature, the structure-conduct-performance hypothesis has been a basis for analysing firm performance given the structure of the market. The hypothesis postulates that market share or size inequalities among the incumbents influence the behaviour of firms through, for instance, pricing and investment policies, and this in turn translates into performance. This model assumes that certain market structures are conducive to monopolistic conduct, and this conduct enables firms to raise prices above costs thereby making abnormal profits and growth. Therefore, the link between market structure and profitability is through firms pricing behaviour. In perfectly competitive markets where firms face a perfectly elastic demand, theoretically the model predicts that there will be lower profitability compared with all other markets where the demand is less elastic.

Further, it is argued that the positive relationship between market share and profitability reflects the superior performance of large firms (see, Bain, 1956). A firm captures a large market share and earns above average profits by establishing a cost advantage over its rivals. Thus, differences in firm-specific efficiencies within markets create unequal market shares and high concentration. The hypothesis is the market share-profitability relationship[98]. The implicit assumption under this hypothesis is that the differing efficiencies among firms lead to unequal market shares

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[97] In the empirical literature, where data to determine the Herfindahl-Hirschman index is unavailable, the standard approach is to use the ***k***-firm concentration ratio (see, for example, Conyon and Machin, 1991; Haskel and Martin, 1994)

[98] See, Demsetz (1973a, b); McGee (1974); Peltzman (1977);Brozen (1982); Gale and Branch (1982).

and high levels of concentration, and are causally due to factors that reduce costs. Thus, the hypothesis implies that the causal link will be between concentration and profits. However, in addition to concentration, Bain (1951) and Mann (1966) found certain barriers to entry, such as economies of scale, market growth, product differentiation, and capital requirements, to have an independent influence on industry performance[99].

6.3.2. Firm Size and Performance.

As industry performance is central to any explanation to the growth of an economy, it is therefore not surprising that so many reasons have been suggested to explain industry profitability and output growth (see, for example, Hart and Oulton, 1996). Hence, analysis of the performance of industries – of different structures and firm sizes – is of core interest to economists and policymakers as it adds to the understanding of competitive forces and, ultimately, the allocation of resources for economic growth (see, Feeny *et al*, 2005). However, one caveat with the firm size-performance models discussed above is that they ignore the role of barriers to entry in an industry. For instance, as Hay and Morris (1991, p.224) state "...even if [concentration or market share] is a necessary condition for higher profitability, it is probably not sufficient. If there are few or no barriers to entry, then we would expect supernormal profits to be competed away by new entrants". Arguably, as indicated above, financial development or financial liberalization should influence firms' entry barriers through its effects on the input and output markets. Evidently, in a study of how institutional factors affect the performance of firms of different sizes and, hence, act as constraints to economic growth, Kumar *et al* (2001) identify, amongst others, 'financial channels' through which institutions in an economy may influence the performance of firms. Thus, according to Kumar *et al*, if the availability of external funds is important for firms to perform better and grow, firm size should therefore be positively correlated with financial development, and, more generally, with any policy initiatives aimed at promoting the development of the financial system. As Rajan and

[99] Due to lack of information about some of these variables in Malawi, this study has been constrained to only relating price-cost margins to the capital-output ratio and market demand growth.

Zingales (1998) establish, financial development influences growth in value-added of existing establishments and in the number of new establishments in industries dependent on external finance. As such, a la Rajan and Zingales, with the development of the financial system, firms should be able to perform better by increasing their price-cost margins as well as output. Nonetheless, whether this is uniformly applicable to small size firms as it is to large size firms is, therefore, ultimately an empirical question, which needs to be investigated.

Further, Beck *et al* (2005) observes that the differences between large size firms when compared to small size firms become clearer when specific focus is made on financing obstacles that face these two categories of the manufacturing industries. According to Beck *et al*, in the financial system, the only obstacle that affects large size firms is that caused by high interest rates. Otherwise, large size firms are found to be unaffected by collateral requirements, bank bureaucracies, or any credit access issues that characterise financial markets of most economies. In contrast, smaller size firms are significantly and negatively affected by collateral requirements, high interest rates, lack of any connections or relationships with the lending institutions, banks' lack of loanable funds, and generally lack of access to credit facilities[100].

According to the foregoing literature, financial market imperfections provide conceptual argument to support size related differences in firm and industry performance. The basis for this argument is that financial markets may overstate the risks associated with small firms and charge interest rates that more than compensate the lender for any actual risk differential. Reinganum and Smith (1983) find that lenders charge risk premiums of small firms that exceed what is justified by increased risk of default. Further, whilst the large firms have credit access to domestic as well as international financial markets, small firms are only confined to the domestic financial market. Besides, the financial markets usually prefer lending to the large established firms as opposed to the small new borrowers. Meyer (1967) cites these differences in

[100] As earlier presented in this study, Aryeetey *et al* (1997), Nissanke and Aryeetey (1998), Nissanke (2001) review these issues for sub-Saharan African countries, including Malawi. Similarly, Weiss (1981) and Stiglitz (2000) on credit rationing; and, Boot (2000), Boot and Thakor (2000), and Boot *et al* (1993) on relationship-based lending by financial institutions. Further, as an example, in a study for India, Kochar (1997) observe that larger firms have more credit access than small firms; and, that credit availability is strongly correlated with productivity.

borrowing patterns and/or lending characteristics as a source of variations in performance between large and small firms. And, within the theoretical literature that directly or indirectly deals with firm size, there exist various other arguments that demonstrate the complexity of the firm size-performance link, partly because of dynamic and static factors.

One of the arguments on firm size-performance differentials is made by Mancke (1974), amongst many others, who incorporate the Gibrat process in the explanation (refer to *Appendix* 4.1 on the concept). Mancke postulates that a positive firm size-profitability will exist due to luck, not some inherent dynamic efficiency or economies of scale. Similarly, according to the predictions made by the Gibrat's law of proportionate effect, all firms' real output, irrespective of size, grow each year by some random draw from the distribution of growth rates. Generally, however, the Gibrat process has itself been subjected to testing in several studies, with somewhat controversial results. Thus, while several findings lend support to the Gibrat's law (see, for example, Klette and Grilliches, 2000; Hart and Prais, 1956), some studies conclude that smaller firms become more profitable and have higher output growth than their larger counterparts[101]. Simon and Bonini (1958) argue that the expected profitability and output growth, is independent of firm size only for firms in a given size class that firms are larger than the minimum efficient scale. Further, Sutton (2000) also points out the role played by scale on explaining the variance of firm growth. Lotti *et al* (2003) find that Gibrat's law fails to hold for small firms in the years immediately following start-up, while the law applies when they achieve a size large enough to overcome the minimum efficient scale. As a matter of fact, Caves and Porter (1977) did test Gibrat's law based on Mancke's (1974) hypothesis and established that the positive firm size-performance relationship was mostly due to product differentiation and business strategy than a Gibrat-like process. Besides, Mancke's hypothesis does not consider the role of entry barriers in influencing starting positions for different firms. Accordingly, the fact that a positive firm size-profitability or output growth will exist due to 'luck', may not be valid.

[101] See, for example, Hart and Oulton (1996); Dunne and Hughes (1994); and, Hall (1987). Also see Sutton (1997) for a comprehensive survey.

As Scherer and Ross (1990), Hay and Morris (1991), Gale and Branch (1982) separately establish, following the seminal analysis of firm profitability by Bain (1951, 1956), barriers to entry are instead considered to be critical determinants of industry performance. According to Bain, barriers to entry are identified as high levels of sunk costs, absolute cost advantages of existing firms arising from privileged access to resources (thus, the greater the cost of entry, the easier it is for existing firms to maintain monopoly profits); and, the existence of scale economies, both in relation to firm size and in absolute terms. Nonetheless, the exact direction of the relationship between firm size and industry profitability or industry output growth is however not unambiguous, and hence the need for further research.

6.3.3. Methodological Approach.

In the literature, it is argued that industries that are characterized by large firms also possess high market shares in total industry value-added and employment. Similarly, in industries where the optimal firm size is small, the market shares will also be low. Accordingly, in these industries, there should be more competition and more entry, since barriers to entry are small when the optimal size of the firm is smaller (see, Guiso *et al* 2004). Consequently, such industries will be relatively more competitive.

There exist many criteria for measuring firm size in the literature, mostly based on either value-added or employment, particularly following earlier work of Shephered (1964, 1972). However, the most commonly used measure in many empirical studies is the latter – employee numbers[102]. Besides, Kumar *et al* (2001) notes that coordination costs, which are present both in the technological and the organizational theories of the firms, are in terms of number of employees. This therefore argues for a measure based on number of employees. The study follows this approach, as others have done, where the share of the market in terms of employment numbers, represent a measure of firm size inequality. As such, as the objective of the study is to examine

[102] In the literature, this methodology is followed, for example, by Yang and Huang (2005);Dedola and Lippi (2005); Dhawan (2001); Kumar *et al* (2001); Audretsch *et al* (1998); Dean *et al* (1998); Gale and Branch (1982); among many others. As argued by Kumar *et al* (2001), this measure has a long intellectual tradition (see, for example, Pashigian, 968).

the effects of financial liberalization on the relationship between performance and a measure of firm size; there is a need to measure each industry's firm size.

Extending from the foregoing arguments, and following You (1995), Sutton (1991), and Coase (1937) who observe that differences in productive technologies, capital intensities, and scale economies influence an industry's technological firm size, Beck *et al* (2008) construct measures of each industry's 'natural' or 'technological' share of small firms based on United States census data on number of employees. As argued by Beck *et al* (2008), the United States is used to form the benchmark measure, on the assumption that it has relatively frictionless financial markets and most developed financial systems in the world by many measures (see, Demirguc-Kunt and Levine, 2001). Further, according to Beck *et al* (2008), the United States has the full spectrum of human capital skills. Besides, comparative studies of United States and European labour markets suggest that the United States has many fewer policies distorting firm size beyond the financial sector. Beck *et al* also notes that due to its size, the US is characterized by a relatively huge internal market, which is comparatively open to international trade. Finally, as observed by Barth, Caprio, and Levine (2006), amongst others, the United States has a superior contracting environment and well-developed institutions. In view of all these attributes therefore, Beck *et al* (2008) argue that the United States represents a natural benchmark for providing a ranking of each industry's technological share of small firms, as a measure of firm size.

However, Beck *et al* (2008) note that the empirical methodology does not require that the US has perfect financial markets, labour markets, contracting systems, or institutions. Instead, the methodology only requires that policy distortions and market imperfections in the US do not distort the ranking of industries in terms of the technological share of small firms within each industry. According to the methodology, therefore, Beck *et al* (2008) constructs each industry's 'natural' or 'technological' $Small\,Firm\,Share_i\ \left(SFS_i\right)$ as industry *i*'s share of employment in firms with less than 20 employees in the United States, obtained from census data. This study follows this methodology used by Beck *et al* (2008), with particular focus on small firm size[103]. Specifically, it develops an analytical framework based on the foregoing, within which an attempt is made to conjecture the consequences of financial liberalization on small firm share in order to establish its influence on the hypothesised link between firm size and profitability. Accordingly, in this research, financial liberalization constitutes a critical component determining the course of price-cost margins for firms of different sizes. This is achieved by including interaction terms between a financial liberalization dummy $\left(FL_t\right)$ and a measure of small firm share index $\left(SFS \times FL\right)_{it}$, in an industry's profitability model where the dependent variable is price-cost margins $\left(PCM_{it}\right)$, representing industry profits.

Next, besides investigating whether financial liberalization has differential effects on the performance of large- and small-firm industries by examining profitability as measured through industry price-cost margins, the study conducts a similar investigation, but using industry's real output growth $\left(GO_{it}\right)$ as the measure of industry performance. Thus, the study examines whether the development of the financial system has any implications on the manufacturing industry performance patterns, by examining industry output growth, as suggested in the literature by, among others, Beck *et al*, 2008; Levine, 2005; Vlachos and Waldenstrom, 2005; and, Rajan and Zingales, 1998. In this particular part of the study, the objective is to specifically test whether the financial liberalization process shapes industry performance by increasing the proportion of production output accounted for by small-firm industries. This is done for two related reasons. *First*, building on previous research, a large literature examines the relationship between financial development and industry growth. This provides a natural framework for the analyses and facilitates comparisons, and identification of relationship between financial liberalization, working through financial development, and the output growth of small-firm industries relative to large-firm industries, additional to the effects established by past work. *Second*, focusing on growth links helps relate this study to an extensive body of theoretical and empirical work on the finance-growth nexus. In the literature, many theoretical models predict that a higher level of financial

[103] However, firm-level census data from Malawian manufacturing sector, obtained through Annual Economic surveys, is used instead in the determination of small firm size index.

development will induce a faster rate of economic growth (see, Levine, 2005). Specifically, the theory suggests that market imperfections, as well as information and incentive problems raise the cost of external funds especially due to underdeveloped financial systems. These may constrain firm's ability to fund investment projects, which may, in turn, adversely affect industry growth (see, Myers and Majluf, 1984). Besides, Demirguc-Kunt and Maksimovic (1998) show the importance of the financial system for relaxing firm's external financial constraints and facilitating industry growth. Rajan and Zingales (1998) use industry-level data to show that industries that are dependent on external finance, grow faster in countries with a developed financial system. Beck *et al* (2005) employs survey data for 54 countries, to investigate whether financial obstacles affect industry growth. They show that underdeveloped financial systems could obstruct industry growth[104]. However, although the existing literature seems to provide many elements on the effects of finance on industry output growth, some important financial factors and industry characteristics are still unexplored. The study, therefore, extends this literature by investigating whether financial liberalization might exert a disproportionately positive effect on the output growth rate of particular type of industries, such as industries naturally composed of small firms facing high informational asymmetries. This, therefore, motivates the separate focus on industry output growth as a measure of industry performance. The approach involves the inclusion of an interaction term variable $\left(SFS \times FL\right)_{it}$, in the industry's output growth $\left(GO_{it}\right)$ model estimation.

Overall, therefore, the study estimates two separate industry performance models; the profitability $\left(PCM_{it}\right)$ model, and the real output growth $\left(GO_{it}\right)$ model. However, whilst the study conducts these investigations by applying the methodology used by Beck *et al* (2008), determination of a measure of an industry's technological share of small firms is primarily based on data from Malawian manufacturing industries. Arguably, whilst the US may be considered to be the perfect benchmark economy, and therefore providing a reliable measure of small firm share, as argued by Beck *et al* (2008), Demirguc-Kunt and Levine (2001) and Barth *et al* (2006), it might still be inappropriate for some countries, particularly the developing countries of the sub-

[104] Also see, Christopoulos and Tsionas (2004), Beck *et al* (2000), Levine *et al* (2000), and Greenwood and Jovanovic (1990).

Saharan Africa region, such as Malawi. As a matter of fact, Beck *et al* (2008), notes that, beyond financial sector distortions, there are other country-specific factors that may affect an industry's technological firm size in an economy. In this case, for instance, in Malawi the level of economic development, R&D, and industrialization in general, may not be comparable with the US. Firms in the US may not employ technologies similar to those in countries like Malawi due to different levels of economic and technological development. As such, in order to capture the country-specific traits, whilst industry's technological share of small firms is determined by the methodology as suggested by Beck *et al* (2008), instead, the study uses Malawian census data. Further, unlike Beck *et al* (2008) who take 1992 as the only reference year, the Malawian data is averaged over the entire study period (1970-2004), in order to determine the approximate period average industry's share of small firms for the respective industries in the Malawian manufacturing sector.

6.4. EMPIRICAL METHODOLOGY.

6.4.1. Model Specification.

As indicated in the foregoing, in order to capture the multi-dimensional characteristic of industry performance, two models using different indicators of industry performance as dependent variables, are estimated. Accordingly, focus is first on price-cost margins (profitability), and then followed by real output growth.

6.4.1.1. Price-Cost Margins Model.

Theoretically, a typical profit model framework, and also drawing from the presentation under Equation (6.3) above, may be specified as follows:

$$PCM = f\left(CR, KO, MKD, X\right) \tag{6.4}$$

where, *PCM* is price-cost margin as the profitability measure, *CR* is industry concentration as a measure of market structure, *KO* is capital-output ratio, *MKD* is growth in market demand. And, X is a vector of control variables that account for other industry-specific and market-specific characteristics. Traditionally, the control variables are to allow for variations in industry characteristics by including structural and conduct variables – including economies of scale, labour market variables, and trade variables – and, generally, other variables that influence both prices and costs (see, Conyon and Machin, 1991; Geroski and Jacquemin, 1985). However, lagged profit margins $PCM_{i(t-1)}$ are also included to the specification in Equation (6.4), since past industry performance may affect future output decisions. An additional justification for the inclusion of a lagged dependent variable, according to the literature, is to allow for partial adjustment to shocks in the persistence of profits[105]. This is based on the idea that competition is a dynamic process. Individual firms are thought of as experiencing 'shocks', which move them away from their long run equilibrium profitability, with the intensity of competition determining how fast they return to equilibrium.

Accordingly, the study use the foregoing background to investigate the impact of firm size on industry profitability; specifically whether industries that are naturally composed of small firms perform better following financial liberalization, the study includes an industry characteristic – each industry's technological Small Firm Share$\left(SFS_i\right)$. This should facilitate the examination of whether there is a positive or negative relationship between small-firm industries and profitability; and, particularly whether smaller-sized firms are relatively more profitable. The model extends to investigate whether financial liberalization affects the relationship between firm size and price-cost margins, by also including in the model an interaction term between SFS_i and a financial liberalization dummy$\left(FL_t\right)$; thus,$\left(SFS \times FL\right)_{it}$. As indicated earlier, changes following the financial liberalization process are expected to alter firm's incentives for profit-maximization and/or cost-minimisation. Arguably, financial liberalization ushers in a lot of policy changes which, in turn, transform a firm's independence to respond to other firms – by either introducing or removing constraints on their actions. These reforms differently affect competition among firms of different sizes as well as the way in which they react to the actions of other firms

[105] As discussed in Goddard and Wilson (1999), Waring (1996); Machin and van Reenen (1993), Mueller and Cubbin (1990); and, Geroski and Jacquemin (1988), among many others.

and therefore their conjectural variations. Accordingly, from Equation (6.4), an estimable price-cost margin equation may therefore be presented as follows;

$$\begin{aligned} PCM_{it} &= \beta_0 + \beta_1 PCM_{it-1} + \beta_2 CR_{it} + \beta_3 KO_{it} + \beta_4 MKD_t \\ &+ \beta_5 SFS_i + \beta_6 \left(SFS \times FL\right)_{it} + \sum \beta_k X_{kit} + \mu_{it} \\ & i = 1, \ldots, N; \quad t = 1, \ldots, T, \end{aligned} \tag{6.5}$$

where, the subscripts *i* and *t* refer to industry and time respectively. Following the model as presented in Equation (6.5) through which change in price-cost margins may be explained, the study considers the effects of other variables that may be changing in the real world and that may need to be taken into account in the empirical investigation. In this case, the study includes imports intensity, exports intensity and inflation.

The focus of the analysis of results from the estimation of Equation (6.5) is mainly on the sign and significance of the coefficients for the variable SFS_i; and, particularly on the interaction between financial liberalization and small firm share $\left(SFS \times FL\right)_{it}$. In particular, if the value of β_6 is greater than 0, and significant, this suggests that financial liberalization exerts a disproportionately positive effect on the price-cost margins of small-firm industries relative to those of large-firm industries. Thus, this should suggest that financial liberalization improves small firms financing constraints and therefore lead to an increase in their profitability. Otherwise, if β_6 is less than 0, and significant, this is an indication that small firm industries continue to be financially constrained following financial liberalization, with adverse implications on their price-cost margins.

6.4.1.2. Output Growth Model.

The study also investigates industry performance through output growth by extending the works of Beck *et al* (2008), Gallego and Loayza (2001), and Rajan and Zingales (1998). Following these studies, industry performance is therefore examined through a model with a dependent variable that is measured by growth in industry's value added[106]. The model may therefore be presented as follows,

$$GO = f\left(SH, KO, LP, Z\right) \tag{6.6}$$

where, GO is the industry's real output growth (thus, nominal output deflated using the GDP deflator), SH is the share of the industry in total manufacturing sector, KO is capital-output ratio, and LP is labour productivity, measured as employees per value-added. And, Z is a vector of control variables that account for other industry-specific and market-specific characteristics. These include market demand growth, international trade, and inflation trends.

Like in the profitability model, the study investigates whether industries naturally composed of small firms for technical reasons have higher or lower productivity than large firm industries, by including a measure of small firm size SFS_i is to Equation (6.6). This should facilitate investigating whether smaller-sized firms grow more rapidly and improve productivity. The study further examines whether financial liberalization shapes industry performance by increasing the proportion of production output accounted for by small-firm industries. Accordingly, an interaction-term $\left(SFS \times FL\right)_{it}$, as defined earlier, is also included to the model in order to determine whether financial liberalization affects the firm size and output growth relationship. The following equation is therefore estimated,

$$\begin{aligned} GO_{it} &= \alpha_0 + \alpha_1 GO_{it-1} + \alpha_2 SH_{it} + \alpha_3 KO_{it} + \alpha_4 LP_{it} \\ &\quad + \alpha_5 SFS_i + \alpha_6 \left(SFS \times FL\right)_{it} + \sum \alpha_k Z_{kit} + \eta_{it} \\ &\quad i = 1, \ldots, N; \quad t = 1, \ldots, T, \end{aligned} \tag{6.7}$$

where, the subscripts i and t refer to industry and time respectively. The initial (lagged) output growth GO_{it-1} is included to capture convergence effects to the industry's steady-state output. And, Z stands for variables, including firm size, as well as other control variables that capture industry specific characteristics. It also captures macro, financial outcome and policy variables.

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[106] In the literature, 'net sales' have also been used as an alternative measure of industry performance. However, value added is most commonly used measure due data availability (see, for example, Liu and Hsu, 2006; Wijewardena and Cooray, 1995).

Similar to the analytical approach taken on the profitability model, of particular interest in the estimation of Equation (6.7) is the value α_6; specifically, whether it turns out to be greater than 0, and significant, which may suggests that financial liberalization exerts a disproportionately positive effect on the growth of small-firm industries relative to those of large-firm industries. Thus, this should suggest that financial liberalization improves the performance of small-firm industries by increasing their productivity prospects relative to those of the large-firm industries. An opposite result may otherwise be an indication that small firm industries continue to be financially constrained following financial liberalization, with adverse effects on their productivity prospects and overall performance compared to the large-firm industries.

6.4.2. Variable Description.

The *Price-Cost Margins* (PCM_{it}) represent an index of profitability (also presented as π_{it}, in the literature). The price-cost margin is the most commonly used measure of profitability in empirical studies of firm/industry performance and indicates the ability of firms to elevate price above marginal cost. However, whilst the appropriate empirical measurement of the price-cost margins that arises from theory has sometimes been a contentious issue in the literature, in many previous studies where – as is the case in this study – manufacturing census data is being used[107], the price-cost margins are defined as:

$$PCM = \frac{Value\,added - Payroll}{Value\,added + Cost\,of\ Materials} \tag{6.8}$$

According to the literature, price-cost margins is also analogous to the difference between price and average variable cost divided by price; and, is a proxy for the Lerner index (price minus marginal cost divided by price)[108]. Further, *lagged price-*

[107] See, for example, Feeny *et al* (2005); Feeny and Rogers (1999); McDonald (1999); MacDonald and Bloch (1999); Prince and Thurik (1995); Domowitz *et al,* (1986a, b); Clarke *et al* (1984); Bradburd and Caves (1982); Liebowitz (1982); and, Encaoua and Jacquemin (1980).

[108] Notably, in the literature, the alternative use of accounting rates of return as a measure of industry profitability has been extensively criticised (see, for example, Fisher and McGowan, 1983; Phillips, 1976). Problems cited include difficulties in measuring depreciation, taxes, and inventories.

cost margins (PCM_{it-1}) are also included as an explanatory variable, in order to capture the effects of previous profitability. As argued by Goddard and Wilson (1999), Waring (1996), Machin and van Reenen (1993), and Muller and Cubbin (1990), among others, the reason for the inclusion of lagged profits is due to the empirically observed serial correlation in profit margin time series; the theoretical need to capture departures from and subsequent returns to, long run equilibrium; and the fact that current output conjectures may depend on previous performance. This approach differs from the previous traditional profit studies, which have been nested within a static structure conduct performance framework, under the assumption that the industry is in equilibrium. However, Geroski (1990, p.17) and Schmalensee (1989, p.356) criticise the static approach on the grounds that the data used to estimate the related models are not generated from equilibrium positions and may be generated during random or temporary departures from equilibrium. Accordingly, while a policy to control profits in a highly concentrated industry may seem reasonable, it may only reinforce an already existing error-correction mechanism which functions to bid excess profits away through increased entry. Following these arguments, price-cost margins are mostly modelled within a dynamic setting, in order to capture both inter-industry and intra-industry differences, particularly in response to cyclical demand shifts (see also, Conyon and Machin, 1991a; Geroski and Jacquemin, 1988). Further, a much more fundamental reason for including lagged price-cost margins is that past industry profitability has traditionally been viewed as an influential factor to future profits through entry and/or exit of firms (see, Siegfried and Evans, 1994). The argument is that, if past industry profitability induces more firm entry, then this might lead to lower profits in future as they are competed away; and, the opposite is true.

Industry Output Growth (GO_{it}) – this is represented by annual growth in industry value added as a measure of industry performance. Several empirical investigations have sought to determine whether there is any relationship between output growth and firm size[109]. The results vary widely. Besides, there is stronger and more consistent evidence rejecting the Gibrat assumption that standard deviations of output growth

[109] See, for example, Sleuwaegen and Goedhuys (2002); Liu and Hsu (2006); van Biesebroeck (2005); Dhawan (2001); Bartelsman and Doms (2000); Grilliches and Regev (1995); Dunne and Hughes (1994); Variyan and Kraybill (1992); Dunne *et al* (1989); Evans (1987a,b); Hall (1987); Singh and Whittington (1975).

rate are independent of firm size. Further, a finer-grained analysis by Scherer and Ross (1990) suggests that the variability of industry output growth rates may differ not only with firm size, but also from industry to industry, depending upon the nature of the product and the character of competition (also see, Beck *et al*, 2008; Vlachos and Waldenstrom, 2005; Rajan and Zingales, 1998; Singh and Whittington, 1975). Further, consistent with the predictions of Jovanovic's (1982) model of industry dynamics, *lagged growth of industry output* $\left(GO_{it-1}\right)$ is also included as an explanatory variable in the estimation of industry output growth model. Based on the premise that true production costs are only learnt by firm managers through time spent in operation, firms choose a level of output each period corresponding with their initial expected costs, based on the outcome of output growth for the previous period; hence, inclusion of the lagged dependent variable in the output growth model.

Industry Concentration $\left(CR_{it}\right)$ – This is a measure of market structure and is represented by the three-firm concentration ratio. It is hypothesised to facilitate collusion between firms and thereby increase profitability. Embedded in the structure-conduct-performance perspective is the view that the firm attempts to control the output in the market by either colluding with other firms to drive up prices and profits, or exercising monopoly power. Therefore, more concentrated industries are expected to be more profitable (see, for example, Domowitz *et al*, 1986a; Martin, 1983; Weiss, 1974). However, whilst theory indicates a relationship between the level of output controlled by a few of the largest firms and performance, it offers no information on the absolute number or size distribution of firms necessary to exercise market power. An overwhelming number of researchers have somewhat arbitrarily used the three-firm concentration ratio (see, for example, Cowling and Waterson, 1976; Dansby and Willig, 1979; Encaoua and Jacquemin, 1980; and Gilbert, 1984). This study therefore uses the three-firm concentration ratio, as others have done. A positive relationship is expected between concentration and profitability.

Capital-Output Ratio $\left(KO_{it}\right)$ – is represented by the ratio of total capital assets to output, as a measure of the degree of capital intensity in the industry. It is hypothesised that performance varies across industries in accordance with the degree of capital intensity. The aim of including this variable therefore is to pick up technological heterogeneity. Besides, traditionally, empirical studies that use the price-cost margins as the dependent variable also include capital intensity as an explanatory variable (see, for example, Prince and Thurik, 1995; Domowitz *et al*, 1986a, 1986b). Two reasons are advanced in the literature for this approach. The pragmatic reason is that the price cost margin is calculated without taking into account the cost of capital in production. As such, capital intensity is included to capture this effect. The theoretical reason is that it is also a proxy for barriers to entry. A high capital-output ratio may reflect the existence of large sunk costs that act as a barrier to entry into industry and therefore insulate any existing incumbents from the potential competition of new entrants, so give rise to monopoly profits (see, for example, McDonald, 1999; House, 1973; Collin and Preston, 1966). A positive association is therefore expected between entity profitability and capital intensity. However, a high capital-output ratio may also lead to constrained output growth. As such, a negative relationship is also hypothesised between capital output and growth in output.

Market Demand Growth $\left(MKD_t\right)$ – represented by growth in real GDP. As observed by Kwoka (1990), a review of the literature reveals that typically, industry performance studies incorporate the effect of demand changes[110]. As observed by Kwoka (1990), it is commonly argued in the literature that contraction in market demand, results in price and profits decline. Further, Bradburd and Caves (1982) note that the profits-market demand growth relationship is often related to windfalls that result when actual demand turns out to differ from planned production – if output emerges with a lag – or capacity. Rapid growth in market demand may create conditions for rising prices and/or a reduction in unit cost due to greater capacity utilization. Thus, markets experiencing high rates of demand growth can be characterized by high marketing costs, rising productivity, increased investment to keep pace with growth, low or negative cash flow, and high levels of buyer spending. The net effect of these cost reductions and increases and rising profit margins and sales is increased profits (see, for example, Buzzell and Gale, 1987). Besides, a growing demand creates an environment for a continual opportunity for new firm

[110] See, for example, Carree and Thurik (1996, 1999); Ilmakunnas and Topi (1999); Dean *et al* (1998); Hay and Morris (1991); Bradburd and Caves (1982, 1980); Grabowski and Mueller (1978); Porter (1974); and, Comanor and Wilson (1967).

investments and higher returns. However, according to Hay and Morris (1991), rapid market demand growth can also have other internal effects within an industry. It could increase margins through maintenance of pressure on capacity or as Bain (1956) suggested, reduce margins because oligopolistic discipline will be harder to maintain. Thus, the coefficient on market demand growth might be positive or negative depending on which effects dominate. Nonetheless, as observed by Hay and Morris (1991), in over three-quarters of all empirical studies, a significant positive association emerged between profitability and market demand growth, whilst in the remainder, no significant relationship was found.

Industry Share (SH_{it})– is the ratio of industry value-added to total manufacturing value-added. This variable is included in the output growth model in order to control for differences in growth potential across industries (see, for example, Beck *et al*, 2008; Claessens and Laeven, 2005; Vlachos and Waldenstrom, 2005; Rajan and Zingales, 1998). As argued by Cetorelli (2001), industry share should capture factors that determine the market structure of one particular industry. As hypothesised in the traditional industrial organisation literature, large industries, or those industries with large shares grow faster than smaller industries due to economies of scale (see, Sheffrin, 2003). A positive relationship is therefore expected between industry share and industry growth. However, Rajan and Zingales (1998) and Cetorelli and Gambera (2001), also observe that whilst industry shares are a result of accumulated past growth in real output, the industry share variable also consistently predict that sectors that had grown substantially in the past, and therefore are already relatively large, grow less in the future, which suggests a negative relationship. The exact relationship between industry share and real output growth may there not be known, *apriori*.

Labour Productivity (LP_{it})– is a measure of output per worker and is often thought to be a major cause of disparities in growth of output between industries. This variable is calculated as employees per value-added thus, the ratio between the value-added originating in an industry and its employed labour force (see, Szirmai, 1994; Leonard, 1971). However, in the literature, earlier studies have used working hours and educational qualifications to determine labour productivity (see, Kendricks, 1961). As technological shifts involves the use of more labour – measured through either number of employees, man hours, or level of education – for the same units of output, this should suggest that labour productivity is on the decline. The opposite is hypothesised to be true when less labour is required. Accordingly, increase in the mechanisation of many production processes, coupled with development in information technology, suggests a positive relationship between labour productivity and output growth.

Small Firm Share (SFS_i) – in this study this is measured by each industry's natural small firm share, which is equal to industry *i*'s share of employment in firms with less than 20 employees, following the methodology used by Beck *et al* (2008), with particular focus on small firm size. This is constructed as a measure of each industry's "natural" or technological share of small firms based on an extensive body of research on the theory of the firm, as discussed by Coase (1937) and Sutton (1991); where, differences in productive technologies influence an industry's technological firm size. However, in industrial economics literature, empirical investigations on the impact of firm size on profitability have given varying results. For instance, whilst Hall and Weiss (1967) find a positive association between firm size and profitability, Osborn (1970) and Steckler (1964) either find a weak negative relationship or none at all. Schmalensee (1989b), seeking to determine whether systematic changes in intra-industry profitability occurred over time, find that large-size firms in general are more profitable than small-size firms within the same industry. Yet, earlier works by Schmalensee (1987) found that firm size and profitability were not strongly correlated. So, conflicting results are reported by the same researcher. Nonetheless, in the literature, economies of scale provide one theoretical justification for a positive relationship between firm size and profitability, according to the prominent works of Scherer (1973), Hall and Weiss (1967), and Steckler (1964). Scale economies may be related to profit by virtue of their propensity to serve as entry barriers and the implied cost disadvantages imposed on smaller firms operating at sub-optimal scale (see, for example, Scherer and Ross, 1990). However, in a study of US industries, Waldman and Jensen (2001) find no evidence of scale economies as a source of size-related differences in profits. An alternative explanation is advanced by Demsetz (1973a, b) who argues that, over time, the more efficient firms are rewarded with both growth and elevated profits. Amato and Wilder (1988) observe, though, that Demsetz's

(1973a, b) findings are not supported by more rigorous empirical testing. Providing yet another conceptual argument to support size related differences in profitability, are Reinganum and Smith (1983) and Meyer (1967), who contend that capital market imperfections are the basis of this relationship. On this, Amato and Wilder (1985) observe that while competition would be expected to equalize rates of return across firm sizes in the long run, the market power and access to capital markets of large firms may give them access to investment opportunities that are not available to smaller firms. The potential for a negative relationship between firm size and profitability is presented by Amato and Wilder (1985), which focus on alternative theories of a firm's motivation.

Similar controversy characterises the hypothesised relationship between firm size and industry output growth. In a study of US manufacturing firms between 1970 and 1989, Dhawan (2001) examines the relationship between firm size and productivity and finds that large size firms have lower productivity than small size firms; thereby suggesting a negative relationship. Sleuwaegen and Goedhuys (2002) also cite a large number of sources from both developed and developing countries confirming that large size firms grow at significantly slower rates. In contrast, a recent study by Bartelsman and Doms (2000) find that large size firms enjoy high growth of output and higher likelihood of survival than small size firms, which suggests a positive relationship between firm size and industry output growth. Similarly, van Biesebroeck (2005) find that size is positively correlated with output growth and, that large size firms unambiguously grow more rapidly and improve productivity faster. Van Biesebroeck also observes that large size firms remain large, more productive and remain at the top of the distribution. Meanwhile, small size firms are found to be less productive and have a hard time advancing in the size or productivity distribution. This is consistent with findings by Liu and Hsu (2006), and Grilliches and Regev (1995), who observe higher output growth rates for large size firms in Taiwan and Israel, respectively. Singh and Whittington (1975) examine the relationship between firm size and industry output growth for nearly 2000 UK firms between 1948 and 1960 and find that firm size has a significant positive effect on output growth. Evans (1987a, 1987b), Hall (1987) and Dunne *et al* (1989) apply the theoretical model of Jovanovic (1982) to test the relationship among the US manufacturing industry growth and firm size. They find that industry output growth decreased with firm size, thereby suggesting a positive relationship. Variyan and Kraybill (1992) and Dunne and Hughes (1994) also obtain similar results using US manufacturing, sales and services firms' data and the UK manufacturing data, respectively.

Overall, the foregoing literature suggests that whilst the firm size-performance relationship may be positive over some firm size ranges and negative for others, it may also be non-existent. Thus, there may be positive or negative or no relationship between firm size and price-cost margins or output growth. This ambiguity suggests that, in both models, the exact relationship between small firm share and performance may not be known *a priori*.

Imports intensity $\left(MM_t\right)$ and *Exports intensity* $\left(MX_t\right)$ – measured as growth in the ratio of manufactured imports to total merchandise imports, and manufactured exports to total merchandise exports, respectively. It is imperative that the effects of international trade effect are considered in the case of a small-open economy like Malawi. However, the expected relationship between the two foreign trade variables and price-cost margins is ambiguous. *Imports intensity* – A number of studies; including Ghosal (2000), Katics and Petersen (1994), Caves (1985), Urata (1984), Geroski and Jacquemin (1981), and Pugel (1980), support the hypothesis that imports have an increasing influence on industrial price-cost margins. However, others like de Melo and Urata (1986) and Jacquemin *et al* (1980) contend that a high rate of imports will negatively affect the price-cost margins. They argue that increased imports may reveal a comparative disadvantage and thus be associated with lower profits. More importantly, they observe that in industries faced with significant degrees of 'actual' import competition, the ability of domestic firms to maintain prices above average cost is reduced. On *Exports Intensity* – the expected relationship with price-cost margins is also ambiguous. Whilst studies have shown that competition in export markets is likely to squeeze profit margins, it is equally possible that exports may actually increase a firm's experience and allow it to learn faster. If this were the case, exports may increase profit margins in the medium term. Empirically, this variable has therefore produced conflicting results in terms of its relationship with profits. Theoretically, as observed by de Melo and Urata (1986), a negative relationship will obtain if one assumes that export activities constrain non-competitive oligopolists to behave competitively as long as the oligopolists cannot discriminate between domestic and foreign markets. The manufacturing exports of most developing countries, like those from Malawi, consist of undifferentiated products for which the scope for discrimination across markets is likely to be small. So, exports can be expected to depress profitability. But exporting firms must be rewarded by a risk premium if there is greater uncertainty in dealing with foreign markets. In that case, industries with higher export sales may have higher rates of return. However, the general presumption is that export activities have a constraining influence on pricing behaviour especially if exports are not differentiated, as is likely to be the case for a predominantly primary commodity exporting country like Malawi. Empirically, Khalilzadeh-Shiraz (1974) and Pugel (1978) find positive relationship between exports and profits in the United Kingdom and United States, respectively; but Pugel (1980) and Jacquemin *et al* (1980) find little support for this result. Yamawaki (1986), in a survey of previous empirical studies on the influence of exports on price-cost margins, which have been performed for several countries, also find diverse results. Hence, the exact effect of exports intensity on profits may not be determined *a priori*.

Inflation Rate $\left(INF_t\right)$ – is measured as annual percentage change in the consumer price index. Notably, the importance of inflation to managers and policy makers, within both the economic growth and finance literature, has generated considerable research effort in the study of industry performance. However, within these two scenes of academic inquiry – thus, within the economic growth and finance literature – the debate as to whether industry performance is helped or hindered by inflation has resulted in ambiguous conclusions. Both positive and negative effects of inflation on industry price-cost margins as well as output growth have been identified in both schools leaving the net effect to further debate and empirical investigation. Theoretical literature linking inflation and price-cost margins suggests a negative relationship as predicted by Diamond (1993), as well as a positive association as observed by Wu and Zhang (2001) and Tommasi (1994). Wu and Zhang (2001) find that inflation decreases the number and size of firms in an industry. The reduced competition leads to higher price-cost margins in their model. Further, van Hoomissen (1988) and Tommasi (1994) establish that inflation lowers the informativeness of current prices about future prices. Prices become outdated quickly, which leaves the consumer less informed. According to this view, less informed consumers permit firms to raise their mark-ups, which result increased profits. Regarding the effect of inflation on output growth, Logue and Sweeny (1981) find a positive relationship between these variables. However, in a study of OECD countries, Katsimbris (1985) and Thornton (1988) find both positive as well as an insignificant relationship between inflation and output growth. Meanwhile, Grier *et al* (2004) and Fountas *et al* (2001) report that inflation has a negative effect on output growth. In view of the foregoing, the relationship between inflation and industry performance could either be positive, negative, or non-existent, and may therefore not be charted *a priori*.

Financial Liberalization Dummy (FL_t) is made up of three parts each associated with one of three major financial reform measures implemented in Malawi. This approach follows Laeven (2003), Bandiera *et al* (2000), and Williamson and Mahar (1998) who observe that financial liberalization takes place in various ways and in stages, which require proper distinction. In Malawi, the pre-liberalization phase 1970 to 1986, the financial liberalization dummy takes the value 0; then, the period from 1987 which marks the beginning of the financial reforms, specifically the deregulation of interest rates, takes the value of 1; and, finally, from 1989, when major financial reforms were seriously implemented, takes the value of 2. Theoretically, in cases where financial liberalization makes easy firm's access to credit, growth and expansion of incumbent firms should be facilitated. Otherwise, financial reforms could also strengthen the monopoly power of existing firms through disproportional growth opportunities; just as it could also result in summary exits of the incumbent firms, due to increased cost of capital resulting from interest rates deregulation.

6.4.3. Estimation Technique.

Recognising the possibility of a dual effect of financial liberalization on economic growth in general as observed by, among others, Loayza and Ranciere (2006); but also in order to facilitate investigation of its hypothesised contrasting effects on industry performance, the study conducts a variety of estimations based on an encompassing model of short- and long-run effects using a panel of cross-industry and time series observations. In any case, in industrial organisation literature there exists many compelling reasons why the input and output markets may adjust to the financial liberalization policy shocks with a lag rather than instantaneously. For example, time-to-build constraints (Kydland and Prescott, 1982), adjustment costs (Lucas, 1967), financial constraints (Kalecki, 1937), and habit formation (Phlips, 1972) can cause delayed response to a shock. Analysis of both the causes of sluggish adjustment and the implied short- and long-run dynamics are of intrinsic interest in this particular study. Accordingly, by focusing on effects at different time horizons, the approach sets a basis for an explanation of the apparently contradictory effects of financial liberalization on the performance of industries with different firm sizes, in both the short-run as well as the long-run. The models as depicted in Equations (6.5) and (6.7) above are therefore estimated using a methodology designed by Pesaran, Shin and Smith (1999), and widely applied in many other research studies[111].

According to Pesaran, Shin and Smith (1999), there are two traditional methods for estimating panel models: averaging and pooling. The former involves running N separate regressions and calculating coefficient means (Pesaran and Smith, 1995). However, a drawback to averaging is that it does not account for the fact that certain parameters may be equal over cross sections. Alternatively, pooling the data typically assumes that the slope coefficients and error variances are identical. This is unlikely to be valid for short-run dynamics and error variances, although it could be appropriate for the long-run. Pesaran, Shin, and Smith (1999), therefore proposed the Pooled Mean Group (PMG) estimator, which is an intermediate case between the averaging and pooling methods of estimation, and involves aspects of both. The PMG estimation method restricts the long-run coefficients to be equal over the cross-section, but allows for the short-run coefficients and error variances to differ across groups on the cross-section. Pooled long-run coefficients and averaged short-run dynamics can therefore be obtained as an indication of mean reversion.

[111] See, for example: Elbadawi *et al* (2008); Law (2007); Goswami and Junayed (2006); Loayza and Ranciere (2006); Martinez-Zarzoso and Bengochea-Morancho (2004); Byrne and Davis (2003); and, Favara (2003).

The PMG estimation is based on an Autoregressive Distributive Lag, ARDL (*p, q ...q*) type of model;

$$y_{it} = \sum_{j=1}^{p} \lambda_{ij}\, y_{it-j} + \sum_{j=0}^{q} \gamma_{ij}\, x_{it-j} + \mu_i + \varepsilon_{it} \tag{6.9}$$

$i = 1, 2\ldots N;\ t = 1, 2\ldots T.$

where, y_{it} is a scalar dependent variable, x_{it} (kx1) is the vector of explanatory variables for group i, μ_i represents the fixed effects, the coefficients of the lagged dependent variables (λ_{ij}) are scalars and γ_{ij} are (kx1) coefficient vectors. T must be large enough, as is arguably the case in this study, in order for the model to be estimated for each cross-section. Equation (6.9) can be re-parameterised as:

$$\Delta y_{it} = \varphi_i\, y_{it-1} + \beta_i^{'}\, x_{it-1} + \sum_{j=1}^{p-1} \lambda^{*}_{ij}\, \Delta y_{it-j} + \sum_{j=0}^{q-1} \gamma^{*}_{ij}\, \Delta x_{it-j} + \mu_i + \varepsilon_{it} \tag{6.10}$$

where: $\varphi_i = -\left(1 - \sum_{j=1}^{p} \lambda_{ij}\right);\ \beta_i = \sum_{j=0}^{q} \gamma_{ij}\ ;\ \lambda^{*}_{ij} = -\sum_{m=j+1}^{p} \lambda_{im}\ ;\ \gamma^{*}_{ij} = \sum_{m=j+1}^{q} \gamma_{im}$

It is assumed that the disturbances ε_{it} 's are independently distributed across i and t, with zero means and variances $\sigma^2_i > 0$. Further assuming that $\varphi_i < 0$ for all i, therefore there exists a long-run relationship between y_{it} and x_{it}, defined by;

$$y_{it} = \theta^{'}_{i}\, x_{it} + \eta_{it} \tag{6.11}$$

where; $\theta^{'}_{i} = -\dfrac{\beta^{'}_{i}}{\varphi_i}$ is the kx1vector of the long-run coefficients, and η'_{it}'s are stationary with possibly non-zero mean (including fixed effects). Since Equation (6.10) can be re-parameterized as:

$$\Delta y_{it} = \varphi_i\, \eta_{it-1} + \sum_{j=1}^{p-1} \lambda^{'}_{ij}\, \Delta y_{it-j} + \sum_{j=0}^{q-1} \gamma^{'}_{ij}\, \Delta x_{it-j} + \mu_i + \varepsilon_{it} \tag{6.12}$$

where, η_{it-1}, is the error correction term. Hence, φ_i , is the error correction coefficient measuring the speed of adjustment towards the long-run equilibrium.

According to the literature, he estimated coefficients in the model are not dependent upon whether the variables are I (1) or I (0)[112]. The key feature of the PMG estimator is to make the long-run relationships homogeneous while allowing for heterogeneous dynamics and error variances.

Apart from the PMG, for robustness of the results, the study also conducts other two panel data estimations – the Mean Group (MG) estimation proposed by Pesaran and Smith (1995) that averages the error correction coefficients and the other short run parameters, allows for heterogeneity but imposes no long-run homogeneity; and the Dynamic Fixed Effects (DFE) estimation, which assumes that all parameters are constant across industries, except for the intercept, which is allowed to vary across industries. The choice between PMG, MG, and DFE estimation entails a trade-off between consistency and efficiency. The DFE estimator dominates the other two in terms of efficiency if the restrictions are valid. If not valid, then DFE estimates will generate inconsistent estimates and will be dominated by the PMG and MG estimates.

Arguably, for this study, the PMG estimator is considered to offer the best compromise between consistency and efficiency, because one would expect the long-run path for profitability and output growth to be determined by a similar process across industries while the short-run dynamics around the long-run equilibrium path may differ from industry to industry, mainly due to idiosyncratic news and shocks to fundamentals. For instance, as argued by House (1973), among others, since price-cost margins are observations for one year only, high margins may be the result of short-run changes in demand, which, over time, would be eroded by the competitive adjustment process. Specifically, the PMG approach may be seen in industry dynamics as modelling the supply side, whereby firms have similar long run reactions to economic variables, given a common objective of profit maximization in the long run, while in the short run institutions may play a role – such as scope of liquidity provided by relationship lending and other credit rationing characteristics – thereby

[112] According to Pesaran *et al* (1999), the existence of a long-run relationship, for Equation (9), is not contingent on cointegration. Because right-hand-side variables can combine stationary and non-stationary variables, the equation can be embedded in a dynamic error-correction model. Pooled Mean Group estimation hence does not require pre-testing for unit roots and cointegration. All the variables in the equation were constructed as index numbers, trend deviations, or shares, implying that they are stationary in the long run.

leading to differing dynamics. Thus, the PMG estimator in this study should allow for financial liberalization to have similar effects on price-cost margins across industries in the long run, while permitting heterogeneous short run adjustments across groups to variations in firm sizes, as well as changes in the level of financial development. However, the hypothesis of homogeneity of the long-run parameters is not assumed *a priori* and is tested empirically in all specifications. Thus, the effect of heterogeneity on the means of the coefficients is determined by a Hausman-type test (Hausman, 1978) applied to the difference between the PMG and MG estimators, where under the null hypothesis, the difference in the estimated coefficients obtained from the PMG and MG estimators is not significantly different, in which case the PMG estimator is more efficient.

6.4.4. Data Specification.

According to Pesaran *et al* (1999), the main requirement to implement the PMG estimator is to have a panel in which the number of groups *(N)* and the number of time-series observations *(T)* are both large. In contrast with most empirical studies in the industrial organisation literature, it is therefore necessary to use a panel of data with annual observations. This study therefore uses annual data from 1970-2004 for 20 three-digit SIC Malawian manufacturing industries; thus, a panel of size N=20 and T=35, therefore with 700 observations for each variable[113]. Estimations are made using a Stata module ***xtpmg*** by Blackburne and Frank (2007).

Table 6.1 present descriptive statistics of the key variables of this empirical investigation. Price-cost margins suggest an average profitability of industries during the period of 18.0 percent; whilst the mean manufacturing output growth, in terms of net sales, stands at about 38.0 percent. Further, the pairwise correlations matrix for the variables of interest is reported in Table 6.2 using panel data, and shows that there are some important correlations among the variables. The signs are as expected in most of the relationships. For example, the industry price-cost margins correlates positively

[113] Arguably, this is large enough for the PMG estimation method, according to Pesaran *et al* (1999). In fact, Pesaran *et al* uses a panel of size N=24 and T=32 (768 observations), which is not significantly different from the sample size used for this study (which is 700 observations).

with industry concentration and growth in market demand. Notably, in both the price-cost margins as well as output growth variables, there is a positive relationship with their lagged values. This suggests that, for both industry price-cost margins as well as industry output growth, there are some path dependencies in these processes. In addition, the small firm size index[114] – which represents industries naturally composed of small firms for technological reasons – is on average negatively correlated with both price-cost margins and industry output growth.

However, whilst the aforementioned raw correlations do not control for other industry or macroeconomic characteristics, they nonetheless indicate that analysing the relationship between firm size and industry performance could well amount to different exercises.

Table 6.1: <u>Summary Statistics of the Main Regression Variables – Annual Data: 1970-2004</u>.

Variable Description		Mean	Std. Dev.	Min.	Max.
PCM_{it}	Industry Price-Cost Margins (Industry Profitability)	0.183	0.135	- 0.26	0.70
GO_{it}	Growth of Industry Output (as % of Real GDP)	0.378	1.630	-24.64	18.13
CR_{it}	Three-Firm Concentration Ratio	82.202	18.065	29.45	100.00
KO_{it}	Industry Capital-Output Ratio (Capital Intensity)	0.277	0.304	0.91	2.43
LP_{it}	Labour Productivity (Employee per Value-Added)	2.313	0.458	1.56	3.17
SH_{it}	Share of Industry Value Added to Total Man. Value-Added.	0.047	0.072	0.01	0.70
MKD_t	Market Demand Growth (Real GDP Growth)	3.822	5.395	-10.24	16.73
SFS_i	Industry's Small Firm Share (Firm Size)	0.047	0.072	0.01	0.70
ED_i	External Finance Dependence	0.637	0.474	0.10	1.58
MM_t	Manufactured Imports as % of Total Merchandise Imports	73.637	3.148	63.39	80.77
MX_t	Manufactured Exports as % of Total Merchandise Exports	8.572	2.811	4.62	15.44
INF_t	Inflation Rate (Annual % change in Consumer Price Index)	17.489	15.716	1.70	83.33

[114] Notably, the correlation coefficient between Small Firm Size and External Finance Dependency is negative and very small (-0.011), but also insignificant. This suggests that the industry characteristics explaining firm size distribution are not the same as the characteristics explaining technological dependence on external finance as per the influential findings of Rajan and Zingales (1998). This confirms the fact that the firm size channel of financial liberalization being investigated in this chapter is different from the external finance channel that has been examined earlier in the study.

Table 6.2: <u>Pairwise Correlation Matrix of the Main Regression Variables.</u>

(Annual Panel Data: 1970-2004)

	PCM_{it}	$PCM_{i(t-1)}$	GO_{it}	$GO_{i(t-1)}$	CR_{it}	KO_{it}	LP_{it}	SH_{it}	MKD_t	SFS_i	ED_i	MM_t	MX_t	INF_t
PCM_{it}	1.000													
$PCM_{i(t-1)}$	0.591^{***}	1.000												
GO_{it}	0.167^{***}	0.308^{***}	1.000											
$GO_{i(t-1)}$	0.093^{**}	0.171^{***}	0.128^{***}	1.000										
CR_{it}	0.225^{***}	0.156^{**}	-0.512^{***}	-0.361^{***}	1.000									
KO_{it}	-0.132^{***}	0.615^{***}	0.516^{***}	-0.384^{***}	0.794^{***}	1.000								
LP_{it}	0.151^{***}	0.149^{***}	0.231^{***}	0.113^{***}	0.127^{***}	-0.264^{**}	1.000							
SH_{it}	0.232^{***}	0.113^{***}	0.351^{**}	0.168^{**}	-0.273^{***}	-0.249^{***}	-0.163^{***}	1.000						
MKD_t	0.241^{***}	0.077^{**}	-0.093^{**}	0.133^{***}	-0.027	-0.122^{**}	-0.076^{**}	0.144^{***}	1.000					
SFS_i	-0.241^{***}	-0.078^{**}	-0.063^{*}	-0.005	-0.093^{**}	-0.027	0.014	0.001	0.001	1.000				
ED_i	0.203^{*}	0.199	-0.004	-0.001	0.135^{*}	0.791^{***}	0.232^{*}	-0.136	0.006	-0.011	1.000			
MM_t	0.019	0.033	0.003	0.023	0.224^{***}	0.877^{***}	-0.001	-0.079^{**}	0.191^{***}	0.068^{*}	-0.001	1.000		
MX_t	0.127^{***}	0.153^{***}	0.318^{***}	0.188^{**}	0.316^{***}	0.529^{***}	0.001	-0.066^{*}	-0.129^{*}	0.130^{***}	0.025	-0.397^{***}	1.000	
INF_t	0.012	0.051	-0.046	-0.024	0.480^{***}	0.737^{***}	0.736^{***}	-0.020	0.606^{***}	-0.173^{***}	0.001	-0.173^{***}	-0.070^{*}	1.000

<u>Note</u>: This table report the correlation matrix of the regression variables. And, *******, ******, ***** indicate significance levels of 1, 5, and 10 percent, respectively. Definitions and data sources are provided above.

6.5. EMPIRICAL RESULTS.

Tables 6.3a and 6.3b below, present the results on specification tests and the estimation of long- and short-run parameters linking industry performance – measured separately through two performance indicators, *viz*, price-cost margins and output growth, respectively – with firm size, financial liberalization, and other performance determinants. The analyses emphasize the results obtained using the pooled mean group (PMG) estimator, which is preferred given its gains in consistency and efficiency over other panel error-correction estimators. For comparison purpose, the study also presents the results obtained with the mean group (MG) and the dynamic fixed effects (DFE) estimators.

However, as indicated in the previous section, the consistency and efficiency of the PMG is conditional on the long-run parameters being the same across industries. And, as further indicated in the section on econometric methodology, this involves testing the null hypothesis of homogeneity through a Hausman-type test, based on the comparison between the PMG and MG estimators. In Tables 6.3a and 6.3b, the study results for the models as depicted in Equations (6.5) and (6.7), respectively, present the Hausman test statistic and the corresponding *p*-values for the coefficients, jointly. In both models, the homogeneity restriction is not rejected jointly for all parameters. A further condition to the existence of a long-run relationship requires that the coefficient on the error-correction term be negative. Regarding the estimated parameters, therefore, analyses focus on those obtained with the PMG estimator.

6.5.1. Price-Cost Margins Model.

Table 6.3a presents estimation results for the price-cost margins (or profitability model) as depicted in Equation (6.5). The dependent variable for the analysis of this model is the theoretically preferred price-cost margin obtained from manufacturing census data. This follows many other empirical studies in the applied industrial organisation literature (see, for example, Feeny *et al*, 2005; Feeny and Rogers, 1999;

McDonald, 1999) [115]. According to the results in Columns (3) of Table 6.3a, in both the short-run as well as in the long-run, price-cost margins are positively related to industry concentration. There is also a positive and significant relationship with market demand, industry share, and imports intensity, in the short-run; albeit, not significantly so in the long-run. Notably, the coefficient for the exports intensity variable is positive strongly significant in the long-run, whilst in the short-run this variable suggests a negative influence on price-cost margins. These are standard results from empirical industry profitability literature, and are generally consistent with results from numerous studies in the structure-conduct-performance tradition (for a review of recent empirical literature, see, for example, Lipczynski *et al*, 2005; McDonald, 1999; Hay and Morris, 1991; Buzzel and Gale, 1987). As such, it is reassuring that the study is able to reproduce the results with this methodology.

Most importantly for the purpose of this study is the finding that price-cost margins are negatively and significantly linked to the measure of firm size – small firm share – SFS_i, in the long-run (-0.042) and in the short-run (-0.010). Interestingly, this relationship does not change with financial liberalization as the interaction term between small firm share and financial liberation $(SFS \times FL)_{it}$ has a negative and significant coefficient both in the long-run (-0.044), as well as in the short-run (-0.062). This suggests that 'small-firm industries' – industries naturally composed of small firms for technological reasons are less profitable, and the situation does not improve with financial liberalization. Another observation is that the short-run average relationship between price-cost margins and the interaction between small firm share, as the measure of firm size, and the financial liberalization dummy $(SFS \times FL)_{it}$ appears to be strongly negative, with a point estimate several times larger than that of the long-run effect of firm size. Thus, comparing the long- and short-run estimates, a first broad conclusion is that the sign of the relationship between industry performances, as measured by price-cost margins, and the interaction term depends on whether their movements are temporary or permanent.

[115] In the literature, oligopolistic firms are often observed to aim at target 'price-cost margins' as a pricing rule of thumb (see, Hall and Hitch, 1939), in which case the margins must be a better dependent variable in regression analysis for firms' profitability. Further, the data for the price-cost margin ratios is traditionally obtained from the same source as that for many of the explanatory variables (Census of Manufacturing); thus, minimising biases.

Table 6.3a: The Long-Run and Short-Run Effect of Financial Liberalization on Firm Size and Price-Cost Margins Relationship
(Annual Panel Data: 1970-2004)

Variables:- *Dependent Variable:* **Price-Cost Margins *(PCM)***	(1) **Dynamic Fixed Effects**	(2) **Mean Group**	(3) **Pooled Mean Group**
CR	**0.226***** *(0.057)*	**0.246***** *(0.057)*	**0.192***** *(0.043)*
KO	-0.047 *(0.035)*	-0.242 *(0.156)*	**-0.055**** *(0.028)*
MKD	**0.049***** *(0.016)*	-0.063 *(0.076)*	0.018 *(0.014)*
SH	0.008 *(0.023)*	**0.476**** *(0.213)*	0.004 *(0.018)*
MM	-0.114 *(0.201)*	-0.059 *(0.113)*	-0.201 *(0.148)*
MX	**0.351***** *(0.124)*	**0.103*** *(0.061)*	**0.437***** *(0.102)*
INF	**0.026***** *(0.007)*	0.011 *(0.007)*	**0.031***** *(0.006)*
SFS	**-0.041***** *(0.013)*	0.007 *(0.020)*	**-0.042***** *(0.010)*
$SFS \times FL$	-0.004 *(0.013)*	0.099 *(0.118)*	**-0.044***** *(0.012)*
Error-Correction Coefficient (ϕ_i)	***-0.357***** *(0.032)*	***-0.683***** *(0.067)*	***-0.292***** *(0.038)*
ΔCR	**0.083***** *(0.029)*	-0.010 *(0.033)*	**0.070**** *(0.026)*
ΔKO	0.028 *(0.018)*	**0.033**** *(0.016)*	0.008 *(0.015)*
ΔMKD	**0.053***** *(0.007)*	**0.047***** *(0.012)*	**0.054***** *(0.011)*
ΔSH	**0.078***** *(0.012)*	0.024 *(0.030)*	**0.168***** *(0.036)*
ΔMM	0.043 *(0.052)*	**0.120***** *(0.036)*	**0.066**** *(0.027)*
ΔMX	**-0.037*** *(0.023)*	-0.015 *(0.022)*	**-0.033*** *(0.019)*
ΔINF	**-0.008***** *(0.002)*	**-0.009***** *(0.002)*	**-0.008***** *(0.001)*
ΔSFS	**-0.017***** *(0.005)*	-0.009 *(0.006)*	**-0.010*** *(0.005)*
$\Delta\, SFS \times FL$	**-0.026***** *(0.006)*	-0.025 *(0.028)*	**-0.062**** *(0.028)*
No. of Observations	678	678	678
Hausman Test (χ^2) *statistic* *p-value*	3.43 *(0.9449)*		

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively.

6.5.2. Output Growth Model.

Table 6.3b presents panel estimation results from the DFE, MG, and PMG estimators for the output growth model as depicted in Equation (6.7) above. As can be seen from the results, all the three panel estimations provide theoretically consistent signs of all the coefficients for most of the explanatory variables. Notably, in the short-run, output growth is positively related to industry share, market demand, and imports. However, in the long-run, the results show a positive relationship between output growth and industry share, market demand and labour productivity; whilst relationships with capital intensity, imports, and inflation, are all significant but with negative coefficients. Again, these are standard results from empirical industry growth literature, it is therefore reassuring that the study is able to reproduce the results with this methodology.

However, of particular interest to this research study is the result between small firm measure and output growth. The small firm size variable has a negative coefficient and is significant determinant of industry output growth, according to the long run and short run results in Column (3) of Table 6.3b. This finding is consistent with the results by Evans (1987a, b), Dunne *et al* (1989), and Doms *et al* (1995) who find that industry growth is negatively related to firm size using U.S. data. Similar findings are made by Dunne and Hughes (1994) using U.K. data; and, by Nurmi (2002) in Finnish manufacturing. However, the relationship does not change with financial liberalization, as results of estimating Equation (6.7) still show a negative relationship between small firm share, as the measure of firm size, and the financial liberalization dummy $(SFS \times FL)_{it}$ and output growth, both in the short-run (-0.060) as well as in the long-run (-0.037). Notably, in the short-run, the quantitative effects of small firm share are much larger with financial liberalization than before the reforms, thereby suggesting the devastating effects of financial liberalization policy. Generally, the results indicate that industries whose organisation is based more on small firms than on large firms grow less following financial liberalization. These results run contrary to the orthodox predictions about the influence of financial development on industry growth, and contradict the findings by, among others, Rajan and Zingales (1998).

Table 6.3b: The Long-Run and Short-Run Effect of Financial Liberalization on Firm Size and Output Growth Relationship

(Annual Panel Data: 1970-2004)

Variables:- *Dependent Variable:* **Output Growth *(GO)***	(1) **Dynamic Fixed Effects**	(2) **Mean Group**	(3) **Pooled Mean Group**
SH	0.010 *(0.022)*	0.024 *(0.213)*	**0.057***** *(0.009)*
KO	**-0.193***** *(0.041)*	**-0.240**** *(0.105)*	**-0.120***** *(0.016)*
LP	**0.464***** *(0.078)*	**0.438**** *(0.190)*	**0.131***** *(0.032)*
MM	**-0.974***** *(0.229)*	**-0.894**** *(0.350)*	**-0.853***** *(0.099)*
MX	**0.235**** *(0.103)*	0.192 *(0.137)*	- 0.002 *(0.044)*
MKD	**0.057***** *(0.015)*	0.028 *(0.059)*	**0.036***** *(0.011)*
INF	**-0.003***** *(0.001)*	**-0.004**** *(0.002)*	**-0.003***** *(0.001)*
SFS	-0.019 *(0.013)*	-0.029 *(0.023)*	-0.011 *(0.010)*
$SFS \times FL$	**-0.024*** *(0.013)*	**-0.197***** *(0.101)*	**-0.037***** *(0.006)*
Error-Correction Coefficient (ϕ_i)	***-0.375***** *(0.032)*	***-0.734***** *(0.082)*	***-0.334***** *(0.060)*
ΔSH	**0.076***** *(0.012)*	0.021 *(0.037)*	**0.145***** *(0.034)*
ΔKO	**0.055***** *(0.019)*	**0.058*** *(0.020)*	0.019 *(0.019)*
ΔLP	-0.044 *(0.058)*	-0.014 *(0.074)*	0.112 *(0.052)*
ΔMM	**0.169***** *(0.050)*	**0.211***** *(0.048)*	**0.142***** *(0.039)*
ΔMX	-0.026 *(0.023)*	-0.018 *(0.023)*	0.014 *(0.017)*
ΔMKD	**0.039***** *(0.007)*	**0.042***** *(0.014)*	**0.032***** *(0.011)*
ΔINF	0.000 *(0.001)*	0.001 *(0.001)*	0.001 *(0.001)*
ΔSFS	**-0.024***** *(0.005)*	**-0.021**** *(0.008)*	**-0.017***** *(0.005)*
$\Delta\, SFS \times FL$	**-0.022***** *(0.006)*	0.014 *(0.018)*	**-0.060**** *(0.026)*
No. of Observations	678	678	678
Hausman Test (χ^2) statistic *p-value*	2.28 *(0.9862)*		

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively.

6.6. ROBUSTNESS TESTS.

This section presents sensitivity analyses of the results. The study uses a different measure and definition of firm size. Further, an alternative estimator is used to examine the influence of financial liberalization on the relationship between firm size and price-cost margins and output growth.

6.6.1. Alternative Measure of Firm Size.

As a sensitivity test the study estimates the models as depicted in Column (3) of Tables 6.3a and 6.3b, using an alternative definition of firm size. Instead of defining firm size through small firms share, it is determined by using a commonly used measure of firm size in the empirical literature – the average number of employees (see, for example, Yang and Huang, 2005; Dedola and Lippi, 2005; Kumar *et al*, 2001; Audretsch *et al*, 1998; Dean *et al*, 1998; Davis and Henrekson, 1997). However, as observed by Kumar *et al* (2001), whilst a simple average, obtained through dividing the total employment in an industry by the total number of firms in that industry, is widely used in the literature, it is, albeit, inappropriate for two reasons. First, it ignores the richness of the data on the distribution of firm size. Second, it would give a number that has little bearing on the size of the firm that is ‘typical’ of the sector or has the greatest share in the sectors production. As such, using the simple average could lead to wrong interpretation of the relationships. Instead, following Kumar *et al* (2001), the study calculates the size of the typical firm by, first locating the industry in which the median employee of the overall manufacturing sector works. Next, the total employment in that industry is divided by the number of firms in that industry to get the average firm size. The study therefore uses the log of the average firm size AFS_i^{med}, calculated based on median employment numbers, as the variable representing firm size in the regressions. Thus, according to Kumar *et al* (2001), the average firm size is defined as follows;

$$AFS_i^{med} = \sum_i \left(\frac{n_i}{N}\right)\left(\frac{e_i}{n_i}\right) = \frac{E}{N} \qquad (6.13)$$

where, AFS_i^{med} is average firm size (based on the median employment numbers), e_i is the total number of employees in industry *i*, *E* is the total number of employees in the entire manufacturing sector, n_i is the total number of firms in an industry. However, one caveat of using the median of the sample to determine an average firm size AFS_i^{med} applicable to the entire industry is that it may sometimes not be considered to be representative, particularly where the distribution of firms is highly skewed. Therefore, the study also determines an alternative average firm size measure based on the 75th percentile of employment numbers to distinguish between small (below the 75th percentile) and large firms (above 75th percentile) $AFS_i^{75th\ percentile}$. In order to examine the influence of financial liberalization on the relationship between firm size and price-cost margins and output growth, interaction terms are calculated using the two alternative measures of average firm size and a financial liberalization dummy, viz; $\left(AFS^{med} \times FL\right)_{it}$ and $\left(AFS^{75th\ percentile} \times FL\right)_{it}$, which are also included in the respective models, and estimated through Equations (6.5) and (6.7). Column (1) and (2) of Tables 6.4a and 6.4b show the results for estimations using average firm size, based on the median, as well as 75th percentile employment numbers, respectively. Like in the main regression estimations, of interest is the sign and significance of the average firm size measures, particularly the interaction terms. A positive and significant coefficient should suggest that as the average firm size increases, it becomes more profitable or that its output grows disproportionately faster. A negative and significant coefficient should suggest the opposite.

According to the results in Column (1) of Tables 6.4a and 6.4b, both in the short-run as well as in the long-run, average firm size, measured based on the median employment numbers AFS_{Median}, has a positive and significant coefficient in the two models. Further, for both models, the results do not change with financial liberalization, as depicted by the positive coefficient on the interaction term between the average firm size measure and the financial liberalization dummy $\left(AFS^{med} \times FL\right)_{it}$. However, the study results are virtually unchanged even after changing cut-off points from median to 75th percentile. In fact, the results in

Table 6.4a: Price-Cost Margins Model: Pooled Mean Group Estimation using Alternative Measures of Firm Size

(Annual Panel Data: 1970-2004)

Variables:- *Dependent Variable:* **Price-Cost Margins *(PCM)***	Firm Size Measure (1) $AFS_{(Median)}$	Firm Size Measure (2) $AFS_{(75th\ percentile)}$
CR	*0.075* *(0.058)*	0.051 *(0.058)*
KO	***-0.094**** *(0.030)*	**-0.087*** *(0.030)*
MKD	**0.033**** *(0.015)*	0.020 *(0.014)*
SH	0.017 *(0.013)*	**0.037**** *(0.014)*
MM	**-0.542***** *(0.161)*	**-0.404**** *(0.156)*
MX	**0.330***** *(0.107)*	**0.243**** *(0.099)*
INF	**0.045***** *(0.008)*	**0.034***** *(0.007)*
AFS_{Median}	**0.046**** *(0.018)*	
$AFS_{Median} \times FL$	**0.023***** *(0.017)*	
$AFS_{75th\ percentile}$		**0.050***** *(0.017)*
$AFS_{75th\ percentile} \times FL$		**0.037***** *(0.012)*
Error Correction Coefficient (ϕ)	***-0.281***** *(0.033)*	***-0.300***** *(0.038)*
ΔCR	**0.054*** *(0.031)*	**0.062**** *(0.030)*
ΔKO	**0.022**** *(0.011)*	0.012 *(0.013)*
ΔMKD	**0.057***** *(0.010)*	**0.058***** *(0.010)*
ΔSH	**0.213***** *(0.035)*	**0.190***** *(0.039)*
ΔMM	**0.114***** *(0.031)*	**0.100***** *(0.028)*
ΔMX	-0.023 *(0.017)*	-0.011 *(0.016)*
ΔINF	**-0.010***** *(0.001)*	**-0.008***** *(0.001)*
$\Delta\ AFS_{Median}$	**0.026***** *(0.027)*	
$AFS_{Median} \times FL$	**0.024*** *(0.013)*	
$\Delta\ AFS_{75th\ percentile}$		**0.017**** *(0.007)*
$\Delta\ AFS_{75th\ percentile} \times FL$		**0.067**** *(0.026)*
No. of Observations	*678*	*678*

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively.

Table 6.4b: Output Growth Model: Pooled Mean Group Estimation Results using Alternative Measures of Firm Size.

(Annual Panel Data: 1970-2004)

Variables:- *Dependent Variable:* **Output Growth *(GO)***	Firm Size Measure	
	(2)	(3)
	$AFS_{(Median)}$	*$AFS_{(75th\ percentile)}$*
SH	**0.042***** *(0.014)*	**0.059***** *(0.010)*
KO	**-0.140***** *(0.026)*	**-0.104***** *(0.017)*
LP	**0.229***** *(0.066)*	0.032 *(0.036)*
MM	**-0.895***** *(0.137)*	**-0.764***** *(0.094)*
MX	**0.196**** *(0.074)*	-0.004 *(0.044)*
MKD	**0.049***** *(0.010)*	**0.029**** *(0.010)*
INF	**0.002***** *(0.001)*	**0.002***** *(0.001)*
AFS_{Median}	**0.059***** *(0.013)*	
$AFS_{Median} \times FL$	**0.003**** *(0.001)*	
$AFS_{75th\ percentile}$		**0.039***** *(0.010)*
$AFS_{75th\ percentile} \times FL$		**0.029***** *(0.007)*
Error Correction Coefficient (ϕ)	***-0.342****** *(0.044)*	***-0.357****** *(0.060)*
ΔSH	**0.234***** *(0.035)*	**0.143***** *(0.036)*
ΔKO	-0.019 *(0.014)*	0.010 *(0.015)*
ΔLP	**0.141**** *(0.061)*	**0.136**** *(0.060)*
ΔMM	**0.163***** *(0.035)*	**0.129***** *(0.039)*
ΔMX	**-0.036**** *(0.016)*	0.006 *(0.016)*
ΔMKD	**0.038***** *(0.012)*	**0.040***** *(0.011)*
ΔINF	**-0.011**** *(0.002)*	-0.001 *(0.001)*
$\Delta\ AFS_{Median}$	0.001 *(0.001)*	
$AFS_{Median} \times FL$	**0.006**** *(0.001)*	
$\Delta\ AFS_{75th\ percentile}$		**0.017**** *(0.008)*
$\Delta\ AFS_{75th\ percentile} \times FL$		**0.077***** *(0.026)*
No. of Observations	*678*	*678*

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively.

In fact, the results in Column (2) of Tables 6.4a and 6.4b are qualitatively similar, but stronger from a statistical point of view, to the results based on the sample median. This is particularly evident in the magnitudes of the interaction term coefficients. Comparing the magnitudes of the coefficients for the interaction term, the short-run result of Table 6.4a shows that the firm size effect is much larger for firms above the 75th percentile of the sample (0.067) than for firms above the median of the sample (0.024). Similar observations are made in Table 6.4b where the firm size effect is also much larger for firms above the 75th percentile of the sample (0.077) than for firms above the median of the sample (0.006). This suggests that the larger firms – those above the 75th percentile – perform better in terms of both price-cost margins as well as output growth, than the smaller firms, or those below the 75th percentile. This suggests that as firm size increases, industry performance – whether measured through price-cost margins or output growth – also increases with financial liberalization; and, therefore further suggests that the larger the firm the more it stands to benefit in terms of performance following financial liberalization. This result renders support to the main findings reported earlier, which contradict the predictions in the literature by Cestone and White (2003), Aghion and Bolton (1997), Banerjee and Newman (1993), and Galor and Zeira (1993), among others, that financial development eases financial constraints, and enhances the performance of small-size firms more than larger-size firms.

6.6.2. Alternative Panel Estimator.

The analysis so far has used a novel empirical estimator to distinguish between short-run and long-run effects of firm size on industry performance following financial liberalization. This methodology uses the time-series dimension of the data at least as intensively as the cross-section dimension. It represents a departure from the typical empirical industrial organisation literature in which high-frequency movements in the data are averaged out prior to estimation. As indicated earlier in this study, typical panel data studies work with data averaged for periods of 5 or 10 years and, therefore, is likely to combine short- and long-run effects. Whilst averaging has the disadvantage of leading to loss of potentially useful information on year-on-year changes in – for instance, profits or output growth for a firm – it nonetheless removes year-on-year volatility, or 'noise' which – in the case of profitability studies, is mostly due to changes in accounting procedures between years; and on output growth, 'noise' could be due to weather changes or any other macroeconomic shocks – all of which do not reflect real changes in a firm's activities. Accordingly, in order to provide further support to the arguments developed in the earlier part of this study, a typical panel data regression framework is therefore used next, to analyze whether firm size is also a relevant determinant of industry performance; and, particularly whether this relationship is influenced by financial liberalization.

In this section, therefore, the study uses an estimation method for panel data that deals with dynamic regression specification, controls for unobserved time- and industry-specific effects, and accounts for some endogeneity in the explanatory variables. This is the generalized method of moments (GMM) for dynamic models of panel data developed by Arellano and Bond (1991) and Arellano and Bover (1995), which were explained earlier in this study. Thus, the models as specified under Equations (6.5) and (6.7) above may be represented as follows;

$$y_{it} - y_{it-1} = \lambda y_{it-1} + \beta' X_{it} + \delta \left(SFS \right)_i + \nu_{it} \tag{6.14}$$

$$y_{it} - y_{it-1} = \lambda y_{it-1} + \beta' X_{it} + \delta \left(SFS \times FL \right)_{it} + \nu_{it} \tag{6.15}$$

$$\nu_{it} = \mu_i + \eta_t + \varepsilon_{it} \tag{6.16}$$

where, y_{it} represents the industry performance measure (price-cost margins or output growth) in industry *i* in period *t*, X_{it} is vector of 'fundamental' determinants of industry performance, which, following the analyses above, includes small firm share (SFS_i) as a measure of firm size, $\left(SFS \times FL \right)_{it}$ an interaction term between the measure of firm size and a financial liberalization dummy, ν_{it} a general disturbance; including an industry-specific unobservable effect μ_i, a time-specific factor η_t, and an idiosyncratic disturbance ε_{it}.

The results for the estimation of Equations (6.5) and (6.7) using this methodology are reported in Tables 6.5a and 6.5b, respectively. The results are based both on a one-step and two-step estimator (for a review on the one-step and two-step GMM estimators, see, Arellano and Bond, 1991). In the one-step estimator, the error term ε_{it} is assumed independent and homoskedastic across industries and time, in the two-step estimator, the residual of the first step are used to estimate consistently the variance-covariance matrix of the residuals, relaxing the assumption of homoskedasticity. However, the study reports both the one-step as well as the two-step estimation results for the sake of comparison, even though the analyses will be based on the two-step estimator results, which are considered robust. This follows Windmeijer (2005) who devised a small-sample correction for the two-step standard errors. Thus, in regressions on simulated panels, Windmeijer finds that the two-step efficient SYS-GMM performs somewhat better than one-step SYS-GMM in estimating coefficients, with lower bias and standard errors. And the reported two-step standard errors, with this correction, are quite accurate, so that two-step estimation with corrected errors is currently considered to be modestly superior to robust one-step estimation.

In all the models, as depicted in Equations (6.5) and (6.7) above, the respective results shown in Table 6.5a and Table 6.5b, the *F*-tests indicate that the parameters are jointly significant (at the 1 percent level). Further, for each model results, the bottom part of the table includes *p*-values for the Hansen/Sargan tests for over- identifying restrictions. According to the results, the study cannot reject the null hypothesis that the instruments used in all the models are uncorrelated with the residuals. Consequently, the tests suggest that the instruments used are valid. The test for AR (1) errors in the first difference equation rejects the null hypothesis of no first-order serial correlation as expected. Furthermore, as should be expected, the test for AR (2) errors suggests that we cannot reject the null of no second-order serial correlation in all the models. And, according to Arellano and Bond (1991, pp: 281-282), as long as there is no second - order autocorrelation, the GMM estimates are considered to be consistent. The two-step estimation results are shown in Column (2) of Tables 6.5a (for the profitability model), and 6.5b (for the output growth model). In both cases, the small firm share variable (SFS_i), has a negative and significant coefficient. This, therefore, confirms the earlier finding that small-firm industries – industries naturally composed of small firms for technical reasons – perform poorly than large-firm industries. However, this does not change with financial liberalization, as the interaction term between small firm share and a financial liberalization dummy $(SFS \times FL)_{it}$ maintains a negative relationship in both models.

Table 6.5a: Price-Cost Margins Model – System GMM Regression Estimation Results
(5-Year Average Panel Data: 1970-2004)

Variables:- *Dependent Variable:* **Price-Cost Margins (PCM)**	One-Step (1)	Two-Step (2)
$L.PCM$	**0.382***** *(0.100)*	**0.406***** *(0.117)*
CR	**0.301***** *(0.088)*	**0.362***** *(0.065)*
KO	**-0.029**** *(0.012)*	**-0.025***** *(0.007)*
MKD	**0.038**** *(0.017)*	**0.046**** *(0.016)*
SH	0.275 *(0.196)*	0.267 *(0.266)*
MM	-0.007 *(0.005)*	**-0.010**** *(0.005)*
MX	**0.144**** *(0.046)*	**0.175***** *(0.032)*
INF	-0.286 *(0.194)*	-0.297 *(0.276)*
SFS	**-0.044**** *(0.023)*	**-0.043**** *(0.019)*
$SFS \times FL$	**-0.800***** *(0.021)*	**-0.098***** *(0.013)*
Diagnostics:		
F - Test	70.47 *(0.000)*	93.90 *(0.000)*
Hansen /Sargan test	5.24 *(0.513)*	5.39 *(0.494)*
Test for AR (1) errors	-2.58 *(0.010)*	-2.47 *(0.014)*
Test for AR (2) errors	-1.22 *(0.221)*	-1.30 *(0.194)*
No. of Industries	20	20
No. of Observations	120	120

Note: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively. The Hansen / Sargan Test and Tests for AR errors are p - values for the null of instruments validity.

***Table 6.5b:* <u>Output Growth Model – System GMM Regression Estimation Results</u>**
(5-Year Average Panel Data: 1970-2004)

<u>Variables:-</u> *<u>Dependent Variable:</u>* **Output Growth** *(GO)*	One-Step (1)	Two-Step (2)
L.GO	**0.487***** *(0.158)*	**0.488**** *(0.196)*
SH	**0.021***** *(0.005)*	**0.024***** *(0.004)*
KO	**-0.014**** *(0.006)*	**-0.013**** *(0.006)*
LP	**0.459***** *(0.125)*	**0.515***** *(0.125)*
MM	**-0.692***** *(0.178)*	**-0.778***** *(0.167)*
MX	-0.009 *(0.030*	0.001 *(0.023)*
MKD	**0.112***** *(0.029)*	**0.126***** *(0.027)*
INF	0.002 *(0.006)*	-0.001 *(0.005)*
SFS	**-0.027*** *(0.014)*	-0.021 *(0.013)*
$SFS \times FL$	**-0.252***** *(0.064)*	**-0.285***** *(0.061)*
Diagnostics:		
F - Test	41.32 *(0.000)*	63.00 *(0.000)*
Hansen /Sargan test	2.29 *(0.892)*	5.12 *(0.528)*
Test for *AR* (1) errors	-2.40 *(0.016)*	-2.26 *(0.024)*
Test for *AR* (2) errors	-1.11 *(0.268)*	-1.04 *(0.300)*
No. of Industries	20	20
No. of Observations	120	120

<u>Note</u>: Estimates of the intercept are not reported for economy of space. ***, **, * indicate significance at 1percent, 5percent, and 10 percent levels, respectively. The Hansen / Sargan Test and Tests for AR errors are *p* - values for the null of instruments validity.

Notably, the quantitative effects of financial liberalization on firm size and industry performance are quite significant in both models. For instance, according to results in Column (2) of both Tables 6.5a and 6.5b, the coefficients for the interaction term between small firm share, as the measure of firm size, and the financial liberalization dummy $(SFS \times FL)_{it}$ appears to be strongly negative, with a point estimate several times larger than that without financial liberalization. Apart from confirming the earlier findings on the effects of firm size on industry performance, the results on both models therefore stand in stark contrast to the orthodox predictions on the effects of financial liberalization on industry performance.

6.7. CONCLUSION.

The study examines the differential impact of financial liberalization on the performance of firms of different sizes using panel data for 20 industry groups for the period 1970 to 2004; and, establishes that financial liberalization affects small and large firms differently.

The results indicate that profitability of the Malawian manufacturing firms, as measured by price-cost margins, depends very much on a firm's size as determined by the number of employees. The results show that it is the smallest firms that are consistently the most adversely affected following financial liberalization. Thus, the study finds no evidence that small firm industries become more profitable than large firm industries following financial liberalization. Financial liberalization leads to an increase in the price-cost margins of large size firms than it does for small size firms. Similarly, the findings also suggest that, following financial liberalization, small firm industries encounter certain barriers, which create greater difficulties for them to achieve significant output growth. Thus, running contrary to the orthodox views on financial liberalization theory expectations; industries characterized by small sized firms do not register output growth following financial liberalization. Growing industry niches and high growth rates, while attractive to both small- and large-sized firm industries, appear to be more conducive to large-size firm industries.

The study therefore establishes that financial liberalization has no positive effect on the performance of "small-firm industries", or industries naturally composed of small firms for technological reasons. These findings are in line with earlier work that has found that small-size firms are more likely to suffer from financing constraints (see, for example, Schiantarelli, 1996), and, among many other case study results, are similar to those of Gelos and Werner (1999) in the case of Mexico who argue that large-size firms may have had better access to directed credit before financial liberalization; and, even more preferential access to credit after financial liberalization. Thus, in Malawi, like elsewhere where financial liberalization has been implemented, the positive effect of more efficient financial system following the reforms – such as the discontinuation of directed credit and interest rate deregulation – may have been offset for the small-size firms by the negative effects of continued increase in information and transaction costs after interest rates deregulation and credit rationing, as well as proliferation of relationship-based lending practices. Alternatively, large-size firms might suffer less from the negative effects of increased transaction and informational asymmetries, apart from benefiting from relationship lending practices by the financial institutions, and thus have better access to credit in general. Accordingly, the results provide a useful link for future policy research on the implications of financial sector reforms on the real sector; and more specifically on the industry environment and small or new firm phenomena. It sheds new light on the traditional financial liberalization policy expectations, and underscores the importance of incorporating differences in the nature of competition as well as the implications of such policies among firms of varying sizes.

Overall, therefore, it may be concluded that a successful financial liberalization needs to consider other aspects of the credit market beyond policies like discontinuation of directed credit programs and interest rate deregulation. Financial liberalization requires both the political will and ability to stop the preferential treatment of well-connected firms, firms that often tend to be disproportionately large.

Appendix 6.1: Hausman Test between Mean Group and Pooled Mean Group Estimation: Price Cost Margins Model

hausman mg pmg

	---- Coefficients ----			
	(b) mg	(B) pmg	(b-B) Difference	sqrt (diag (V_b-V_B)) S.E.
CR	.2458471	.1915829	.0542643	.0363316
KO	-.2422238	-.0553779	-.1868459	.1536566
MKD	-.0626304	.0182718	-.0809022	.0743287
SH	.476059	-.0040852	.4801442	.2121611
MM	-.0585591	-.2009077	.1423486	.
MX	.1025312	.4370345	-.3345034	.
INF	.0106298	.0306735	-.0200437	.0043247
SFS	.0067008	-.0422355	.0489362	.0172188
SFS_FL	.0994029	-.0435952	.1429981	.1173806

b = consistent under Ho and Ha; obtained from xtpmg
B =inconsistent under Ha, efficient under Ho; obtained from xtpmg

Test: Ho: difference in coefficients not systematic

chi2 (9) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B)
= 3.43
Prob>chi2 = 0.9449

Appendix 6.2: Hausman Test between Mean Group and Pooled Mean Group Estimation: Output Growth Model

. hausman mg pmg

	---- Coefficients ----			
	(b) mg	(B) pmg	(b-B) Difference	sqrt (diag (V_b-V_B)) S.E.
SH	.0238432	.0574688	-.0336257	.2125517
KO	-.2403027	-.1195135	-.1207893	.1034579
LP	.4375612	.1312254	.3063359	.1869758
MM	-.8939776	-.8530467	-.0409309	.3353341
MX	.191724	-.0020715	.1937954	.129238
MKD	.027899	.0359243	-.0080253	.057468
INF	-.0035378	-.0032175	-.0003203	.0017273
SFS	-.02926	.0111477	-.0404077	.0227887
SFS_FL	-.1972427	-.036588	-.1606548	.1008507

b = consistent under Ho and Ha; obtained from xtpmg
B = inconsistent under Ha, efficient under Ho; obtained from xtpmg

Test: Ho: difference in coefficients not systematic

chi2 (9) = (b-B)'[(V_b-V_B) ^ (-1)] (b-B)
= 2.28
Prob>chi2 = 0.9862

CHAPTER 7.0: CONCLUSION AND POLICY RECOMMENDATIONS.

7.1. SUMMARY OF STUDY FINDINGS.

The literature on financial liberalization in developing countries has been identified with a number of mechanisms through which this process should affect resource mobilisation, resource allocation and economic growth. Following deregulation, for instance, increases in the real interest rate should induce more savings; a relaxation of liquidity constraints through increased and broad-based access to credit and financial deepening should facilitate private investment; and subsequently, this relaxation, coupled with decentralization of banking, should improve the allocation of financial resources at the micro level. These processes are therefore hypothesised to enhance competition and growth among both small as well as large firms, which influence the industry structure that evolves in the real sector. The empirical relevance of these effects to Malawi’s financial liberalization efforts have been investigated in this research study, with particular focus on industries in the manufacturing sector.

While theory does not paint a clear picture about how financial liberalization ought to affect competition in industry, the empirical work does. Much contrary to the orthodox view that financial liberalization induces competition, the results from this study show that financial liberalization – working through financial development – does not necessarily lead to a competitive industry structure. Financial liberalization has been associated with increasing industry concentration, an indication that the much-hypothesised distributional ramifications of this policy reform have, in fact, not taken effect in the Malawian manufacturing sector. Instead, this policy has been detrimental to competition in the industry, as it disproportionately facilitates growth and expansion of selected firms at the expense of others. The results further show that financial liberalization does not always enhance competition by inducing creation of new firms and/or facilitating firm entry in the industry. Rather, the policy has induced an increase in entry barriers, and in some instances even prompted the closure and exit of firms from the industry. Net firm entry has mostly recorded a negative relationship with financial liberalization, according to the results of this study; thereby suggesting that there have been more firm exits than new entrants following this policy reform. Accordingly, the study findings show that financial liberalization leads to the expansion of existing establishments rather than the creation of new establishments. Thus, in addition to the disproportionate effect on certain industries, it appears that liberalizing the financial system benefits the existing firms in these industries rather than facilitating the entry of new firms. The study also finds that financial liberalization disproportionately boosts profitability and growth of large-firm industries more than small-firm industries. In industrial organisation literature, some theories argue that financial development is beneficial to large firms, whilst others predict that financial development is especially important for lowering transaction costs and information barriers that hinder small firm profitability and growth. However, the findings from this study are consistent with the latter view, that financial liberalization is particularly detrimental to the profitability and growth of industries characterised by firms with 20 employees or less.

The foregoing results appear to emerge out of credit rationing practices as well as relationship-lending behaviour, as perpetrated by the financial institutions in Malawi – a characteristic typically prevalent in most of the developing countries, particularly those in sub-Saharan Africa – where larger and more established firms are accorded preferential access to credit at the expense of new and smaller establishments. Apparently, in Malawi, a World Bank (2004b) report on private sector development indicate that one of the major constraints to entrepreneurship is finance which includes, *inter alia*, poor access to credit, high and volatile real interest rates, as well as unpredictable changes in the real exchange rates (ibid, p.61). Further, results from this study have established that the financial liberalization effects have been most prevalent in industries where firms are highly dependent on external finance than in those where operations are mostly financed through internally generated cash flow or self-financed. Thus, these findings contradict the widely documented predictions by Rajan and Zingales (1998) that industries where firms are more external finance dependent grow disproportionately faster following financial development. The results also do not support the notion that one avenue through which financial development promotes economic growth is by facilitating the creation and entry of new firms in the industry and therefore promoting competition.

These outcomes somehow corroborate the doubts that have previously been expressed in the literature regarding whether financial liberalization policies would establish a competitive industry. This literature has advanced three important factors as the basis for such pessimism (see, for example, Zattler, 1993). First, the structural conditions of the economy matters. In particular, as indicated by Mosley and Weeks (1993), economies like Malawi that have predominantly been primary exports dependent and that only have an incipient, high-cost industrial sector – a situation shared by most of the countries in sub-Saharan Africa – cannot be expected to adjust easily following liberalization. Malawi is a predominantly agricultural based economy with 90.0 percent of its foreign exchange earnings generated through exports of agricultural produce; mainly tobacco, sugar, tea, and cotton. Second, it is argued that a large debt overhang may lead to uncertainty, which hampers private investment in promising new activities. In Malawi inflation and interest rates have been high and volatile, which create an uncertain environment for businesses by crowding out private sector investment, increasing costs, and eroding profit margins. Third, is low responsiveness of domestic production to price changes, due to infrastructural bottlenecks, or generally lack of institutions. Most importantly, studies by Borner *et al* (1995), Sheahan (1994), Stein (1994), and Zattler (1993), point to a lack of attention to institutions as the reason for lack of response to price signals by economic agents. Lack of or uncertainty about institutions such as regulatory framework, business laws and customs, may seriously affect private investment and so dampen the effects of financial liberalization on competition and growth in the real sector. Recent literature indicates increasing concern on this particular aspect – the role of institutions – in influencing competition in the economy. As a matter of fact, the role played by institutions, particularly financial institutions, in regard to enterprise development, is specifically identified in the industrial organisation literature (see, for example, Malerba and Orsenigo, 1996, pp.53-54).

The foregoing perspectives are extended in this study, where it is established that financial institutions lending behaviour after financial liberalization, lead to increased credit rationing, much to the detriment of the small-scale entrepreneurial sector of the economy – perhaps, in part, to protect the profitability of their large established and relationship-based borrowers. A trend has been established among lending institutions, both in developed as well as developing countries, that lending to firms requires the lender and borrower to forge a long-term relationship. Information gained over the course of time by the lender is subsequently used to make value-enhancing credit decisions; thus, whether to expand credit or restrict credit to potential borrowers. Spagnolo (2000) and Cestone and White (2003) have presented theoretical frameworks in which existing lending relationships do indeed affect the behaviour of lenders *vis-a-vis* potential new borrowers (also see, Helman and Da Rin, 2002; Boot and Thakor, 2000; and, Bhattacharya and Chiesa, 1995). These frameworks also established that the less competitive the conditions in the credit market, the lower the incentive for lenders to finance new comers. Notably, Aryeetey *et al* (1994, 1997), Nissanke and Aryeetey (1998), and Nissanke (2001) observe these lending characteristics for sub-Saharan developing countries, including Malawi.

Further, the increase in interest rates following the deregulation process has tended to promote investment in the financial sector itself and in less risky commerce and service activities, at the cost of investment in real sector productivity. Whilst the neostructuralists contend that financial liberalization induces a vicious cycle of stagflation, reduces the availability of loanable funds, thereby impeding growth, a post-Keynesian perspective extend this view by including ‘speculative investment’ to the framework. According to this perspective, financial liberalization induces misallocation of credit towards speculative activities prompted by what Grabel (1995) describes as ‘boom-euphoric’ expectations and / or competitive pressures to engage in profit-seeking activities (ibid, p.131). As indicated, in Malawi, the post-liberalization period is characterized by high interest rates. Whilst the banking system is free to set its own rates, these have mostly been structured in tandem with the rates set by the government borrowing from the market in the form of Treasury bills. And, high inflation in Malawi has been accompanied by high interest rates. As such, since 1998, with 3-month Treasury bill rates fluctuating between 40.0 and 70.0 percent, at the going rate of inflation – this implies a high real interest rate of about 20.0 percent. The high real interest rates have been accompanied by high spreads between lending and borrowing rates (see, Mlachila and Chirwa, 2002). In turn, as observed by the World Bank (2004b), these characteristics have been detrimental to the development of private sector businesses in Malawi, as increased government borrowing through Treasury bills has provided commercial banks and other institutional creditors with a safe and high return financial asset. Business lending has instead declined, on average, from 51.0 percent of the commercial banking system's total assets in the first six months of 2000 to 36.0 percent in the last six months of 2001. Over the same period, holdings of government paper have increased from 8.0 to 16.0 percent of the commercial banking system's total assets (RBM, various years).

This study, therefore, demonstrate that financial liberalization policies do not foster competition, as is claimed by proponents of financial market deregulation in the literature. In fact, such policies, which are traditionally applied wholesale, create significant barriers to new firm start-up; and, do not provide equal opportunities to all investors. These policies in Malawi have led to the revival of old and creation of new private monopolies and oligopolies in industry. Further, the study results indicate that the effects of financial liberalization are not uniform across industries, but rather that depending on firm-specific characteristics within the respective industry – some firms benefit while others lose. Accordingly, this analysis suggest that contrary to the prognostications of the orthodox theory, neither did financial liberalization lead to a higher level of competition, nor change the oligopolistic structure of the industry in the Malawian manufacturing sector.

In conclusion, therefore, the results corroborate both the neostructuralists as well as the post-Keynesian arguments against the impact of financial liberalization which stress on, *inter alia*, a reduction in loanable funds, a general increase in the cost of borrowing, and risky investment practices following financial liberalization (Buffe 1984; Taylor 1983; and van Wijnbergen 1982, 1983a) – and consistent with the views by Fitzgerald and Vos (1989), Kolodko *et al* (1992), Zattler (1993), and Grabel (1995). It is argued, for instance, that financial liberalization lead to higher interest rates following the deregulation policy. These high interest rates will increase firms' operational costs and costs of investment, and so will reduce real demand for money. According to the International Monetary Fund (IMF, 1987) monetary approach, this will necessitate tightening money supply, which results into a vicious circle, leading to a recession. In fact, Stein (1992) suggests that local currency devaluation – another key policy that is traditionally prescribed within the economic liberalization framework by the Brettonwoods institutions – will add to this effect, by further increasing operational costs.

This is an important insight, which updates the conventional wisdom that financial liberalization is either good or bad. Overall, the study results demonstrate that, financial liberalization, as a device to raise the level of competition in the manufacturing sector, may be necessary but not sufficient, mostly due to financial market imperfection, as exhibited through the financial institutions lending behaviour.

7.2. CONTRIBUTIONS TO LITERATURE.

The study makes a contribution to four strands of literature.

First, in this study panel data is employed in estimation to take advantage of time varying financial measures and macroeconomic policy shocks, as well as available industry-specific characteristics. These industry specific characteristics are important from credit accessibility and competition point of view. Previous attempts relied either on aggregated time series or on purely cross-section data or were just descriptive. Allowing for variability at a disaggregated level has the added advantage of generating even more meaningful results. As suggested by Baltagi (2000, p.5), investigating in a panel data context is more informative – because, benefits from more variability, more degrees of freedom, and more efficiency, are derived. These benefits are unavailable within time series or strictly cross-sectional based studies.

Second, it contributes to the industrial organisation literature by estimating industry structure and dynamics and confirming the presence of financing constraints for a broad range of industry types and groups, in a low-income developing country context. The study extends the existing literature on the few known country-specific studies on the relationship between financial liberalization, financial development and industry structure[116]. Evidently, though, these studies focus mostly on the experience of middle-income developing countries. Otherwise, the current literature offers very limited empirical research on the impact of financial liberalization on low-income developing countries such as Malawi. In fact, to the author’s knowledge, there exist

[116] These being: Yenturk-Coban (1992), for Turkey; Diehl (1995), for Vietnam; Aswicahyono *et al* (1996) for Indonesia; Dijkstra (1996) for Nicaragua; Nordas (1996) for South Africa; and Sharma (2000) for Nepal)

no known studies in this respect that focus on any of the least developed countries in the sub-Saharan African region. This study therefore may be the first to conduct such a comprehensive analysis.

Third, whilst many previous studies have broadly investigated the relationship between financial development and economic growth, this study differs because it investigates microeconomic channels through which this relationship might exist. It is argued that with the worldwide adoption and implementation of economic liberalization policies, competition in industry has become one of the most important variables of interest in many economies. As such, firm’s response to policy change, in particular its size distribution has become a critical indicator monitored by policy-makers regarding the performance of the economy. Now emerging as a critical component of antitrust and competition policies in many economies, as observed by Sokol (2007), is the need to control for the evolution of industry structures; hence, the need for a microeconomic approach, such as the one adopted in this study, to investigate the finance and growth nexus.

Fourth, and more important from a policy perspective, this research study contributes to the economic development and growth literature by showing empirical results that run contrary to the orthodox view that financial liberalization diminishes financing constraints by reducing information asymmetries. Instead, the study demonstrates that financial liberalization has the potential to perpetuate financing constraints by selectively facilitating access to financial resources in favour of large and long established enterprises. Thus, loanable funds available in the local credit market for firms’ investments are not flowing in significant amounts to small-scale enterprises, which appear to be squeezed out of the mainstream financing circuit. At one extreme of the credit market are the large, reputable corporations with access to a broad range of products to raise capital, from banks or financial markets, in local or international markets. At the other extreme are small-scale enterprises. Further, lending to the small-scale enterprises, where available, is aggravated through the tendency by financial lending institutions to heavily rely on collateral as a means of mitigating principal-agent problems. As a result, most small-scale enterprises have no or limited access to credit, which implies that a higher share of their investment has to be financed with retained earnings or suppliers credit. Consequently, this market imperfection is fuelling the development of oligopolistic structures that do not price competitively.

7.3. POLICY RECOMMENDATIONS AND DIRECTIONS FOR FUTURE POLICY RESEARCH.

A number of policy issues emerge out of this study; arguably, not only relevant to Malawi, but to the whole sub-Saharan Africa region as well as other developing countries, particularly where financial liberalization policies have been implemented under the IMF/World Bank steered structural adjustment programs. These results should also be applicable in some developed economies where the literature provides evidence of financing constraints being experienced by a significant proportion of the private sector, particularly new and small-scale enterprises.

In general, therefore, results from this study seem to be consistent with enough that is known from such other similar studies to enable one to hazard the supposition that the outcome from this study is not sample specific. The problems arising from financial market imperfections and the implications this anomaly has on the individual firms in particular, and to the industry-wide structure in general, are therefore real and have characterized both developing as well as developed countries alike. Accordingly, whilst the differences that have been identified across industries in the Malawian manufacturing sector are significant in and of themselves, they nonetheless serve to magnify the importance of understanding what different indicators of industry dynamics are tapping into when exploring this in other countries. For instance, as demonstrated by Bain (1966) and Pryor (1972), industries with high or low concentration in one nation tend to have similar or low concentration in all industrialized nations they studied. In a study of ten Latin American countries, Meller (1978) compare a number of identical industries, and show that all of these countries have similar concentration hierarchies among their industries: the industries that have high concentration levels in one country tend to have high concentration levels in the rest of the countries as well. Scherer *et al* (1975) find similar results in a comparison of twelve industries in six industrialised countries. In the words of Schmalensee

(1989, p.992) this finding “suggests that similar processes operate to determine concentration levels elsewhere.”

The following issues are therefore observed:

⇒ (i). Fundamentally, from a policy perspective, these research findings raise the question whether financial liberalization facilitates equitable growth through easing of access to credit for small and medium firms that typically face credit constraints. Disappointingly, the results do not support this policy expectation. Instead, the financial policy reforms are showing that although macro-level economic reform is essential for private sector growth, it is not enough. There are constraints that continue to inhibit the growth of existing firms and impede the entry of new ones; thereby suppressing competition, despite the reform efforts. In changing market conditions, the effects of more intense competition on firm conduct, market structure , and industry performance are hard to distinguish, and often times not in conformity with the orthodox paradigms. As observed by Symeonidis (2002) in a study of the United Kingdom, that whilst policies aimed at promoting competition lead to a reduction of restrictive practices and increase price competition, this is however followed by an increase in concentration. A key analysis of Symeonidis is the argument that excess profits are eliminated following these policies; since, an increase in price competition depresses profits and leads to firm mergers and firm exits, thereby increasing concentration ratios. Accordingly, for financial liberalization to be effective, it would be important to consider the implementation of accompanying economic reforms, such as industry deregulation, and increased competition in the banking system, that could have complementary impact on new firm entry and growth.

⇒ (ii). In accordance with the static model of industrial organization, entry of new firms into industry is crucial as it is expected to provide an equilibrating function in the market. Conceptually, in the presence of market power, additional output provided by the new entrants is expected to restore the levels of profits and prices to their long-run competitive equilibrium. Notably, most of the new entrants operate at such a small scale of output that they are confronted with an inherent cost disadvantage. Policies that mitigate barriers to start-up of new firms as well as to the survival and efficiency of incumbent firms should therefore be an equally important component of competition policies. By encouraging entry of new firms side by side with promoting survival of incumbents, such a policy can generate new competition in the form of a greater number of firms experimenting with a greater variety of approaches, both new as well as old (see, Cohen and Klepper, 1992; Audretsch and Thurik, 1999).

Yet, this study, like many other previous empirical studies, has established that among critical barriers to firm start-up in the context of most developing countries, and even some developed countries, include access to capital[117]. Evidently, in many economies this has therefore prompted a shift in emphasis towards reducing barriers to accessing start-up capital or any entry barriers. These efforts have mostly been effective in developed economies[118]. As observed by De la Torre *et al* (2007), following these initiatives, some of the developed economies have registered increases in commercial microfinance, driven by the development of innovative lending techniques, significant technological advances – such as scoring methods and e-banking – and the growing presence of credit bureaus. Accompanying these trends in business lending has been strong growth in consumer credit in emerging market economies (see, for example, BIS, 2005), particularly as competition in the lending market for large corporations is on the increase – reflecting financial globalization and the expansion of local financial markets. However, De la Torre *et al* (2007) note that, in the process, small-scale and medium-scale enterprise segments are sometimes being neglected in favour of the large corporate. Brownbridge and Harvey (1998) and Nissanke (2001) observe similar lending characteristics in the developing countries of sub-Saharan Africa, where newly established banks instead compete for large corporate clients, where good and quick profits are assured, at the expense of loans to small-scale enterprises.

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[117] Results from a recent survey commissioned by the European Union (EU, 2005), regarding SME's access to finance in the European Union, clearly demonstrate that the problem of credit access by small-scale enterprises is not peculiar to the developing economies alone.

[118] Notable initiatives in the developed world include; (a) the Small Business Innovation Research (SBIR) in the US, a program which provides over $1.4 billion annually to new high-technology small firms (See; *http://www.grants.nih.gov/grants/funding/sbirsttr_programs.htm*); and (b) the European-based Business and Policy Research facility (EIM, 1998) which implements a broad range of programs, spanning financial assistance, training, and administrative burdens.

Notwithstanding, similar approaches could be adopted in Malawi, resources permitting. As an additional possible policy option, this could involve the offering of flexibility in interest rates charged on new borrowing by the lending institutions. Specifically, a framework where new entrants are allowed to borrow at a preferential rate may provide a mechanism to compensate for higher costs due to an inefficient size. Preferential rates may, in fact, be an essential instrument of dynamic competition policy by facilitating the start-up of new firms that otherwise would be deterred.

⇒ (iii).The results of this study suggest that some degree of state participation should be allowed in institutional building, particularly in the designing and sequencing of the financial reforms, as not all intervention may be adverse. The role of the state is particularly essential when there are pervasive market failures, including imperfect information asymmetries, externalities and economies of scale that characterize sub-Saharan African countries such as Malawi. A 'neostructuralist consensus' (see, Sheahan, 1989) advocates selective credit restrictions in order to protect productive activities *vis-a-vis* commercial activities and speculation. Similarly, Mosley (1993) suggests that a more active role for the government is necessary to stimulate and carry out investment. In specific regard to the manufacturing sector, critics of IMF and World Bank-supported programs argue that the sector is too important for long-term growth to let it to be beleaguered with problems of financial constraints. This means that, apart from general policies to improve education and skill levels, specific government policies are necessary to enhance competitiveness in the manufacturing sector. Further, Lall (1994) identifies, among others, capital market deficiencies and the subsequent need to provide selective credit support, as one of the critical avenues through which government intervention may be necessary in the economic development process.

⇒ (iv).Finally, of particular relevance to this study is the fact that financial reforms need to take into account small- and medium-sized enterprises in the supply of credit by the formal financial sector, as well as the role of the informal financial sector which, in Malawi, just like in most of the developing countries, is significant and continues to thrive even following financial liberalization. These types of market failures may further justify an active role for the state, as indicated above, to facilitate the development of a range of financial institutions to intermediate between savers and investors with different requirements and time horizons. As Nissanke (2001) notes, "...the [financial] reform measures have excessively emphasised the need for a policy shift to liberalization, without adequate consideration of the need for institution-building to improve and diversify financial services to serve dynamically evolving demand on the part of private enterprises." (ibid, p.358)

Further, De la Torre *et al* (2007) suggest that whilst initiatives aimed at increasing credit to the small- and medium-scale enterprises requires a review of the financial institutions, as well as their lending practices, serious consideration has also to be made of the prevailing international finance code of practice, which may inadvertently be discouraging loans to this segment. De la Torre and others observe that the financial institutions lending behaviours – both in developed and developing countries – are, or may be, partly due to the current requirements under international laws and policy ethics that govern financial institutions lending practices – *viz*; the Basle Accord and anti-money laundering legislation. For example, under the prudential lending guidelines of the Basle Accord (under BIS), regulations that require loan origination dossiers to include formal financial statements, sophisticated cash flow analysis, and transparency in tax compliance are likely to undercut many informal, opaque small- and medium-scale enterprises where such documentation may not be available or cannot be easily produced. Likewise, anti-money laundering regulations that require substantial documentation to satisfy the 'know-your-client' requirements may exclude informal, small- and medium-scale enterprises that would have otherwise been included. Nonetheless, the need to improve small- and medium-scale enterprise finance – as well as improving and levelling the contractual environment – remains an important issue for policymakers that are concerned with the effects of financial development on economic growth. But, how this challenge is balanced against the requirements under the Basel Accord and the anti-money laundering regulations are issues for future policy research and initiatives.

7.4. CONCLUSION.

Overall, both economic theory and industrial experience suggest that financial liberalization, working through financial development, has an impact on the competitive behaviour of firms and the performance outcome – either way, through prices, profits, growth in value-added, net sales, etc – in the markets which, in turn, influence the structural features of an industry. However, without under-estimating the importance of several previous attempts to increase the relevance of economic theory to the analysis of these relationships, it is generally agreed that new and more precise generalizations as to the relation of the financial development status of an economy and the industry structure that evolves as well as the performance patterns that emerges, will depend heavily upon continued empirical research. Such studies would produce results not only of academic interest but also of fundamental importance for the development of relevant and effective public policies for the promotion of market competition and economic growth.

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