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Refugee Crises

Measurement and Impact on Selected European Economies

Vladimir Sharapov

SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

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Abstract

In Part I this dissertation states and answers the following questions. What is a 'Refugee Crisis'? How might one measure it objectively? What are the characteristic features of the Refugee Crises?

After examining the existing literature from various disciplines, this dissertation argues that there is an ambiguity in the understanding of the term *refugee crisis*. Furthermore, there is a lack of an objective, measurable description of it, significantly limiting the possibilities to quantitatively investigate refugee events and their effects on the receiving countries.

This dissertation proposes a set of criteria for defining and objectively measuring the severity of a refugee event, thus generating a way to identify refugee crises in the receiving country and allowing one to compare any refugee events.

In Part II this dissertation uses a set of European countries which have participated in many extensive movements of refugees in Europe since 1951 and employing a relatively new but popular among macroeconomists method of Local Projections, the dissertation then evaluates the impact of the refugee crises on the selected macroeconomic, socio-economic and political indicators of these countries.

In Part III this dissertation undertakes a comprehensive examination of the existing literature on the relationship between refugees, refugee crises and terrorism, highlighting significant shortcomings in sample selection methodologies. Subsequently, it employs established methods and specifications from the literature to estimate the influence of refugees and refugee crises on terrorism within the selected countries. Furthermore, the analysis proposes enhancements to the existing specifications and assesses their validity in establishing the connections between refugees, refugee crises, and terrorism.

The key empirical findings are that from the economic point of view, refugee crises can work as a short-term demand shock, increasing real GDP per capita

potentially through the rise in real government consumption and significantly increasing unemployment in the receiving country. With the time it takes for refugees to integrate, the unemployment response seems to decrease, and then the positive inflation response to a refugee crisis emerges. There were no statistically significant effects found on such socio-economic indicators as the shadow economy, human capital, or the overall crime levels in the host countries. However, according to this dissertation, the percentage of votes for a right-wing political party dramatically reacts to a refugee crisis, rapidly growing over the few years after the crisis.

Furthermore, another important finding of this study is that while refugee crises positively and statistically significantly contribute to terrorism in host countries, the impact of sheer numbers of refugees and asylum seekers follows a U-shaped pattern. Specifically, as the stock of refugees and asylum seekers increases, terrorism in host countries tends to decrease. However, beyond a certain threshold, the presence of an additional person from either of these categories starts to exert a positive influence on terrorism.

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Declaration

I declare that, except where explicit reference is made to the contribution of others, 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.

The copyright of this thesis rests with the author. No quotation from it should be published in any format, including electronic and internet, without the author's prior written consent. All information derived from this thesis should be acknowledged appropriately.

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Signature:

List of Abbreviations

Abbreviation	Translation
AIC	Akaike Information Criterion
BIC	Bayesian Information Criterion
CPI	Consumer Price Index
CRF	Civil Rights Freedom
ECB	European Central Bank
EEA	European Economic Area
EU	European Union
EUROMOD	Tax-benefit microsimulation model for the European Union
FD	First-Differencing
FDI	Foreign Direct Investment
FE	Fixed Effects
FSGM	Flexible System of Global Models
FRG	Federative Republic of Germany
GDP	Gross Domestic Product
GEE	Generalised Equation Estimation
GMM	Generalised Method of Moments
GTD	Global Terrorism Database
ICARA	International Conference on Assistance to Refugees in Africa
IDP	Internally Displaced People (Person)
IOM	International Organisation for Migration
IRF	Impulse Response Function(-s)
IRO	International Relief Organisation(-s)
IMF	International Monetary Fund
IRF	Impulse Response Function(-s)
ISIC	International Standard Industrial Classification
LP	Local Projections
MGI	McKinsey Global Institute
NGO	Non-governmental Organisation(-s)
PCA	Principal Component Analysis
TFP	Total Factor Productivity
UCDP	Uppsala Conflict Data Programme
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USD	United States Dollars
VAR	Vector Autoregression(-s)
VIF	Variance Inflation Factor
WDI	World Development Indicators
WHO	World Health Organisation
WFP	World Food Programme
WWII	World War II

Part I

Refugee Crises Definition

Chapter 1

Introduction

Burden-sharing and refugee politics in Europe were called 'scandalous' by Helmut Kohl in London on 5 May 1999 during the Kosovars spread across the EU (Koser, 2000). At that time, it was the Kosovars Refugee Crisis. The term 'Refugee Crisis' has not long ago again penetrated the frontlines of the newspapers and speeches of the politicians and activists around the world. It became even more popular in Europe in 2015-2017 than the Financial Crisis was between 2007 and 2009 (LexisNexis, 2020). Even the everyday lives of people around the world were not left untouched. The discussion of migration and foreigners as a threat has facilitated shaping the public opinion in the UK during the Brexit campaign, influencing the final decision to leave the EU (Hall, 2016; Stewart and Mason, 2016; Outhwaite and Menjivar, 2019).

However, many events named 'Refugee Crisis' differed from each other and were labelled by the same term. For example, sometimes the refugee crisis name was used only in relation to the receiving countries (Francis, 2015), and sometimes - to the sending counties (Rizal, 2004). Other publications used it for both (Kalipeni and Oppong, 1998). Some regional studies added to the confusion of understanding of the term when the arrival of 300 people was also called a refugee crisis. For instance, it happened in Canada according to Gilbert (2013). At the same time, the label was used for the influx of more than a million refugees into Lebanon (Anderson, 2015; Murphy et al., 2016a). All cases mentioned above varied in humanitarian, social, political, and economic circumstances and outcomes for refugees and natives.

In this dissertation, it is argued that there is a fundamental ambiguity in the usage and understanding of this refugee crisis term even within the academic

literature published on the topic. Some authors made attempts to identify the specific characteristics of such events. This dissertation outlines the most relevant publications from various disciplines attempting to define the refugee crisis or, generally, the migrant (migration) crisis, as in Weiner (1995), Zolberg et al. (1992), or Schmiedel and Smith (2018). The analysis of the existing publications concludes that, apart from many other drawbacks, the existing attempts to define the refugee crisis lack quantitative measurability. Therefore using the existing approaches, one can neither separate a crisis event from a non-crisis event nor compare the severity of crises with each other.

Hence, this dissertation contributes to the academic literature studying migration by answering the following research questions. What is a quantifiable definition of 'Refugee Crisis'? How many refugees is enough for a refugee event to be a crisis? What are the other characteristic features of the refugee crises? Which characteristics are more important for the refugee crisis? How can one measure and compare the refugee events with each other? What are the economic, social and political aftermaths of refugee crises?

To answer the questions above, the work relies on the approaches used in financial literature, which defined and measured banking crises and financial crises. The definition of refugee crises is based on the approach applied to identifying banking crises by Laeven and Valencia (2012). It is proposed that the 'Refugee Crises' are the (potentially chronic) states of affairs in a country receiving refugees (host country), requiring political, economic, and social action. In addition, such a state of affairs can be characterised by a specific large share of refugees and asylum-seekers in the population of the host country and up to seven following criteria¹:

1. Significant violence or human rights violation in the source country;
2. The appearance of large-scale, long-term camps in the host country;
3. Significant human rights violations against refugees in the host country;
4. Reports of underprovision for the refugees in the host country;
5. International agreements for financial and physical relief;

¹The criteria here are presented in a short form, for the full description of each criterion see Chapter 3

6. Presence of a significant number of IDPs in the source country;
7. Smuggling of asylum seekers.

The definition presented above has significant advantages compared to other attempts to formalise crises of such sort. The core benefit is that the description does not include abstract concepts but is based on a list of facts that happened during a refugee event and that anyone can check. That allows one to quantify and measure the severity of the arrival of asylum-seekers into a host country. The more characteristics are confirmed, the more severe the event is.

The proposed measure (definition) of refugee crises was used to construct a refugee events index for a selection of open democratic European economies for the extensive period from 1951 to 2019. The novel panel dataset is used further to empirically evaluate the influence of a refugee crisis on the chosen countries' macroeconomy, as well as on the socio-economic and political outcomes in those countries, as a demonstration of the dataset's applicability to multidisciplinary research and policy advice.

For the empirical estimations, the dissertation employs a relatively new 'Local Projections' method of estimating Impulse Response Functions (Jordà, 2005), which became very established and popular among macroeconomists, who evaluated the economic aftermaths of financial and banking crises (Romer and Romer, 2017; Jordà et al., 2011). Additionally, the approach to the application of the local projections was improved to encompass the latest econometric findings on the method's statistical properties for small panel datasets (Brugnolini, 2018; Montiel Olea and Plagborg-Møller, 2021; Plagborg-Møller and Wolf, 2021).

The main findings of the research are that relatively minor refugee crises in a developed open economy can have a short-term expansionary effect on the real GDP per capita if a receiving government dedicates extra funds to the asylum seekers' and refugees' welfare. It also raises unemployment in the middle term, and inflation is estimated to react positively when the unemployment effect tapers off. The timing of the reactions coincides with the refugee facts found in certain European countries after the 2014-2016 refugee events. At the same time, there was found no statistically significant effect of refugee crises on the shadow economy, human capital, or level of crime in

the recipient country. Finally, the percentage of votes for a right-wing party is estimated to increase in a few years after a refugee crisis significantly from political and statistical points of view.

The rest of the work is structured as follows. Part I and II of the work are divided into six chapters. Chapter 2 first presents the definitions of the relevant humanitarian status terms, definitions of a 'migrant', 'forcibly displaced' and a 'crisis', which are necessary to establish a solid communication of further ideas outlined in this dissertation. Then, Chapter 2 gives a review of the relevant literature from various disciplines, concentrating on refugee crises and the voluntary and involuntary migration effects on the economic and socio-political spheres of different countries. Chapter 3 presents the measure of severity of refugee events, the way it was built, and the scientific approaches which inspired it. Next, Chapter 4 describes and discusses the data and the methodology used for the empirical part of this dissertation. Chapter 5 outlines the empirical estimation results, robustness checks, and the discussion of the empirical results. Chapter 6 provides the concluding remarks for Parts I and II.

Next, Part III of the dissertation is separated into another six chapters. Chapter 7 provides an introduction into investigation of refugees, refugee crises and terrorism nexus investigation. Chapter 8 outlines the essential definitions for Part III. Next, Chapter 9 presents a literature review of the refugees, refugee crises and terrorism nexus. Chapter 10 describes the data used and presents the research design used in Part III of this dissertation. Chapter 11 demonstrates the results of the investigation and discusses them. Finally, Chapter 12 concludes Part III.

Chapter 2

Essential Definitions and Literature Review

The 'Refugee Crisis' is of core interest in this dissertation. Thus, before analysing the existing literature aiming at defining and analysing refugee crises, it is essential to review the meaning of a 'crisis' and a 'refugee' as well as the other terms heavily used in the relevant literature: 'Migrant Crisis', 'Asylum Crisis' or 'Forced Displacement Crisis'. The above expressions can also be separated into two components. The first component refers to a particular group of 'people under concern' or event, while another is the word crisis. To understand the left-hand side of the terms, each relevant category of people was isolated and presented in the first section of this chapter. It is dedicated to emphasising the essential differences between the terms.

The formal definitions with references to the legal documents and other sources can be found in Appendix A.1. The second section in this chapter reviews the literature on various types of relevant crises and outlines the existing gaps.

2.1 Humanitarian status terminology

2.1.1 Refugees and Asylum Seekers

First, a refugee is the person who fled their country because of the fear of unjust persecution based on race, religion, political views and a few others¹

¹For the complete list of reasons see Appendix A.1.

seeking refuge in another country as presented in the Geneva Convention 1951 (United Nations Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons, Geneva, 1951).

Therefore, to obtain refugee status, a person must cross an international border. In contrast, an Internally Displaced Person (IDP) is a person in the same situation but who never crossed an international border (UNHCR, 2015). The UNHCR statistics (UNHCR, 2022b) record only the IDP escaping the high-violence regions or areas where an active military conflict or significant human rights violations are present. A refugee has been a legal status for more than half of a century (since the 1951 Geneva convention), whereas the IDP could get neither formal international protection nor the legal status recognition until around the 1980s (Cohen and Deng, 2012).

An asylum-seeker is also a relatively new term. The UNHCR statistics (UNHCR, 2022b) department has kept track of these people only since approximately 2000. This category includes those that left their country of origin and applied for asylum abroad but were not yet recognised as refugees or were not yet granted any other humanitarian status (IOM, 2011). Hence, technically, an asylum-seeker and a refugee differ only in their legal status recognition.

Overall, the two categories are similar in the amount of protection they require but differ in support and resources they require from the host country. The difference comes from the difference in rights of the two groups. In recent years, asylum seekers in Europe have been placed in detention centres. They have significant rights restrictions, for instance, not being able to leave the detention centres or access any healthcare except the emergency one. In contrast to asylum seekers, refugees should have the same rights and access to benefits as the residents of the host country.

Historically, the term 'refugee' was used for those displaced in Europe after World War II. There was no debate around the status of the arriving population under concern, and all of them were accepted and integrated. Later, during the Cold War period, any people fleeing violence were also accepted and granted refuge in the capitalist countries. This process served as anti-soviet propaganda, bringing politicians in power extra votes at the next elections.

However, Loescher (1996) argues that the appearance of the asylum-seeker as a legal status of a group of people is partly due to the collapse of the So-

viet Union and year after year rise of people requesting asylum in the countries of the developed West after the collapse. Then acceptance of hundreds of thousands of refugees and funding the protection and fulfilment of their needs stopped bringing political benefits. Consequently, since approximately the 1990s, European countries introduced border controls, stopped granting asylum unconditionally, and introduced several other types of humanitarian protection for asylum seekers instead of refugee status. The two examples are the temporary protection for asylum seekers or the 'tolerated' status of asylum seekers. That way, the granting of the refugee status could happen only after going through a bureaucratic procedure of proving eligibility for the refugee status individually. Some groups that could qualify as refugees a decade ago were not even eligible for the status now. According to Loescher (1996) such procedures climaxed during the break out of the Kosovo War (1998-1999).

Therefore, starting from 2000, a person often qualifying as a refugee becomes first an asylum seeker. Many asylum seekers do not get the status of a refugee but obtain similar rights to refugees for a limited period of time through other protection statuses. For this reason, the asylum seekers complement the data on refugees produced by the UNHCR statistics department. Therefore, the asylum seekers are included in the research as people constituting a vital part of any refugee influx in the studied group of countries from 2000.

2.1.2 Migrant and Forced Displacement

A migrant is the broadest of the terms, describing any person changing her or his place of residence (IOM, 2011). An IDP, a refugee, or an asylum-seeker is virtually a migrant. This definition is not internationally legally fixed, however. It does not specify the legal status of the person in transition. It also does not distinguish between voluntary and involuntary movement. The definition adopted for this research is from International Organisation for Migration (IOM). In the definition of a migrant, this organisation neither specifies his reasons for movement nor considers the length of stay at the destination.

Thus, referring to a migrant crisis, one does not have to specify the reasons for people's movements and their legal status. For example, the BBC used that term for the problems associated with the irregular immigration to Europe in

2014-2016, taking a possibly politically motivated caution and suggesting that one can not know if the migrants were refugees or economic migrants (Tazzioli and De Genova, 2016).

Finally, the broad term **forcibly displaced** (forced displacement) encompasses all possible categories of people that had to involuntarily leave their places of habitat. There can be refugees, asylum-seekers and IDP in any possible combination included in the term 'forcibly displaced'. Thus, in contrast to a 'migrant', a 'forcibly displaced' underlines the involuntary nature of the movement.

2.1.3 Crisis Terminology

The term **crisis** is also an integral part of the events that people call refugee crises. A crisis is a broad philosophical term. The word's history starts in Ancient Greece, where it was central to politics, the legal system and medicine. In politics, it meant a divorce, a quarrel, and a decision. The jurisprudential use was in terms of judgement or court. While the medical use referred to the decisive situation during an illness in which a doctor would understand if their patient was to live or to die (Koselleck and Richter, 2006).

The modern understanding is given in the Cambridge English dictionary. It explains it as "a time of great disagreement, confusion, or suffering". In addition, one of the definitions on the Meriam-Webster is as follows: "an unstable or crucial time or state of affairs in which a decisive change is impending", which is predominantly used in cases of economic or financial crises. At the same time, Koselleck and Richter (2006) suggest there is an ambiguity with the time framing of the situations described as a crisis. In modern language, one can refer to a chronic crisis meaning that this crisis lasts for a significant period, for example, a few years. From an economic or financial point of view, the crises can also be recurring.

Understanding the meaning of the above described 'building blocks' for the 'refugee crisis' facilitates answering the research question "what a refugee crisis is" and "how to measure a refugee event and understand if there is a crisis".

2.2 Literature Review

This section first provides an overview of the academic publications that tried to define events related to large movements of people within and across borders as 'Refugee Crisis', 'Migration (Migrant) Crisis', 'Asylum Crisis' or 'Forced Displacement Crisis'. The main focus of this section is on refugee crises, which because of their involuntary nature, can be considered the most dramatic from the humanitarian point of view and, therefore, from the economic point of view. In addition to that, despite being seemingly different, it is argued that the terms were mainly used for the same or similar events.

The second part of the literature review concentrates on the articles and books dedicated to the economics of voluntary and forced migration. They are presented with the involuntary migration economics in the spotlight.

The primary purpose of the review is to provide, if not an all-encompassing inspection, then at least to draw attention to the absence of a measure for refugee events. The existing definitions of refugee crises used by the media, politicians, and even academics nowadays are based on abstract concepts and are challenging to quantify. In addition to that, the review draws attention to the fact that the economic side of the refugee events stays under-explored by researchers, especially at the cross country level.

2.2.1 Publications attempted to define *Refugee Crisis*

Overall, the academic literature in humanities, history, or migration economics seems to overlook the ambiguities in understanding the term 'refugee crisis'. However, relatively recently, the publications attempting to explain the issue started to expand the knowledge of the problem. These publications recognised the existence of refugee crises, therefore one can group them under 'believers' and further, the 'sceptics' are presented as well.

The Publications Recognising Refugee Crises

Some authors, as, for example, Weiner (1995) discussed the topic of 'Migration Crisis' rather than 'Refugee Crisis'. Since the author aggregates the problems associated with all categories of migrants, his definition can be a helpful starting point for building the measure for refugee events. Weiner (1995) rightfully

identifies that a migration crisis can be due to:

- voluntary migration (low-skilled guest workers or high-skilled expats)
- involuntary migration (refugees or internally displaced people).

In an attempt to define 'Migration Crisis' Weiner (1995) dedicates the whole first chapter to the short historical overview of the worldwide irregular migrations, refugee migrations and internal displacements along with the year 1995 (year of publication) situation overview. He also outlines a few reasons for the increased flows of the above categories of people.

The author recognises the ambiguity of the narratives about crises, arguing that the importance lies in that when governments talk about a crisis, it does not necessarily mean the same as their citizens. Thus, according to the author, it is still unclear if "the crisis is a matter of perceptions..." or a real "long-term threat to the security and the cultural and economic well-being of countries."

In an attempt to remove this ambiguity, Weiner (1995) discusses a "Global Migration Crisis" recognising the multiple dimensions of it and leaning towards accepting it as a genuine concern requiring a solution. This definition is a significant step from essentially nowhere forward to understanding the issue, especially taking into account the fact that such a definition did not exist before the publication. Hence, making Weiner (1995) to be the first one attempting to work on refugee crises as a concept.

On the other hand, due to the nature of the book, the author does not outline strict tractable conditions which would allow one to easily separate a crisis event from a non-crisis one or measure it. Below, the summary for the five dimensions of the "Global Migration Crisis" according to the Weiner (1995) is presented.

The "Global Migration Crisis" by Weiner (1995) is an event that has the following five elements:

1. Control over the entry. A country is in crisis when it cannot control the entry of migrants—for example, suffering from irregular migration or human trafficking.
2. Absorption. A crisis happens if a state cannot absorb a given number of migrants. Absorption here stands not only in terms of physical space

but mostly in terms of integration or assimilation. The author also refers to cultural absorption through the education system, politically or economically, through a labour market.

3. **International Relations.** A crisis happens when the migratory flows become a part of an international agenda: one country puts pressure, intervenes or even engages in a full conflict as a result of displacement. For example, refugee inflows give the host country a feeling that it has the right to intervene or protect its borders by what essentially is blackmail. It can be done in the form of sanctions, including military ones. This feature as an essential part of migration crises is present in several later publications, for example, Rajaram (2015), and Tazzioli and De Genova (2016).
4. **International Regimes and Institutions.** There is a crisis when the existing regimes, institutions and infrastructures, including the above-governmental (e.g. UNHCR, ILO, IMO and others), cannot solve the various newly developed dimensions of the migrants' problems. For example, when the 1951 convention does not cover those fleeing gender-based oppression or coercive family planning. Additionally, according to the author, there can be a global migration crisis when the existing legal systems are not giving enough rights to the guest workers, not allowing them to get benefits, bring families, and acquire the right to remain. Besides, the crisis is happening when "hosting states are unwilling or unable to unilaterally address the conditions inside the source countries that lead people to flee and turn to the international institutions. Most of these institutions, in turn, lack adequate legal authority, military power, financial resources, and administrative capacity to take on such responsibilities."
5. **Moral Considerations.** An event can be called a crisis when there is a moral dilemma, dispute, or discussion in the receiving society: Should we let people in? What are their rights? Should we keep them away? How? Is it moral?; Should we intervene? What are the costs and benefits?

The definition described above is a useful generalisation. It brings attention to the matter. It recognises the complexity of the terminology, going into

more detail and separating several dimensions of a global migration crisis. Nonetheless, further investigation is required to make it applicable to economics research or any other quantitative analysis.

First, a migration crisis is a more broad term and, thus, incorporates the refugee crisis. The Weiner (1995) uses the former and does not focus specific attention on refugees. Therefore, this dissertation is complimenting the work of Weiner (1995) by paying particular attention to the least protected groups of migrants - refugees and asylum seekers.

Second, the author refers to the global migration crisis, implicitly suggesting that it touches all countries around the globe simultaneously. It is an opinion that is difficult to agree with. Any migrant influx, without putting any other unnecessary restrictions here, can be expected to affect the host country directly. One can imagine the economic aftermath of this effect, such as a labour supply shock or bringing extra fiscal burden on the recipient nation, as shown in Borjas (2014). It can also have a direct effect on the source country (e.g. via 'brain drain' or remittances as presented in Borjas (2014).

However, the effects on the other countries are more challenging to identify. In the case of voluntary migration, there could potentially be positive or negative spillover effects (for example, terms of trade changes). The effect on the third countries from involuntary migration can be imagined only also through the terms of trade changes and the burden that might come to the UNHCR donor states, which are mainly the developed countries (UNHCR, 2019). Such effects are challenging to identify unless it is a really global refugee or migrant event as it was after WWII touching each country in the world. Nevertheless, one can imagine that Australia or Papua New Guinea, for instance, were relatively less affected by flows of people than Germany, the UK, or the Soviet Union after WWII. Therefore, the problem of identification and measurement of refugee events and their effects on countries remained unsolved after the publication of the book by Weiner (1995).

Besides, Weiner (1995) is unclear on the time frames of crises. How many dimensions of the 'Global Migration Crisis' are sufficient for an event to be called a crisis? Should they happen simultaneously?

On the other hand, the approach of recognising several dimensions of global migrant crises is taken after in this dissertation to create a measure for

a refugee Crisis.

The books and publications outlined in this section further generally take a less rigorous attitude to identifying the crises.

In this fashion, another heavily cited book is the one by Zolberg et al. (1992) which provides a detailed historical and analytical overview of the refugee situations around the world happened by 1989. Along with detailed attention to the particular regions that experienced refugee influxes, the authors also set out valuable policy suggestions for dealing with the root causes of the displacement problems.

However, despite taking a historical path at the beginning of the book and looking solely at involuntary migration, the authors explicitly associated 'refugee crises' with only large displacements (millions in numbers) of people. That being said, the actual numbers sufficient for a refugee influx to be a crisis were not given by the researchers. In this way, they named only two crises that happened after both World Wars in Europe. It should also be noted here that the authors only implicitly referred to the humanitarian problems and shortages those displaced masses experienced due to the simultaneous occurrence of the refugee crises and the economic crisis in the interwar period.

A bit further in the book by Zolberg et al. (1992), one can spot the actual attempt to define a crisis in the chapters dedicated to the displacements evolving in Africa during the period when the authors were writing their book. According to them, "a **refugee crisis** is a displacement of large masses of people due to severe conflicts or massive violence". The authors make a noticeable attempt to unwind the root causes of the violence in Africa during that period and point to the fact that the refugee-generating conflicts are usually domestic wars but *internationalised* to some extent, either historically or through the international interference. In addition to the above, the authors' reference to a 'Refugee Crisis' as a global event similarly to Weiner (1995) does not help to pinpoint the differences between several such events, their length or their severity. Accordingly, their approach is also not helpful in carrying out an empirical quantitative analysis of the effects of refugee crises on a country.

The book edited by Schmiedel and Smith (2018) makes a further step closer to identifying and building a measure for the term of concern in comparison to Zolberg et al. (1992). The former book concentrates on the role of religion in

the EU in the recent period, suggesting that it has again become an important identifier for friend-or-foe among the general public. With respect to the term of the interest, the authors pose questions of conceptualisation of the 2014-2016 refugee situation in Europe and then discuss it. Their main questions being “Whose crisis is it?” “Are the refugees in crisis?” or “Are the receivers in crisis?”

The Schmiedel and Smith (2018) are the first to explicitly indicate underfunding of the UNHCR as a condition that makes a particular case a crisis. That is why such crises are seen as crises of the receivers, while “*crises which make refugees leave their countries have been muted, constructing the receivers’ migration crisis at the cost of the refugees’ crisis migration.*” Schmiedel and Smith (2018) do make a useful point, leading to an understanding of the refugee crisis as rather a bilateral event between 2 countries than a global issue. However, such a framework is limited in its applicability in estimating the macroeconomic effects of a crisis in concern as disentangling its effects on a source country from the violence in this country (usually the core reason to flee) stages a serious challenge. On the other hand, the financial shortage of relief agencies, especially UNHCR, or the recipient countries leading to shortages in provisions for the refugees is an essential feature of the refugee crises that seems to be overlooked in the other publications that attempted to measure these events. Hence, it is included in the list of the refugee crisis characteristics proposed in this research.

So far, the authors were in the majority ‘**believers**’ presenting the terminology of concern as a real question of global, or, at least, international matter. The group of authors presented below, apart from attempting to describe refugee crises, also tried to investigate if it is at all related to the refugees. The ‘sceptics’ pose the question of whether a refugee crisis is a significant problem requiring a solution or just a ‘social construct’ created using media and used by politicians to gain extra votes in elections by intensifying border control. Some of these authors themselves call such an approach ‘sceptical’, for example, Agustín and Jørgensen (2018).

The Publications Sceptical of Refugee Crises

The main focus topic for these 'sceptics' is the recent European refugee issues (2014-2016). Authors usually suggest various explanations why the crisis is not just about refugees but is a consequence of the internal EU problems. One of the first publications suggesting that is by Nalepa (2017). Despite suggesting that the term 'Refugee Crisis' is only a 'social construct', the author's crucial point is that it is expected to be limited in time. Although the definition contributes to the philosophical understanding of the terminology and the humanities literature, it ignores the intangibility of the proposed description. The definition of the refugee crisis by Nalepa (2017) is based on vague and abstract facts, not suitable for any quantitative, let alone economic analysis. However, such ignorance is understandable in the light of the 'sceptical' approach.

In a similar but a bit more thorough way, the work by Lucassen (2018) scrutinises the term of interest. He suggests that what the European Union experienced is "*not so much a 'refugee crisis' as a complex political, cultural and socio-economic crisis.*" The paper is instead posing a question about why the current inflow of refugees caused such a widespread 'moral panic' and was called a crisis. According to the author, the past experience with refugees could not solely contribute to the current treatment of the situation as a disaster because, during the 1990s, the numbers of asylum seekers in most countries of the EU were higher. Besides, the 1990s saw an overwhelming presence of Muslims among refugees, and Lucassen (2018) argues that they and their children were integrated relatively well, implying that the integration of refugees can contribute to the problems a 'real' crisis can be characterised by.

In Lucassen's opinion, the cause of such perception of the recent refugee situation in Europe lies in the complex continuous global development of the "*inequality and a discomfort with integration of countries into a globalised world*". Also, the unwinding of the *Problematisation of Islam* at the end of the 1980s and "*issues of terrorism*" in the 2000s, together with the reasons mentioned above, led to the propagation of the "*populist rhetorics*". The rhetorics, in combination with the introduction of the *EU visa regime*, created a "*Perfect Storm*" (a perfect situation for a moral panic) which was called by the name refugee crisis. Hence, the author argues it is a social construct, at least for the

EU.

A somewhat similar attitude is presented in Borjas and Crisp (2005), who implicitly suggested that the mobility of populations has always been present while a 'crisis' is communicated by the media and politicians.

It is worth noticing that, despite being among the 'sceptics' Lucassen (2018) suggests border restrictions as an essential tangible characteristic of refugee crises. The border restrictions, which effectively limit the human right to asylum in the recipient country, are recognised in the proposed measure.

Another sceptic is Triandafyllidou (2018). She recognises the controversy and ambiguity around the terminology of concern in a concise form and explains her understanding of refugee crises. She recognises the multidimensionality of the refugee event in the EU in 2014-2016 without generalising and extrapolating it to any other countries. According to Triandafyllidou (2018) the *refugee crisis* in the EU can be characterised by:

- Unprecedented volume and pace of refugee and migrant flows;
- Divergences in and conflicts of opinions of member-states;
- Dramatic wave of solidarity and voluntary help by citizens and NGOs;
- Dramatic rise of suspicion and 'asylum panic';
- Mobility restrictions inside the EU and from outside the EU.

In spite of following a very structured and more measurable facts-based approach, the list of proposed characteristics by Triandafyllidou (2018) resembles the one by Weiner (1995). Therefore, Triandafyllidou explicitly states that Refugee Crisis is essentially a humanitarian emergency. Hence, according to the author, it becomes a crisis due to 'politicisation' and 'mediatisation', which are the actual sufficient conditions for a crisis.

This argument is treated critically in this research. The essential difference between a humanitarian emergency and a refugee crisis is that some refugee crises involve humanitarian emergencies while others do not. A refugee crisis can be a humanitarian emergency when there is a direct threat to the lives of the refugees or the host nation (by definition of a Complex Humanitarian Emergency Pakes (n.d.)). However, the measure of refugee crises developed in

this dissertation and its analysis demonstrates that a host country may have a refugee crisis without a humanitarian emergency.

Despite the above limitation, Triandafyllidou (2018) underlines a few crucial aspects, which were also employed to some extent in the description and a measure proposed in the next chapter. It is the first, and the last of the characteristics outlined by Triandafyllidou (2018). The volume of a refugee flow and the restrictions imposed on it are believed to be the signals of refugee crises.

Another author that can be referred to as a sceptic of refugee crises, Rajaram (2015) goes even further, claiming this crisis in Europe is fabricated as it is based on just verbal framing of the situation as a crisis. However, it is merely a “less desirable mirror of a more orderly form of what is effectively the same phenomenon (mobility of population)”. Thus, again, concentrating the attention on the mobility issues and suggesting treating the crisis as a part of global human migrations.

The opinion by Rajaram (2015) is implicitly criticised in this dissertation as the measure of refugee crises built using factual evidence from similar crises around the world assesses the European refugee events of 2014-2016 as a crisis for the majority of the European countries chosen for the empirical research.

The above publications try to explain what a refugee crisis is, although none of them states that the absence of a firm and generally recognised definition is itself a problem. The book by Agustín and Jørgensen (2018), on the contrary, discusses this issue and builds the whole narrative around a few serious complications with the fact that the refugee crisis does not have a precise definition.

The authors express their overall scepticism about the term, suggesting that the term “Crisis of Solidarity” is more relevant, at least, for the refugee events in Europe in 2014-2016. Despite that, the book contributes to the topic by explicitly providing the distinction between the ‘refugee crisis’, ‘migration crisis’, ‘humanitarian crisis’, and a ‘crisis of the asylum system’ in Europe. While, as in the book by Weiner (1995), the ‘Migration Crisis’, according to the authors, is the term that, being broad, includes the ‘refugee crisis’ in itself. ‘Humanitarian crisis’ explains an angle from which one can look at the recent refugee situations in Europe and other parts of the world, for example, from the side of shortages Rohingya refugees experienced in Bangladesh.

This term underlines the suffering and victimisation, creating the difference between wanted and unwanted migrants and thus leading to the 'crisis of the asylum system' in Europe.

Summarising the Agustín and Jørgensen (2018) discussion around the studied concept in Europe, one can note that while criticising the refugee crisis, they do not give a precise description of it. In spite of being sceptical, they explicitly named a few features of the current migration situation in Europe, which can partially describe the *Refugee Crises* in general. The combination of the chosen criteria is surprising for a book published by the sceptics of the refugee crisis terminology. For example, they suggest that framing the situation as a Crisis allowed the EU countries to temporarily de-facto ban the Schengen regulation, i.e. impose mobility restrictions.

Agustín and Jørgensen (2018) also make a good point about the fact that the numbers of refugees coming to Europe play a central role in framing the current set of events in the EU as a refugee crisis. It is suggested that the absolute numbers of refugees or asylum seekers themselves are insufficient to determine a crisis. This notion is also a crucial step forward for the literature. The current dissertation, though, goes further and proposes a cut-off value as the benchmark for the number of refugees relative to the total population of the recipient country, going above which suffices for the corresponding *country-year* to be counted as a candidate for the refugee crisis.

Agustín and Jørgensen (2018) continue the discussion around the European refugee problems, noting that the inflow of migrants was present for a while before 2015. Thus, 2015 may not be the beginning of the crisis for all the countries involved. Similarly, De Genova et al. (2016) pointed out that the crisis in the countries of the global south is much more evident and significant than in the EU from the point of view of pure numbers, while the direction of migration South-North has been present for decades. This dissertation develops that idea further as the proposed measure of the refugee crises shows that some countries in Europe could have entered into a crisis earlier than 2015, for example, Austria (2014).

Therefore, the book by Agustín and Jørgensen (2018) does move the understanding of the issue forward. The authors are sceptical about the terminology they are discussing, keeping the refugee crisis in quotation marks. Such an

approach does not require a formal characterisation of the term, nonetheless allowing them to spot a few objective characteristics of it. The most important of all is that during that one European refugee event they studied, the mobility restrictions were imposed on the refugees and asylum-seekers. They also argue for the direct link between the refugee crisis and “‘the economic crisis’, ‘the financial crisis’, ‘the debt crisis’, the ‘banking crisis’, ‘the housing crisis’, and so on.” This link is not explained, though, implicitly emphasising the necessity of the empirical investigation of the refugee crises’ aftermaths outlined in Chapter 5 of the current research.

Publications Relying on One Characteristic or One Country for Identification of Refugee Crises

Agustín and Jørgensen (2018) are not alone in specifying (even implicitly) the mobility restrictions as one of the attributes of refugee crises. There is a group of papers that spotted and concentrated only on these restrictions in their attempts to characterise the term. The view on mobility restrictions as a signal of the crisis is present in most case-study humanities publications, which form the basement of the proposed definition of the Refugee Crisis along with other human rights violations refugees suffer in the receiving society.

Initially, the argument about mobility restrictions was explained in De Genova et al. (2016). In contrast to the mainstream rhetoric, the refugee events in Europe in 2014-2016 were called a “Schengen Regulations Crisis”. According to De Genova et al. (2016), the government of the EU gave itself the mandate to produce emergency policies hiding behind the “words of crisis”, introducing a deeper and wider border and immigration control. However, recognising that it is a controversial policy, the authors suggested the EU citizens are “too intellectually distracted, emotionally manipulated, or otherwise paralysed by the border spectacle to organise any adequate or consequential form of resistance”.

A similar view on the recent “refugee crisis” in Europe is also supported by Bendixsen (2016), Duarte et al. (2016), and De Genova (2016) who all claim in one way or another that it is not only the large inflow of migrants that contribute to a crisis situation but also the border mobility restrictions imposed on them, which, in turn, are polarising the EU society around the securitisation

paradigm. To add up to the importance of this dimension, as it can be evident from the refugee crisis measure presented in Chapter 3, the mobility restrictions, as the most common refugee rights violations, are the feature inherent in almost each of the cases studied in this work.

Many publications reviewed in this Chapter focused not only on one particular fact associated with refugee crises but on a particular country in the EU, studying the refugee event in it rigorously, similarly to the approach to refugee crises proposed in this dissertation. For example, Castelli Gattinara (2017) studied the recent situation with the refugees in Italy only together with its political and social consequences on this country. The author seems to be implicitly accepting that the term is not investigated thoroughly and does not have a clear definition by suggesting that a detailed analysis of all aspects of it is beyond the scope of his article. Thus, Castelli Gattinara (2017) only concentrates on the two dimensions of the term (according to the author): regulatory and public opinion. The paper does not give a tractable or quantifiable definition of a refugee crisis but instead talks about pre-crisis conditions and during- or post-crisis changes in the Italian society extrapolating them to the whole EU.

Calling the refugee crisis a regulatory dilemma, Castelli Gattinara (2017) directs the reader to the securitisation policy of the EU over the last 30 years, whose main goal was to diverge the migratory flows into the union, for example, using the Dublin principle (EU Council, 1997). The paper also suggests that the current crisis can not be viewed independently from the other crises that Europe suffers from, especially from “the crisis of legitimacy of national governments”. Thence, stating that the crucial dimension of the refugee crisis in Europe is the internal problems of the EU. This dimension is not included directly in the measure of the refugee crisis proposed in this work as it is rather an inner characteristic of the host country that increases its vulnerability during the refugee inflows, influencing the socio-economic and political aftermaths of the crises. This dissertation tries to give an objective, quantifiable description of the term of interest that does not depend on a host country’s pre-crisis economic, social, and political conditions.

The second dimension of the crisis by Castelli Gattinara (2017) is “moral panic” and public anxiety, which, in turn, resulted in the deterioration of the

conditions of the refugees entering the EU, as according to the author, the combination of the two dimensions did not allow to relocate the refugees efficiently and did not allow the governments to cooperate in solving the crisis. Nevertheless, at this point, the author implicitly refers to another important dimension of the crisis - relocation and resettlement. This issue is included in the proposed definition as it usually involves international cooperation and funding.

To sum up, from the publications attempting to describe a *refugee crisis*, one can notice the following fundamental gap in the existing literature. It seems to overlook the fact that the term that people at all levels of responsibility heavily use still has no clear definition. Especially a definition that can be used as a measure of refugee events in an empirical analysis, distinguishing crisis years from non-crisis years in a particular country. This dissertation, therefore, aims to close this gap by proposing such quantifiable measure, creating a dataset of the crisis years and showing an example of its application.

2.2.2 Publications relied on *Refugee crisis* term without defining it

This subsection concentrates on books and publications that use the term refugee crisis extensively, although neither defining it nor recognising the necessity of doing so. In contrast to the previous very niche bit of literature limited to a few publications and books, this literature is very broad. This part of the review creates links between the research on refugee crises and the investigations on voluntary and involuntary migration economics. It is not aimed to be all-embracing. That would be beyond the scope of any work. The aim here is to draw the reader's attention to the extent that a refugee crisis is used in the relevant areas of humanities, politics, society, economics and even finance.

The biggest chunk of the literature uses the refugee crisis to explain the situations in one or several countries that were influenced by a particular group of refugees. The authors of these publications try to explore the past events in the country of origin of a particular group of refugees or in the affected host countries and the reactions of these countries to the events the authors refer to as a refugee crisis. However, the authors do not prove that the event they

study is actually a refugee crisis, thus using the terminology without reference to a particular set of characteristics. In most cases, those publications were implicitly dedicated to increasing awareness of a specific refugee situation.

For example, quite a few such publications are outlined and used in Chapter 3, which describes the initial step in building the measure for refugee crisis by establishing the most common features associated with a refugee crisis. For example, there are papers by O'Donnell and Newland (2008), Hodges (1984), Rizal (2004), Wain (1979) and others.

However, some authors attempted to briefly overview several refugee crisis cases. Robinson (2016) studied the British and the Canadian responses to what he called an 'International Refugee Crisis'. The author gives a historical overview of the refugee source countries, refugee groups arriving in Britain and Canada, and the countries' policies to these refugees. Similarly to Robinson (2016), Weiner (1995), Zolberg et al. (1992), and some other authors, not explored in this review (see, for example, Esses et al. (2017), or Cooper (1999)), Loescher (1996) supported this view on the necessity of recognition of refugee crisis as an international event. According to the author, globalisation and the pure numbers of refugees registered by the UNHCR in the world (26.6mil people, UNHCR (2022b)) serve as the justification for the conclusion, together with the shortage of funding and staff in the UNHCR.

The above approach to the refugee crisis is beneficial for comparing overall humanitarian situations. In contrast, a study that focuses on one country allows one to evaluate the actual impact of refugees on the recipient country or region. This approach is similar to the one proposed in this dissertation. However, the humanities publications evaluate the impact mostly qualitatively. For example, Dong (2015) argues that because of still present underdevelopment of the relief organisations in South Asia, refugee flows "remain largely a state-to-state issue in Asia". A similar view was expressed in the paper by Hodges (1984) but relative to the regional distribution of the "refugee crises", therefore making the qualitative assessments of the corresponding regional development related to refugee flows.

Other authors seem to have adopted an approach from natural sciences and created reference books for the researchers in the area. They collect all potential information sources in one book for those researching refugees, as, for

example, Gibney (2010). The book and other authors give the historical outline of the refugee events with a detailed description of international documents and organisations responsible for determining the relationships of refugees with the hosting, resettling and sourcing societies. However, such publications neither provide a way of comparing severities of different refugee events in different countries nor present a way of evaluating the impact of flows of asylum seekers on any country.

Both Loescher (1996) (explicitly) and Gibney (2010) (implicitly) refer to selected events with the term refugee crisis, which are different in values across many dimensions: numbers of refugees, countries affected by the influx, reasons behind the influx, the level international recognition, solutions provided and so on. Thus, applying the term inconsistently. For example, the 200,000 Hungarians arriving in Austria in 1956 and the post-WWII millions of Volksdeutsche expulsion (about 8 million people were German expellees residing in Germany by 1950 Münz and Ulrich (1997)) both are called refugee crises. In contrast to the above publications, this research tackles the problem, giving the concrete criteria to distinguish between a crisis situation and a non-crisis situation.

Due to the relative recency of the appearance, the literature that explores the reasons behind the migration to Europe in 2016-2016 is extensive and growing. The majority of papers find the reasons for the crisis inside the EU, its politics and actions, or, at least, the reasons for not being able to cope with it are internal. Similarly to Agustín and Jørgensen (2018) already mentioned above, these authors investigate the recent events in isolation from the past refugee events, let it be worldwide or in the EU alone. For example, Samad-dar (2016), Genschel and Jachtenfuchs (2018), or Guiraudon (2018).

Finally, one of the most important ideas of the literature dedicated to studying refugee events in the EU in 2014-2016 that can be illustrated with Corsetti et al. (2016) is the fact that the refugee crisis became a base for a serious EU-wide policy suggestions foundation. The authors in the book dedicated one chapter to the proposal and justification of “Refugee Bonds”, which would serve as insurance against the potential fiscal ‘burden’ a sudden refugee influx can be for the seashore countries of the EU, such as Greece or Italy. Building on the recent experience of the EU with migratory flows from the Mediter-

anean, the proposed bonds would serve as the mechanism of providing the resources to finance the existing infrastructure under pressure in the affected countries. Hence, the processed and integrated asylum-seekers are supposed to be more prepared to utilise their mobility rights inside the Schengen area. If the EU accepts this policy, it could help spread the costs and benefits of the influx. That is important since, currently, the benefits are accrued by the most developed countries of the EU situated further away from the Mediterranean sea, while the costs - are by the coastal countries.

The crucial point in their work is that the authors of that policy proposal suggest that the execution of the 'Refugee Bonds' should be triggered "as long as some narrowly defined conditions are met, such as the occurrence of a refugee crisis". Corsetti et al. (2016), in that argument, overlook the ambiguity of the term refugee crisis entirely and do not define it. However, this dissertation complements their policy suggestion by equipping decision-makers with a measure of refugee event severity to understand if it is a crisis or not and, hence, if the Refugee Bonds should be used to mitigate the financial burden of a refugee influx.

To sum up, extensive literature uses the refugee crisis term without recognising the ambiguity of its understanding. Policy suggestions are prepared for "Monitoring the Eurozone" based on the refugee crisis. Thus, the measure proposed in this dissertation complements the existing literature and policy suggestions, providing a solid foundation for understanding refugee crises, measuring them and separate from non-crisis events. It is also complementary to the existing research on the economics of migration. The next section of the literature review is dedicated to the publications on the economics of voluntary and involuntary migration.

2.2.3 Economics of Migration

The literature on migration economics is much more developed than the refugee crisis literature. The aim of the current investigation is not only to characterise the term and evaluate the refugee events for the selected European countries but also to estimate the potential economic, socio-economic and political impact of refugee crises on them. Thence, the review of the studies focused on the economics of both voluntary and involuntary migrations is beneficial in

building expectations for the estimated effect.

The Voluntary Migration Economics

The literature here is voluminous and can be roughly separated into two groups whose authors seem to have two opposing views. The first group is those finding mostly negative impacts of immigration on the host country. This 'school of thought' is represented, for example, by Borjas (2014), Blau and Mackie (2016), or Kerr and Kerr (2011). Often, the foundation that is used in those works is the cost-benefit model, which is developed on the model by Roy (1951).

On the other side of the line 'stand' the group of equally well-cited authors, for example, Woetzel et al. (2016), Card and Peri (2016), Ortega and Peri (2014), or Dustmann et al. (2016) who see positive influence migration can have on economies of countries and host populations.

In both cases, the lists of authors mentioned above are far away from being comprehensive. There are many other brilliant academics on both sides of that very vague 'border' or even standing at the border, questioning and blending the traditional views. The discussion about why the authors are getting different results in the voluntary migration economics can be found, for example, in Dustmann et al. (2016).

First, the review briefly covers the group of authors with relatively negative expectations of the economic impact of migration. The very respected book by Borjas (2014) presents a combination of his past research and publications. The book explicitly argues that immigration brings considerable costs to many participants of the labour market of the receiving country and the economy in general. Immigrants are considered to be a labour shock to the economy. The evaluation of the effect of this shock is done in a partial equilibrium setting. One of the most important typical assumptions used in the book and in this field of economics is that immigrants and natives fall into a relatively small number of skill groups, and one can estimate the effect of shifts in the labour supply for each group. Nevertheless, Borjas (2014) does not discuss the involuntary immigrants' influence on economies in that book. That is why the impact of refugee crises on unemployment in the recipient countries is studied in the empirical part of this dissertation.

Another book to be considered in this review is by Blau and Mackie (2016). Apart from the above-mentioned migratory labour market impact, it also looks at the fiscal effects of immigration, using the United States as an example. The authors suggest that immigrants and their dependent children create a fiscal burden on the receiving country. The rest of their results follow the same negative view on the wage effect of immigration, suggesting that it decreases the earnings of, at least, the low-skilled workers. Macro-level data on wages and earnings is very limited, nevertheless, this dissertation complements the studies similar to Blau and Mackie (2016) by estimating the impact of refugee crises on government consumption expenditure.

Further, the survey by Kerr and Kerr (2011) provides a comprehensive literature review on the reasons why people choose to migrate and their effect on economics and the labour market in the destination country. The authors scrutinised the EU labour market and participation rates of various cohorts of migrants over time. Their research suggested that participation rates are lower among immigrants than among natives. They also found that the participation rates of the later cohorts tend to be lower, which can be explained by either a larger number of cohorts of immigrants or a worse quality of skills. The empirical results of this dissertation are built on the expectation that the outcomes of refugees are going to be different to those of the natives, especially in terms of unemployment.

Generally, it is expected that refugees do not get involved in economic activities for at least some time, depending on the country. For the EU countries, the time for labour market integration is reaching approximately 2-5 years according to Fratzscher and Junker (2015), UNHCR (2013), or Shaw (2016) for the UK. Therefore, one can also expect an increasing impact of the refugee crises on the European economies' unemployment and government spending.

The other perspective of the economics of migration can be represented by Woetzel et al. (2016), who suggest that immigration globally has a very significant positive effect of 4% on the global output. On the same side stand Card and Peri (2016) in their critical review of the above-mentioned book by Borjas (2014). They empirically and theoretically demonstrate that Borjas might be wrong in his calculations. Thus, they argue that the real effect of economic

migration on the labour markets in receiving countries and the economy, in general, should be at least less in amplitude or with an opposite sign, i.e. positive.

Another book that, to some extent, combines the voluntary and involuntary migrants by Jaumotte et al. (2016). They empirically studied the long-term implications of all migrations (including the recent refugee influx) on GDP per capita in receiving advanced economies as a measure of people's living standards. Their main result is that income per capita rises in the long term, primarily due to a rise in labour productivity. However, the authors do not provide a mechanism to separate the effects of the voluntary and involuntary (refugees) immigrants. This dissertation estimates the potential impact of refugee crises on the real GDP per capita of the receiving countries and conjectures a potential mechanism for the revelation of the estimated impact.

For a more rigorous review on the topic of voluntary migration, the reader is directed to the excellent book by Chiswick and Miller (2014), where the interaction of the views on the matter is explored to a great extent.

The above publications mainly concentrated on the labour market implications of voluntary migration, while refugees' migration is involuntary. Refugees are different to traditional immigrants. As it is presented in the book by Betts et al. (2017), the refugees are in a different economic position because they are placed in between three distinctive sets of institutions. First of all, they are under the authority of the receiving state and international relief organisations, such as UNHCR. In addition to that, they are stuck between formal and informal sectors. The entrance to the formal sector of an economy is usually especially problematic for this group of people. Finally, they are in between national and transnational economies since their resources and capital can be based in two or more countries, for example, the country of origin, the refuge country, and the transition country. Such conspicuous differences in the nature of involuntary migrants from voluntary migrants gave a strong foundation for the involuntary migration literature, especially the one that concentrates on the economics of involuntary migration.

The Involuntary Migration Effect on Host Countries on Micro-level

Following an exceptional state-of-the-art literature review on involuntary migration economics by Zetter and Fiddian-Qasmiyeh (2011), one can identify several stakeholders in the process of involuntary migration:

1. Refugees;
2. Host populations (society);
3. Host state (country);
4. Source country and stayee population in the country of origin;
5. International community.

Since the refugees interact with all of the above stakeholders during their displacement, various publications examined their impact on each of those groups. In most cases, however, the research on the influence of involuntary migration is qualitative. The works are based on formal and informal interviews, surveys, focus groups, oral stories, fieldwork and other qualitative methods. Zetter and Fiddian-Qasmiyeh (2011) identifies "the overarching absence of analyses drawing upon systematic and comparative methodologies", specifically, of quantitative type. Therefore, this dissertation fills the gap in the impact of involuntary migration literature on the receiving countries by creating a quantitative measure of refugee crises and estimating their economic, socio-economic and political impact on the selected European countries.

The review below first concentrates on the existing studies focused on analysing the effect of involuntary displacements on economies. The largest share of the literature concentrates on the effect of refugees on the population of the host countries. The literature seems to have developed, overwhelmingly, on the work by Chambers (1979) and his later works Chambers (1986), or Chambers (1996), who identified that in any displacement situation among the host society, there should be "winners and losers". Chambers and another outstanding academic in the area, Kibreab et al. (1985), identified that the ethnic differences matter in the level of hospitality to the incoming people, along with the resource availability and the local labour demand.

The existing literature has identified the following key impacts of refugees on the host population, based on Zetter and Fiddian-Qasmiyeh (2011):

- Environmental impact;
- Health and well-being of hosts;
- Social impacts:
 - Demography and fertility;
 - Education;
 - Host concerns, social tensions, violence and crime;
- Economic impacts on host populations.

This dissertation evaluates the impact of refugee crises on economic and social spheres. In addition to that, it estimates the impact on the political sphere represented by the votes of the right-wing party.

Zetter and Fiddian-Qasmiyeh (2011) identify Kuhlman's works (Kuhlman et al., 1990; Kuhlman, 1991; Kuhlman et al., 1994) as "pivotal" for his outstanding model for "the Economic Dimension of Refugee Adaptation", which provides a very logical approach to the successful integration of refugees into a receiving society. According to the author, it is necessary to balance full access of the displaced to the local infrastructure and labour market while minimising the refugees' negative impact on the locals' income. The same argument is further developed in the paper by Zetter and Ruaudel (2016).

Despite the microeconomic nature of the investigations dedicated to studying the economic impact of the refugees on the host populations, the literature identifies an argument that is highly relevant for macroeconomic research. As cited in Betts et al. (2017), several authors, for example, (Campbell, 2006; Whitaker, 2002; Jacobsen, 2002) developed an understanding that while refugee accommodating can be a burden on security, environmental and economic spheres, it usually causes inflow of international resources in the form of humanitarian and financial help. Not to mention that refugees can themselves be a valuable human capital for the receiving society. As a result, the expected sign of the effect of refugees on an economy is ambiguous.

Zetter and Fiddian-Qasmiyeh (2011) identify the following areas of the impact of displaced on the host communities analysed in the literature:

- Impact on prices (of food, and accommodation or land);

- Impact on employment levels and types;
- Impact on income levels and trade;
- Impact on expenditure (incl. consumption);
- Impact of new industries and markets.

There are a few studies that touch one or several of the mentioned key impacts in their research, for example, Alix-Garcia and Saah (2009), Maystadt and Verwimp (2014), Akgündüz et al. (2018), Diaconu et al. (2015). Interestingly, the impact on food prices or accommodation prices is mostly studied through the lenses of supply and demand, which are believed to shift when humanitarian aid arrives in the host country (or international relief organisations build camps for refugees). The majority of studies, thus, suggest that the food prices in the affected regions should decrease in the presence of aid as the relevant supply increases. Some authors argued, though, that the effect is not as high as the influence of the demand shift due to the refugee influx. The prices, as a consequence, should generally increase as presented by Alix-Garcia and Saah (2009), or Fiddian-Qasmiyeh et al. (2012). On the other hand, house prices, for instance, can also increase from the buy-to-let market induced by the rises in rents, while the rents are going up because the refugees either cannot afford to buy a house or do not expect to stay for long in the host country. The availability of macro-level data on prices is very limited across the selected countries and chosen time period. Therefore, the investigation of the effects of refugee crises on price levels is left for future research.

Maystadt and Verwimp (2014) studies other economic indicators: income and consumption expenditure of the host population. The authors argue that the economic variables are not evenly influenced by involuntary migration. It is due to the fact that some actors, for example, farm owners or non-agricultural workers, may be able to benefit from the influx of refugees, who, most probably, are first employed in the agricultural sphere.

Diaconu et al. (2015) can serve as an excellent example of qualitative research that describes the vehicle of the potential impact of refugees on each of the key elements mentioned by Zetter and Fiddian-Qasmiyeh (2011). Diaconu suggests that because of the differences in the human capital of natives and immigrants in the EU in 2015, there can be significant problems for the

refugees to integrate into the labour market. Therefore, Diaconu et al. (2015) proposes the introduction of better integration policies and lists them. Her conclusions were confirmed later by the facts found in European countries before and after the 2014-2016 events (UNHCR, 2013; Dumont et al., 2016) and this dissertation for a panel of European countries for the period 1951-2019.

Akgündüz et al. (2018) studies the firm entry and profit levels for Turkey during the Syrian refugee influx. The author finds that although the number of firms stays relatively equal to the pre-crisis time, the foreign-owned firms increased in numbers leading to an overall rise in growth and profits but to a limited degree.

The few papers that draw their conclusions on empirical estimations are by Alix-Garcia and Saah (2009), Maystadt and Verwimp (2014), and Akgündüz et al. (2018). The studies mostly concentrate on particular cases of displacement, for example, Eritreans and Ethiopians in Eastern Sudan or Syrians in Turkey. It inevitably causes questioning the possibility of extrapolability of the above research results to other countries, even countries from the same region, due to an inherent heterogeneity of each refugee displacement. That emphasises the value of the quantitative cross-country and cross-temporal analysis presented in this dissertation. The chosen approach allows, taking into account the heterogeneity of the countries, to obtain statistically valid and extrapolatable estimations of the impact of refugee crises on the European economies.

Notwithstanding the valuable insights of the above review on the potential effect of the crises of concern, the publications mentioned above are primarily on the micro-level. Since the investigation in this dissertation aims to evaluate the refugee crises' impact on the macroeconomic, social and political indicators of the recipient country, the literature review continues with the studies on the impact of the involuntary migration on host states on a macro-level.

The Involuntary Migration Effect on Host Countries on Macro-level

As evident from the previous parts of the literature review, the literature that attempted to execute a quantitative analysis is present to a much lesser extent than the qualitative research. Although, analyses using the empirical economic investigation are even rarer. In the majority of cases, the authors publish on the countries that have relatively more data available. That is why the

number of macro-level publications on the advanced countries exceeds the number of those published for the developing countries. Overwhelmingly, however, the papers of this kind resemble “accounting exercises”, when the costs and benefits of a particular influx are calculated, and the final balance is discussed.

The direct and indirect costs and benefits to the receiving governments that are most often mentioned in the literature can be adopted from the Zetter and Fiddian-Qasmiyeh (2011) in the following way. It is worth noting that each of the points mentioned below can be generally counted at the same time as costs and benefits for the hosting states:

- Encampment - expenditure and spillover effects of establishing camps and detention centres (even if they are created by the International Relief Organisations (IROs)).
- Care and maintenance programmes - can be on the ‘liabilities side’ for the government or ‘assets’ if done by IROs.
- Governmental employees who are working on refugee-related work. It can put extra pressure on the existing institutions. On the other hand, it can bring additional investments in the same institutions since the spending is required on:
 - Hosting displaced populations outside of camps;
 - Refugee status determination process;
 - Detention;
 - Dispersal policies.
- Deportation - similar effect depending on which party pays for it and how the resources disseminate. For example, it can be the host country covering the costs of deportation, or it can be an IRO.
- Integration in the labour market - ambiguity of the effect depends on whether the host country pays for the training in necessary skills, including language or an IRO covers it.
- Remittances - can be perceived as the outflow of the financial resources or as extra profits for the financial companies facilitating this.

- Tax revenues - extra revenues can come after the integration of the newcomers, but there can be a deficit if there are some barriers present for the refugees to participate in the income-generating processes;
- Growth and inflation - the ambiguity of price rises were inspected in the above subsection using food and housing examples. In contrast, the brunt of the refugees on the GDP growth can depend on all of the above-presented arguments.

First, in discussing the papers on the countries of Global South Zetter and Fiddian-Qasmiyeh (2011) suggest that the governments of those countries along with the international agencies have underlined the requirement of international help for those countries in order to manage the hosting of the displaced populations. Because of that, several pieces of research were executed in partnerships with the related governments or international organisations. For example, the Government of Malawi (Zetter and Fiddian-Qasmiyeh, 2011) estimated the total one-year macro-level cost of hosting Mozambican refugees. Several other “accounting exercises” were done in Tanzania in 1994 and Kenya in 2010. Some were funded by Denmark, e.g. Enghoff et al. (2010), estimating the benefits of the Dadaab refugee camps on the surrounding areas and finding approximately 25% increase in the income per capita of the neighbouring population in the province affected. While the Bank (2013) assessment showed that the spillover effect of the conflict in Syria *might* have decreased Lebanon’s GDP by approximately 2.9%, making the unemployment rate twice higher (to above than 20%) and constituting the total fiscal impact of USD2.6 billion.

Similarly, looking at the EU countries (the Global North), the research by Aiyar et al. (2016) suggested that the refugees required spending from the host countries. For example, the EU states have been increasing their expenditure on the coming asylum seekers for the three years before publishing the study by Aiyar et al. (2016). The table below is reproduced directly from the paper for the illustration purposes:

However, Aiyar et al. (2016) argue that such an increase in expenditure in the short-term should lead to “a modest increase” in a country’s GDP. At the same time, the long-term macro- and micro-economic effects will depend on the efficiency of the integration of the refugees into the host society. Thus, the policy suggestions from the authors can be summarised in the following.

Table 2.1: Fiscal costs of Asylum Seekers, 2014-2016. (Percent of GDP)

	2014	2015	2016
Austria	0.08	0.16	0.31
Belgium	0.07	0.09	0.11
Croatia	0.002	0.09	0.11
Cyprus	0.003	0.012	0.012
Czech Rep.	0.0	0.0	0.02
Denmark	0.24	0.47	0.57
Finland	0.09	0.13	0.37
France	0.05	0.05	0.06
Germany	0.08	0.20	0.35
Greece	n.a.	0.17	n.a.
Hungary	0.0	0.1	0.0
Ireland	0.03	0.04	0.05
Italy	0.17	0.20	0.24
Luxembourg	0.05	0.09	0.09
Netherlands	0.10	0.18	0.23
Serbia	0.00	0.06	0.1
Spain	0.006	0.006	0.03
Sweden	0.3	0.5	1.0
U.K.	0.015	0.016	n.a.
Simple average	0.07	0.14	0.22
GDP-weighted average	0.08	0.13	0.19

Source: Aiyar et al. (2016) and the IMF staff estimates based on authorities information and/or other sources.

Assumptions behind estimations vary across countries. For example, assumptions about per head spending (both for staying applicants and for immigrants transiting to other destinations), length of stay and benefits received by rejected applicants, coverage of benefit-related spending (e.g. security and education) and local government costs.

It is necessary to give access to the labour market and allow mobility, which should, in turn, contribute to the mitigation of the fiscal costs of the receiving states.

This dissertation also evaluates the impact of refugee crises on real GDP per capita. However, in contrast to Aiyar et al. (2016), it is done through empirical estimations over a much longer period and, thus, a larger number of refugee crises.

The above paper, in its cost estimation part, resembles Jandl (1995) or Martin et al. (2005), which can be counted as a part of the annual evaluations of the fiscal impacts of the asylum seekers for the EU states.

In their discussion of the efficiency of integration of refugees into the receiving society, Aiyar et al. (2016) evaluate the performance of the three durable solutions to a sudden refugee influx. They are local resettlement, third-country resettlement, and repatriation. In the context of the advanced economies, the

third-country resettlement usually means the resettlement in the country of the refugees' first asylum, which is typically in the Global South. Repatriation is the return to the source country, while local resettlement is integrating refugees into the host country.

As well as Aiyar et al. (2016), Zetter (2014) suggests that when looking at the long-term, one can find developmental benefits from the arrival of refugees, conditional on their successful integration. The importance of the integration of refugees into the receiving economy is also emphasised in the work by Fratzscher and Junker (2015), who studied the time, costs, and outcomes of the economic integration of refugees. Based on the German example, they estimated that it takes around two years before refugees can join the labour market. However, their participation rates are much lower than the natives in the same age group. Furthermore, Dumont et al. (2016), UNHCR (2013) found that a large share of refugees stays unemployed even after five years from the arrival. The authors found that both before the 2014-2016 refugee events in EU, up to 75% of refugees are in a protracted unemployment. Nonetheless, according to the model simulation by Fratzscher and Junker (2015), investments in refugees assimilation should pay off depending on pessimistic or optimistic forecasts for the studied economies.

As mentioned in Clemens et al. (2017) a few case studies did not find negative effects of the refugee influxes they scrutinised. For example, Card (1990) found that a large arrival of the refugees from Cuba to Miami in 1980 did not affect the wages of the natives or the unemployment level. Even more, Hunt (1992) established that a large influx of refugees from Algeria to France in 1962 led to a very narrow rise in unemployment. Friedberg (2001) demonstrated that the extensive entrance of post-Soviet Jews to Israel between 1990 and 1994 did not induce a reduction in the wages of natives. Angrist and Kugler (2003) examined the inflow of Balkan refugees in the 1990s, obtaining an association of it with the increases in unemployment in the 18 European countries. However, the results were unstable and statistically insignificant, not allowing one to interpret them as causal.

To conclude the economics of involuntary migration, the majority of macroeconomic studies' approach to the refugees' impact as costs versus benefits is justified as a case of a refugee influx is usually labelled with such wording

as 'overstretching' or 'pressing' the infrastructure already inadequate for the locals (Francis, 2015). It, however, concentrates on the short-term effects and overlooks the potential mid- and long-term influence on the recipient country. The long-term effects investigated by the authors were usually simulated using theoretical models (Aiyar et al., 2016) than estimated from data. It can be attributed, in most cases, to the shortage of reliable quantitative indicators for some countries and no quantitative index for refugee events as in Jacobsen (2014). Furthermore, as seen from the above publications, both micro- and macroeconomics literature on involuntary migrations almost exclusively studies only one country. The reason lies in the methodology, as endogeneity and confounding variables hinder more aggregated approach attempts. Furthermore, in the absence of an objective measure of refugee events, it is very complicated to compare the different influxes in one country, let alone across countries. Thus, Betts et al. (2017) argues that assessing the macroeconomic impacts of refugees at a more general level is challenging from a methodological point of view, although it is in high demand from the governments affected. The measure of refugee crises proposed here allows one to quantify refugee events and compare them in time and across countries, aiming to close that gap in the literature.

2.2.4 Involuntary Migration Impact on Crime and Political Landscape

Involuntary migration is commonly seen as a threat to the welcoming society due to the belief that asylum seekers and refugees increase the crime or terrorism levels in the recipient country. The view is overwhelmingly presented by the media in Europe, for example, BBC (2018), Mail Online (2016). Some researchers concluded that such negative beliefs about this type of migrants shaped the public opinion on leaving the EU in the UK (Outhwaite and Menjívar, 2019; Hall, 2016; Stewart and Mason, 2016).

Europeans also view asylum seekers and refugees as the cause of the increased terrorism level, as shown in many surveys after the 2014-2016 refugee events in Europe, for example, Stokes et al. (2016). Therefore the fears of higher crime levels and other threats brought by asylum seekers could have

impacted the political landscape of the European countries. For example, the events in 2014-2016 could have led the host societies to lean toward the right-wing parties, who might promise to stop the influx of asylum seekers. This dissertation examines the influence of refugee crises on crime levels and the votes for a right-wing party. Because of that, it is necessary to analyse the existing literature on the topic briefly.

The modern academic literature on the relationship between involuntary migration and terrorism argues that it is true that refugees may cause terrorist attacks. However, these attacks usually target the refugees themselves. Thus, Choi and Salehyan (2013) demonstrate that the direction of the attacks is towards refugees themselves for 154 countries. Helbling and Meierrieks (2020a) in their comprehensive review of empirical research on migration and terrorism, come to similar conclusions. Furthermore, they show that there is no evidence for the unconditional rise in terrorism attributed to migration.

In addition, the literature specialised in solely involuntary migration demonstrate that the crime levels in the receiving countries are to decrease in contrast to the common belief. For example, Kayaoglu (2022) shows that the Syrian refugees did not significantly influence the crime levels in Turkey in either the short- or long-run. Furthermore, Feltes et al. (2018) argued that the crime levels were even decreasing after the arrival of the refugees. Kayaoglu (2022) suggests that the refugees and asylum seekers can have a higher cost of committing crimes. The main cost can be the fear of deportation and loss of the protected status, which can make the refugees and asylum seekers find themselves in the place they were desperately fleeing.

The empirical study of the effect of refugee crises on the crime levels in the chosen European countries complements the existing literature by focusing on several countries at the same time over a long time and also using the index of refugee crises. The employment of the new measure of refugee events severity for the index of refugee crises allows one to measure the crime level aftermath of the complex refugee events.

In contrast to the literature on refugees and crime, the academic publications on the elections after the refugee events seem to confirm the fact that the negative attitudes of the hosting nation can transfer into more votes to a right-wing party. For example, Karacuka (2021) found that the refugee crisis

related to Syrians in Turkey significantly increased the votes for the Nationalist Action Party. Sekeris and Vasilakis (2016) argue that the 2014-2016 events in Greece gave a significant rise to xenophobia and votes to the right-wing party Golden Dawn. There are also presidential elections in France, where the right-wing Marine Le Pen managed to get into the second tour with the centrist Emmanuel Macron. The presidential election in Hungary even ended with the victory of the right-wing candidate Katalin Novak.

The empirical study of the effect of refugee crises on crime levels and right-wing party votes in the chosen European countries complements the existing literature by focusing on several countries simultaneously over a long time and using the new measure of refugee crises.

To sum up the analysis of the existing literature, the employment of the new measure of refugee events severity for building the index of refugee events allows one to measure the specific aftermath of the complex refugee events. Furthermore, this index aims to tackle almost all issues and oversights in the literature mentioned above. It represents a factual-based tangible indication of the events on the country-year level. It provides the framework, data, and methodology for the comparative evaluation of the consequences of extreme involuntary migration cases. The approach proposed further in the dissertation allows one to draw reasonable policy suggestions useful for the affected countries as it is ideally designed to be used in a panel data analysis (cross-country and cross-temporal data) in various disciplines. In this dissertation, the use of the index is illustrated with the estimation of refugee crisis effects on macroeconomic, socio-economic and political indicators of the chosen countries. The estimated impact is then compared with the conclusions made in the literature reviewed in this Chapter.

2.2.5 Summary and the Concluding Remarks

The literature reviewed above concentrated on three separate topics, which are tightly related via the main actor - refugees and asylum seekers. The first theme of publications examined the term 'refugee crisis'. Some authors published on the topic investigated what this term can mean, and others questioned its existence. The primary publication of that part is the book by Weiner (1995) that proposed a definition of a 'Global Migration Crisis' in the way the description of the refugee crisis is proposed in this paper. That and other publications that studied the topic are looking at it from various non-quantifiable angles. Therefore, the current understanding (before this dissertation) of the refugee crisis term overlooks the necessity to have a concrete description that has identifiable and quantifiable characteristics for one to measure the severity of crises and refugee events in general. Consequently, this dissertation aims to provide such a description, mitigating as much ambiguity in it as possible.

The second bulk of the literature is the largest but the most sparsely themed. The review gives a few examples of the publications that discussed a wide variety of issues, which extensively used the wording refugee crisis without recognising the ambiguity of its understanding. That makes some specific conclusions of those papers, in turn, ambiguous to some extent. The central paper there is by Corsetti et al. (2016), which proposes a serious and thought-through policy that would allow spreading both costs and benefits of any future refugee influx into the EU to all countries utilising "Refugee Bonds". That policy is supposed to resolve the issue that the Mediterranean countries absorb all the costs of registering, accommodating and helping refugees, along with controlling the border security. However, the richer countries are then accruing all benefits since the educated and skilled refugees tend to execute the freedom of movement to move to, for instance, Germany or France. The "Refugee Bonds" are supposed to be triggered by the appearance of a refugee crisis. The authors, however, completely overlook the ambiguity of this term. Thence, this research covers this gap in the literature with the proposed definition, allowing a country to execute policies on an objective evaluation of the situation.

Finally, the third part of the review inspects the past literature on voluntary and involuntary migration economics and the impact of the involuntary

migration on crime and votes for a right-wing party in the recipient country. The core reason for the review is to outline the key results to expect in the empirical part of this dissertation. However, the literature does not provide an obvious benchmark for the empirical estimations for economic variables executed in Chapter 5. In the cases of both voluntary and involuntary migration studies, some authors argue for a generally negative effect. In contrast, others appeal to the negligible or even positive effects of migration, especially long-term. The core feature of the more relevant involuntary migration economics literature here is the shortage of quantitative, cross-country and cross-temporal research that could show a generalised effect of the refugee influxes. The proposed description and measure of refugee crisis severity for the period 1951-2019 for the selected countries and the part of this dissertation with the empirical estimations complement the literature and cover the gaps identified in this literature review.

Chapter 3

Measure of Refugee Crisis Severity

“The Chinese use two brush strokes to write the word “crisis”. One brush stroke stands for danger; the other for opportunity. In a crisis, be aware of the danger – but recognise the opportunity.” — John F. Kennedy.

Recognising the opportunity to fill the aforementioned gaps in the knowledge about refugee crises, it was decided to propose a measure for this term forming it after the approaches and styles of the well-developed literature on financial crises and banking crises. Thus, the following works by Valencia and Laeven (2008), Laeven and Valencia (2010, 2012, 2013), are presented below.

3.1 Financial Crisis Literature

The ‘criteria’ style of the description for refugee crisis is taken from Valencia and Laeven (2008); Laeven and Valencia (2010, 2012) and is similar to Weiner (1995). The first three constitute a series of works on the same topic of developing a dataset of “Systemic Banking Crises”. Every two years, the authors had been polishing and enhancing their method and approach for the identification of banking crises. Their definition and a rule for distinguishing significant policy interventions in the banking sector are the examples that inspired the approach for this dissertation. Below, one can find the definition of systemic banking crises and the rule for the identification of systemic policy interventions as they were presented in Laeven and Valencia (2012).

A banking crisis is defined as *systemic* if two conditions are met:

1. “Significant signs of financial distress in the banking system (as indicated by significant bank runs, losses in the banking system, and/or

bank liquidations)

2. Significant banking policy intervention measures in response to significant losses in the banking system”.

They consider the first year that both criteria are met to be the year when the crisis became systemic. For the definition of significance here, the authors used the following: “Therefore, we consider a sufficient condition for a crisis episode to be deemed systemic when either (i) a country’s banking system exhibits significant losses resulting in a share of nonperforming loans above 20 per cent or bank closures of at least 20 per cent of banking system assets) or (ii) fiscal restructuring costs of the banking sector are sufficiently high, exceeding 5 per cent of GDP”. Therefore, the authors, even in their earlier version of the dataset, identify significant events based on their expert knowledge and experience, along with improving and complementing the previous works by Caprio and Klingebiel (1996) and Caprio and Klingebiel (2005).

They also consider policy interventions in the banking sector to be significant if at least three out of the following six measures have been used (the benchmarks are also based on the authors’ judgements):

1. “extensive liquidity support (5 percent of deposits and liabilities to non-residents)
2. bank restructuring gross costs (at least 3 percent of GDP)
3. significant bank nationalizations
4. significant guarantees put in place
5. significant asset purchases (at least 5 percent of GDP)
6. deposit freezes and/or bank holidays”.

A similar rule is applied in this work to classify the severity of refugee crises.

Romer and Romer (2017) used a slightly different style of defining the financial crises in the set of 24 OECD countries for the period 1967-2012, although their approach found its applications in this investigation. The authors describe the product of their work in the following way: “The series is based on assessments of the health of countries’ financial systems from a consistent,

real-time narrative source, and classifies financial distress on a relatively fine scale." The authors argue for the analysis of the narratives on the particular financial events in the countries of their interest. Using the OECD Economic Outlook publications for the chosen period, they analyse the texts to find written evidence of financial crises. While the definition given by Bernanke (1983) works as a compass for them: 'financial crisis' is "a rise in the cost of credit intermediation." Hence, Romer and Romer (2017) focused on the narratives describing various "disruptions to credit supply" only as of the attributes of this type of crises. In contrast to Laeven and Valencia (2012), they avoid quantitative measures for identification despite their objectiveness. They argue for the fact that sometimes such measures are not available. The narrative analysis is helping them to overcome this problem. It has potential flaws that can be attributed to the imperfectness of human judgement, although the authors explained that they tried to be as consistent and systematic as possible. Similar limitations are present in the approach to measuring refugee event severity. A detailed outline of this approach's limitations can be found at the end of this Chapter.

The analysis of Romer and Romer (2017) allows them to not only obtain the starting and the ending years of a crisis but also to get an idea of how significant a crisis was. The authors called it the severity index. Thus, their dataset consists of not binary data but of the "measure of financial distress". Valuing the usefulness of this approach, this investigation also provides a way to measure the severity of refugee crises using the proposed definition of the refugee crisis. Similarly to Romer and Romer (2017), there is an [Online Appendix](#) available, giving a reader quotations of the exact narratives and explanations used to prove a particular country-year can be called a crisis per host country. The authors' appendix, for example, explains how Romer and Romer (2017) identified a moderate crisis in Sweden in 1993 in the first quarter based on the following narrative: *"In the summary of its entry, the OECD said, "Steeply falling property values have led to a sharp increase in corporate bankruptcies and heavy loan losses in banks' balance sheets" (p. 113). A paragraph devoted to the financial system reported (p. 115): "Falling asset values and corporate bankruptcies linked to the collapse in the commercial property market have provoked an unprecedented increase in banks' loan losses. These reached Skr 70 billion in 1992 (7.7 per cent of outstanding*

loans), up from Skr 36 billion in 1991..."

The approach in this dissertation methodologically stands somewhere in between Laeven and Valencia (2012) and Romer and Romer (2017). Combining the analysis of the narratives in the publications and reports of UNHCR, IMO, WHO, and other relief organisations, along with the news articles and academic literature on each candidate country-year. In addition, some characteristics of a refugee crisis tested have concrete quantitative cut-off levels, while the other characteristics are easily quantifiable using the weights of the importance. Thus, the approach is aimed to be as objective and tangible as possible. A thorough explanation of how the benchmarks were chosen is presented below, along with a justification for using a particular criterion for refugee crises description and measurement. It is demonstrated to be an easily applicable and quantifiable method for identifying and measuring refugee crises, being a combination of qualitative and quantitative criteria. The final product of the application of this method is the index of refugee events consisting not of simple binary data identifying the crisis dates for the chosen countries but consisting of a measure of the severity of refugee events. Furthermore, it allows one to easily separate crisis events from non-crisis events. The final dataset is used in an empirical estimation of the effect of refugee crises on a variety of the host countries' indicators.

3.2 Refugee Crisis Characteristics and Weights

In order to choose the criteria for the refugee crisis, the analysis of the narratives of several publications is used. These publications used the expression "Refugee Crisis" or "Migration Crisis" with respect to a particular event and attempted to study and describe it in detail from various points of view. For example, historical, humanitarian, legal, or even economic perspectives. Each paper concentrates on at least one event. Efforts were made to include sources from different disciplines, authors, and backgrounds, referring to events distant in time and geographical positions to each other. Table 3.2, shortly summarising the principal subject and the ideas of each publication, are presented below.

Each of the 24 papers' narratives was carefully analysed to determine what

the authors associated with the refugee crisis. There were 73 different issues initially. They were then regrouped under 25 general headings. The next step was to drop some of them due to not being present consistently, while other relevant and frequently met issues fell into a single criterion, forming the final set of characteristics for the refugee crisis.

The short form of the definition of a refugee crisis with its characteristics can be presented as follows. **Refugee Crisis** is a (chronic) state of affairs in a country receiving refugees (*host country*), requiring political, economic and/or social action. It can be characterised by a large share of refugees and asylum-seekers in the population of the *host country* and several or all of the following criteria:

1. Significant violence or human rights violations in the *source country*;
2. Appearance of large-scale long-term camps (or detentions) in the host country;
3. Significant human rights violations in the host country;
4. Reports of underprovision for the refugees in the *host country*;
5. International agreements for financial and physical relief;
6. Presence of a significant number of IDP in the *source country*;
7. Smuggling of asylum seekers into the host country;

Thus, if in a particular *country-year* several criteria from the list are satisfied according to the rule below, one can claim that there was a **Refugee Crisis**.

Table 3.2: The Publications Sources For Refugee Crisis Definition and Measure

Author and Year	Short Description
Donev et al. (2002)	The description of the refugees' arrival to Macedonia in March 1999, description of the policies and actions taken by all participating bodies (countries involved, UNHCR, NATO) to cover all necessities of refugees. Investigation of the morbidity and mortality rates of refugees.
Parnini et al. (2013)	The historical, humanitarian, and policy analysis of the Myanmar-Bangladesh relationships in relation to the refugee flows between the countries.
Leach (2003)	Investigates the media narratives and representation of refugees in the Australian public opinion throughout 2001-2002, outlining the situation that refugees in Australia were put into.
Yip and Sharp (1993)	The examination of the Kurdish refugees' population, their situation, and increased morbidity and mortality rates among children of refugees in the camps.
Prasse-Freeman (2017)	The article inspecting the reasons why Rohingya are perceived as 'not belonging'. It analyses the policies and violations imposed on the Rohingya over time, causing the most recent refugee inflow to Bangladesh.
Francis (2015)	The investigation of the impact of the refugee flows from Syria by 2015 on Jordan. The historical overview of Jordan's refugee acceptance and proposition of the best response policies on integration of and assistance to refugees.
Dong (2015)	The study on China as the main policy-maker and country of asylum for the large refugee influxes in Southeast Asia, describing the history and conditions of displacement in Vietnam and North Korea.

Table 3.2: The Publications Sources For Refugee Crisis Definition and Measure Contd.

Author and Year	Short Description
Miltner (2015a)	Analysis of the migration-related events in Europe in 2015, including the EU-wide response.
Hodges (1984)	The analysis of the refugee-related situation in Africa, including the UNHCR and NGO-s responses.
Giannakopoulos and Anagnostopoulos (2016)	Medical publication in Lancet, covering the physical and mental health of refugee children in Greece in 2015-2016.
Anderson (2015)	The publication investigating the needs of displaced Syrians in the Middle East and their funding by the EU.
Diaconu et al. (2015)	Multidisciplinary analysis of the literature related to the Refugee Event in the EU in 2015 and of past empirical literature related to the economic effects of the refugees on nations.
O'Donnell and Newland (2008)	An overview of the displacement events in Iraq 2006-2007, their needs in the host countries, resolution policies.
Murphy et al. (2016a)	The publication on the funding gap and health-related needs of the Syrian refugees in the countries neighbouring Syria.
Stanzel (2016a)	Analysis of the impact of the protracted displacement situation in Afghanistan on the neighbouring countries and the EU, including policy suggestions to all participants.
Wain (1979)	The investigation of the refugee-producing situations and refugee flows in Mainland Southeast Asia. The policies of the receiving states are also outlined and analysed.

3.2.1 The Rule for the Measure of Refugee Events

The importance of each criterion in defining refugee crises was determined through a subjective evaluation of their significance and frequency of appearance in the publications listed in Table 3.2. A total of 72 different features

Table 3.2: The Publications Sources For Refugee Crisis Definition and Measure Contd.

Author and Year	Short Description
Calderón-mejía et al. (2015)	The paper investigates the socio-economic influence of several displacement events on the hosting countries of the Arab region, concentrating on the refugees from Syria and Iraqi.
Wildman (2017)	The publication describes the situation of the recent Rohingya refugees' influx from Myanmar to Bangladesh. It also reflects on the past events with the Rohingya people related to displacement.
Rizal (2004)	The paper describes the expulsion of the Lhotsampa people from Bhutan, its history, international response and policies for helping the refugees.
Gale (2004)	The paper describes the arrival of the 'boat people' in 2001 to Australia (Tampa affair), the policies applied to them, and the media and public discourse around the issue.
Kalipeni and Oppong (1998)	The investigation of the refugee situations in Africa by 1998. It applies a political ecology approach to study the dissemination of diseases across refugee camps and receiving societies.
Gilbert (2013)	The description of the arrival of the Mexican refugees to Canada, investigation of the discourses in Media and political responses.
Chang et al. (2006)	The overview and analysis of the past and present of the North Korean refugees and their treatment in the main countries of asylum.
Bariagaber (1999)	The article concentrates on the difficulties associated with the repatriation of refugees, using the Horn of Africa as an example. It also outlines the refugee situations in place.

associated with refugee crises were identified and grouped into 25 larger categories. For example, the category "Reports of NGOs of Underfunding for Possible Needs of Refugees" also included the following separate features:

1. Food and water
2. Medicines
3. Housing
4. Education
5. Stopping Spread of infectious diseases
6. Mortality rates higher than normal
7. Administration and similar

Since the analysis for the identification of refugee crises criteria covered events from around the world and over an extended period of time, that list of 72 features was considered satisfactory. For every feature, its relative frequency of appearance was calculated out of 405 total appearances of all features within the literature used (Table 3.2). After that, based on the grouped relative frequency and several iterations of applications to various countries only the main 8 features (groups) mentioned above were kept as the most appropriate and feasible.

The final set of criteria used in the study was assigned relative weights based on their frequency of appearance and assessment of importance. The weights were determined as follows: the entrance of refugees, as well as criteria 1 and 2, were assigned a weight of 1.5 each in the severity of crisis measure, criteria 3-5 were assigned a weight of 1 each, and criteria 6-7 were assigned a weight of 0.5 each.

These weights were used to assign a severity value to each refugee event based on the specific criteria of refugee crises present in a particular country and year. The criteria were applied to five European countries in the final version of this dissertation. It's important to note that the application process considered not only a specific country-year but also each group of refugees by the source country individually. These groups of refugees from the same source country within one or multiple consecutive country-years are referred to as cohorts of refugees in a host country. The severity measure was calculated individually for each cohort, and then the scores were weighted and

summed across all cohorts to obtain the overall score for the studied country-year. This procedure was repeated for each candidate country-year to assess the severity of the refugee crisis.

To ensure that the features included in the refugee event severity measure are not redundant or introducing unnecessary noise into the index, a Cronbach's alpha (Cronbach, 1951) analysis was conducted. Cronbach's alpha is a measure of internal consistency and reliability, commonly used to assess the interrelatedness of multiple items or criteria.

The analysis was performed on the obtained severity measure per criterion before the relative weights were applied. The results of the analysis are presented in Table (3.2.1.3). Along with it, the pairwise correlations between calculated criterion values for the chosen countries (before using weights) in Table (3.2.1.1) and their descriptive statistics in Table (3.2.1.2) are provided. Cronbach's alpha values range from 0 to 1, with higher values indicating greater internal consistency among the items. The purpose of this analysis was to assess the reliability of the severity measure and determine if the selected criteria are capturing a coherent concept of refugee event severity. The Cronbach's alpha analysis helps to ensure that the selected features or criteria are measuring the same underlying construct consistently.

Table 3.2.1.1: Pairwise Correlations Between Dimensions of the Refuge Event Severity Measure

	Large Share of Refs	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7
Large Share of Refs	1.0000	-	-	-	-	-	-	-
Criterion 1	0.4051*	1.0000	-	-	-	-	-	-
Criterion 2	0.0157	0.1388*	1.0000	-	-	-	-	-
Criterion 3	0.1987*	0.3496*	0.2378*	1.0000	-	-	-	-
Criterion 4	0.2529*	0.2190*	0.2861*	0.2583*	1.0000	-	-	-
Criterion 5	0.5300*	0.3527*	0.2189*	0.1855*	0.3501*	1.0000	-	-
Criterion 6	0.3488*	0.4145*	0.0986	0.4281*	0.0546	0.01919*	1.0000	-
Criterion 7	0.2504*	0.4301*	0.3228*	0.3771*	0.0315	0.2418*	0.4315*	1.0000

Table 3.2.1.2

Variable	Obs	Mean	Std. dev.	Min	Max
Large Share of Refs	345	.2086957	.4069666	0	1
Criterion 1	345	.4289855	.4956501	0	1
Criterion 2	345	.0231884	.1507201	0	1
Criterion 3	345	.2956522	.4569982	0	1
Criterion 4	345	.0347826	.1834949	0	1
Criterion 5	345	.1913043	.3938994	0	1
Criterion 6	345	.1478261	.355443	0	1
Criterion 7	345	.1855072	.3892731	0	1

The overall Cronbach's alpha for the refugee event severity measure is reported to be 0.7495, which indicates a moderate level of internal consistency among the criteria. This value is above the traditional minimum level, sug-

Table 3.2.1.3: Cronbach's Alpha Analysis

Item	Obs	Sign	Item-test correlations	Item-rest correlations	Interitem correlations	alpha
Large Share of Refs	345	+	0.6226	0.4687	0.2676	0.7189
Criterion 1	345	+	0.6866	0.5503	0.2529	0.7032
Criterion 2	345	+	0.4810	0.2978	0.3001	0.7501
Criterion 3	345	+	0.6296	0.4774	0.2660	0.7173
Criterion 4	345	+	0.5087	0.3303	0.2937	0.7443
Criterion 5	345	+	0.6370	0.4868	0.2643	0.7155
Criterion 6	345	+	0.6157	0.4600	0.2692	0.7205
Criterion 7	345	+	0.6400	0.4905	0.2636	0.7148
Test scale					0.2722	0.7495

gesting that the measure is reliable in capturing the concept of refugee event severity.

It is noted that the exclusion of any of the criteria results in a decrease in Cronbach's alpha or not increasing it significantly, indicating that each criterion contributes to the overall internal consistency of the measure. This suggests that all the selected criteria are important for capturing the different aspects of refugee crises.

The items or criteria in the measure are reported to be relatively highly correlated with the overall test. However, it is mentioned that the measure was constructed to capture distinct features of refugee crises, as it can be seen from Table (3.2.1.1), where there is no correlation coefficient above 0.53 between any two criteria. Therefore, it is expected that there may be variations in the correlations among the criteria. For example, criterion 2, which is related to the appearance of camps, may have relatively lower correlation due to the specific context of the European region where the measure was applied. Large and long-lasting refugee camps were very rarely present in the studied countries in 1951-2019. It is acknowledged that refugee events can vary across regions, countries, and even areas within countries, and the measure was designed to be universally applicable worldwide.

It is expected that the level of Cronbach's alpha would be even higher if the measure were applied to a representative sample spanning the whole world, as it was originally calibrated for. The specific European region in this analysis may have its own particularities in the realisation of refugee events, leading to variations in correlations. For a broader understanding of refugee events, it is recommended to consider events in different regions, such as the refugee events described in Hodges (1984), which illustrate the integral role of camps in developing countries.

Overall, while the measure demonstrates a moderate level of internal con-

sistency and reliability, it is important to consider the specific context of application and potential variations in correlations among criteria across different regions and countries.

To assess the robustness of the weights obtained from the relative frequency employment method, a principal component analysis (PCA) was conducted on the measure resulting from the application of each criterion to the selected European developed countries.

PCA is a statistical technique that helps identify patterns and relationships in data by reducing the dimensionality of the data while retaining the most important information (Pearson, 1901; Hotelling, 1933). In this case, PCA was used to examine how the criteria contribute to the overall measure of refugee event severity and to explore the underlying structure of the data.

The results of the PCA provided insight into the importance of each criterion in explaining the variation in the measure. The eigenvalues associated with each principal component indicate the proportion of the total variance in the data that is explained by that component. Higher eigenvalues suggest greater importance in explaining the variation.

Furthermore, the loadings of each criterion on the principal components can provide information about the relative contribution of each criterion to the overall measure. The loadings indicate the correlation between each criterion and the principal component.

By conducting PCA on the resultant measure, the robustness of the weights obtained from the relative frequency employment method can be assessed. If the PCA reveals that the first few principal components explain a significant amount of the variance and the loadings are consistent with the relative frequencies, it would support the validity and robustness of the weights assigned to each criterion. The results are presented in Table (3.2.1.2). It is important to underline that PCA was applied on the resultant measure by criterion applied to the European developed countries chosen for this dissertation, which is not the sample used to design the index.

Based on the proportion of the variance explained by each criterion obtained from the principal component analysis (PCA), it appears that the weights applied to each criterion are generally valid and robust. The slight changes in relative weights suggested by the PCA indicate a qualitative equivalence to

Table 3.2.1.2: Principal Component Analysis

Component	Eigenvalue	Difference	Proportion	Cumulative
Large share of Refs	2.95825	1.78066	0.3698	0.3698
Crit 1	1.17759	0.0476123	0.1472	0.5170
Crit 2	1.12998	.327114	0.1412	0.6582
Crit 3	.802864	.203979	0.1004	0.7586
Crit 4	.598886	.0844529	0.0749	0.8334
Crit 5	.514433	.0778235	0.0643	0.8977
Crit 6	.436609	.0552182	0.0546	0.9523
Crit 7	.381391	-	0.0477	1.0000

the weights used in this dissertation.

Specifically, the relative variance coverage (proportion of the variance explained) for criteria 6-7 is relatively similar to smallest weights used for the research. Also, the similarity of the variance coverage qualitatively coincides with the weights of criteria 3-5 assigned to them in the study.

The main discrepancy arises in the comparison between criteria 1-2 and the "Large Share of Refugees and Asylum seekers in the total population." The PCA suggests a difference in relative variance coverage for these criteria. However, it's important to note that the PCA was conducted on a non-representative sample specific to the European developed countries studied in this dissertation. Therefore, it is not appropriate to interpret these findings as a suggestion to change the weights. Instead, further research is needed to conduct a PCA on a larger and more representative sample that encompasses the entire world.

To sum up, while the PCA provides insights into the proportion of variance explained by each criterion, the overall validity and robustness of the weights assigned to each criterion remain relatively consistent. Future research could explore the application of PCA on a more representative sample to further investigate the underlying structure of the data and refine the weights if necessary.

Therefore, using the conclusions above, the aim of building a measure was to complement the existing literature and to avoid overlooking the crucial areas identified in the literature review (Chapter 2). Thence, the approach adopted is different to the any that are usually used in the publications above. The approach produces a quantifiable result to be used in further analysis. It allows a policy-maker, academic or anyone else take the list of features and easily apply it to a particular refugee event to measure its severity.

A more detailed description of each of the characteristics of the refugee crisis is presented below. It describes the characteristics with examples of events from the articles presented in Table 3.2. For more details and direct quotes from the papers supporting the validity of these characteristics, please, refer to the [Online Appendix](#). The sections below also provide the particular cut-off levels for the characteristics where it is applicable. For example, what one can count as a large influx of asylum seekers and refugees and why what is counted as a large camp and so on. That justification allows one to quantify each characteristic, making the evaluated refugee events comparable and employable in quantitative empirical research.

3.2.2 Large Share of Refugees and Asylum-seekers in the Total Population of the *Host Country*

One of the necessary but not sufficient conditions for a refugee crisis is the presence of a large number of refugees and/or asylum-seekers in a *host country*. The emphasis is not on the influx itself¹, but instead on the number of registered refugees and asylum-seekers, i.e. stock of refugees and asylum seekers. The countries under inspection are the following: Austria, Germany, Italy, Spain, and the UK. These countries are all signatories to the 1951 Geneva Convention relating to the Status of Refugees and the 1967 Protocol (General Assembly Resolution 2198 , xxi), meaning that these countries are legally required to assist refugees and asylum-seekers and not send them to the country that they fled (Article 33 of the 1951 Convention). The same applies to the asylum-seekers unless the authorities find a solid basis for believing those people are not in need of protection.

The literature review presented in the previous chapter describes several papers that explicitly associated a refugee crisis with a large number of displaced, albeit the majority of papers have done so implicitly. Furthermore, many well-cited books such as Weiner (1995) and Zolberg et al. (1992) have been arguing for a refugee crisis to be associated with a large number of refugees. Nevertheless, no publication discussed the number of refugees suf-

¹As such characteristics as speed, timespan, and geography of the influx itself are not tractable, specifically for events distant in time. Refugees may often cross the border in different directions, even before requesting asylum. Their registration is made by the UNHCR or a host country only after the formal application.

ficient to signal a crisis. This dissertation covers this gap, suggesting a simple benchmark. To obtain such a cut-off level, the data provided by the UNHCR on the number of refugees and asylum-seekers in 194 countries from 1951 to 2017 was combined with the data on the total population of those countries for these years (World Bank, 2018; Population Pyramid, 2018). That action provides a panel dataset of the relative number of refugees and asylum-seekers in a country to the total population in this country over the chosen period. The distribution of these values was then analysed to obtain the mean (.6210936) and the median (.0940998)².

In the proposed measure, the first criterion operates as follows. The percentage of refugees and asylum seekers in the total population is calculated for a specific country and year. This percentage is then compared to the two suggested threshold levels mentioned earlier. If the number of refugees and asylum seekers exceeds the mean (for strict classification) or the median (for alternative robustness checks), further investigation is conducted on that particular country-year to examine other dimensions of the proposed refugee event severity measure. Moreover, the corresponding weight for this dimension is assigned to the country-year.

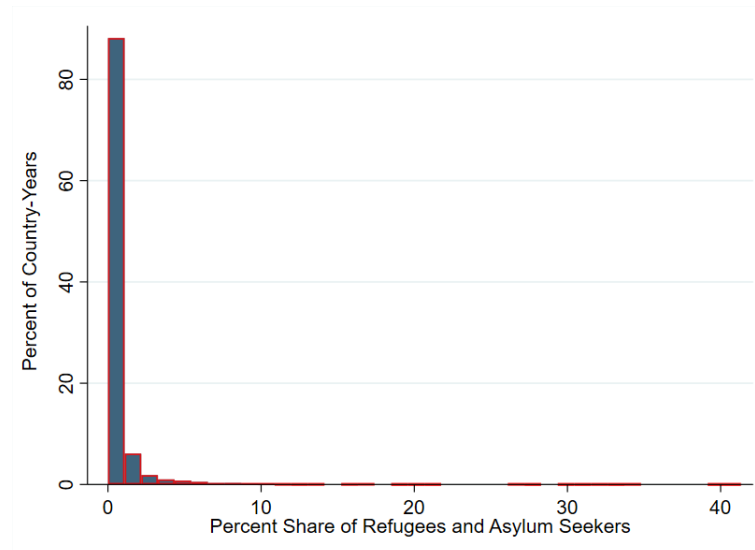
Essentially, this criterion serves as a signal indicating the potential occurrence of a refugee crisis in the given country-year. It helps distinguish the country-years that necessitate further investigation from those that are not considered candidates for a refugee crisis. If the number of refugees and asylum seekers falls below the specified threshold, a value of zero is assigned to indicate the absence of a refugee event severity in the measure.

The calculated distribution of the shares of refugees and asylum seekers in the total population of receiving countries can be seen at Figure 3.2.2.1.

The decision to use the mean instead of the median for the benchmark classification is relatively straightforward. Figure 3.2.2.1 illustrates a highly asymmetric distribution, making the mean an inadequate measure of central tendency. Instead, the median is deemed a more appropriate choice. However, despite this, the mean was selected for the precise classification of the refugee event severity measure. This choice allows for a cutoff value that is larger than the median, thereby capturing more extreme events that are closer

²It takes into account all non-zero values of refugees and asylum-seekers in the original dataset by the UNHCR

Figure 3.2.2.1: Distribution of Percentage Shares of Refugees and Asylum-seekers in the Total Population of the Host country, Worldwide, per Country-Year; Percentage Frequency of Appearance.



Source: Author's own calculations using UNHCR (2018) and World Bank (2018).

to true crisis situations. In comparison, the mean is more stringent than the 75th percentile of the distribution, as shown in Table (3.2.2). Simultaneously, the median is employed for the relaxed classification of the measure, ensuring greater inclusivity for a robustness check.

Table 3.2.2: Detailed Descriptive Statistics for Percentage Shares of Refugees and Asylum Seekers in Total Population

Percentiles	Percent Share	Smallest		
1%	.0001315	1.91e-06		
5%	.0007899	2.16e-06		
10%	.0020599	6.53e-06	Obs	6,332
25%	.010024	9.65e-06	Sum of wgt.	6,332
50%	.094201		Mean	.6214174
			Largest	
75%	.4750528	34.60196	Std. dev.	2.102005
90%	1.281284	34.77584	Variance	4.418427
95%	2.550503	39.36407	Skewness	10.17902
99%	8.596355	41.33021	Kurtosis	142.3536

In the course of the work on obtaining the mean and the median of the distribution mentioned above, several issues were identified with the data supplied by the UNHCR in 2018. The main one is the fact that the downloadable version of the data, when aggregated by years, did not correspond to the numbers that are presented on the front page of the UNHCR Population Statistics website (UNHCR, 2018). This problem was investigated as the differences in the numbers were sometimes reaching millions, for example, in the years 1971 and 1972. After a careful investigation of the problem, the UNHCR statistics

department was contacted. In the process of the joined investigation, several reasons for the discrepancies in numbers were found.

First, the dataset available for downloading from the website is missing some people of concern (refugees, asylum-seekers, IDP, returnees, stateless, and others of concern) for many countries across significant periods of time in cases when the statistics department cannot identify the origin of those refugees, but, what is more valuable, where they went. That means the data used for this research does not take some refugees into account almost every year, implying that the distribution of the numbers of refugees and asylum-seekers relative to the total population of the host countries is underestimated. Thus, one may make a conjecture that the effects estimated in Chapter 5 may be underestimated³.

In addition to that, the data for the latest year in the downloadable dataset sometimes miss the origins of some cohorts of refugees in the receiving countries due to security issues. Also, a few mistakes were the responsibility of those creating the datasets and the website for the UNHCR data. For example, the input for the Gambian refugees in Angola in 2013 was “-1” instead of 0. Moreover, 16,406 IDPs who are residing in Kosovo were missing from “Serbia” data⁴. This IDP population was added under “Serbia” to the downloadable version of data. All of the above discrepancies were discussed with the UNHCR representative, and the latter two were changed, while the former was promised to be noted for the next update of the website. The data used for the empirical estimations part of the dissertation used the most recent version of the UNHCR data (UNHCR, 2022b).

A few issues were found in the labelling of refugees as returnees in several cases. For example, the 1970-1971 Hindu refugees were labelled as returnees, despite being called refugees in the official reports of UNHCR dated with the respective years (e.g. General Assembly (1973)), not to mention other publications, for instance, Grbac (2014). The discussion of this issue with the UNHCR is postponed. The relevance of these mistakes is not solely statistical. There are papers and publications that used the dataset provided by the UNHCR without recognising the issue (e.g. Echevarria and Gardeazabal (2016)). That

³Assuming that the data on the website is correct

⁴Kosovo is still not a recognised sovereign state by all of the UN countries (by November 2008)

constitutes a possibility for future research.

The approach applied to find the benchmark of a relative number of refugees and asylum-seekers to the total population of a country has several advantages. Firstly, it is quantifiable. As evident from the literature review, there is a shortage of quantitative methods and models for analysing the impact of involuntary migration and refugee crises on the source and host countries. Secondly, these cut-off values make it possible to separate a potential crisis from a non-crisis as objectively as possible. Hence, making the implementation of this rule straightforward for policy-makers. Thirdly, it considers the historical distribution of refugees and asylum-seekers worldwide, which makes this approach universal and applicable not only to the developed countries studied here. Therefore, it mitigates the extrapolation issues prevailing in the involuntary migration literature. The fourth advantage is that it is presented not in a level form but relative to the total population. The importance of the relative figures is overlooked in the literature on the involuntary migration, except for a few authors, for instance, Bariagaber (1999), who discussed the differences between relative numbers of refugees accepted in Malawi and the Horn of Africa.

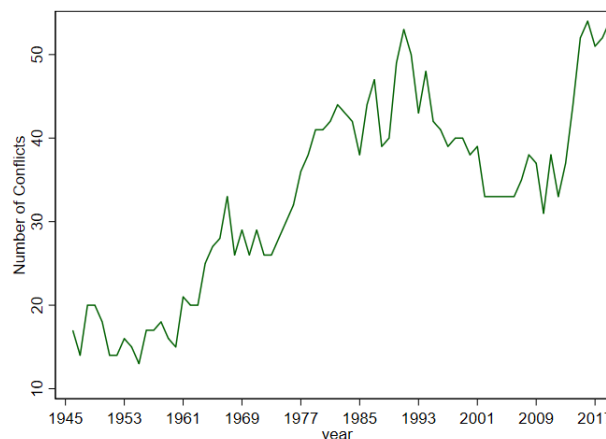
At the same time, the cut-off rules are backwards-looking, which constitutes the main limitation. The number of displaced has been and is forecast to be growing over time. It was discussed in Myers (2002) or Weiner (1995) and can be seen from the trend of the total number of people of concern by UNHCR in Figure 3.2.3.4. In 10 or 20 years, one might observe potentially positive shifts in this distribution. Therefore, the calculated shares represent relatively modest cut-off levels. The calculated relative numbers of refugees and asylum-seekers appear to be stationary over time and, hence, the estimated mean is statistically meaningful.

To sum up, large refugee populations can constitute a crisis from a humanitarian and, inevitably, an economic point of view because of the care and provision required. The above approach follows the arguments largely used in Romer and Romer (2017) and Laeven and Valencia (2013). The former base their distinction of Financial Crises similarly on cut-off values, while the latter authors also use the descriptive statistics analysis extensively.

3.2.3 Significant Violence or Human Rights Violations in the Source Country

Comparing the historical numbers of conflicts and wars with the number of conflict-related deaths and the number of people under concern by the UNHCR presented in Figures 3.2.3.1, 3.2.3.2, 3.2.3.3, 3.2.3.4 below, a clear trend can be observed. The number of conflicts and wars is relatively steady and only jumps up at the end of the observed period, while the number of conflict-related deaths has been going down since WWII. At the same time, the number of people of all categories under the concern of the UNHCR is proliferating. Specifically for refugees and asylum-seekers. Therefore, over the last 71 years, the conflicts are becoming less deadly, but they displace higher and higher population volumes. The reasons behind this trend are beyond the scope of this investigation. However, military conflicts and wars, as refugee-producing events, play a crucial role in the identification of refugee crises.

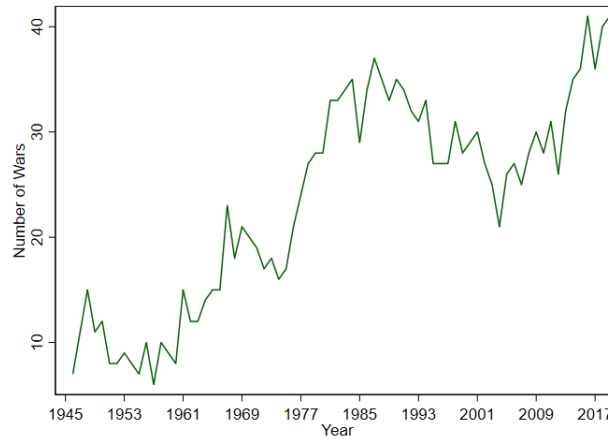
Figure 3.2.3.1: Number of Conflicts since 1945



Source: Author's own calculations using the data by Gleditsch et al. (2002) and Pettersson et al. (2021)

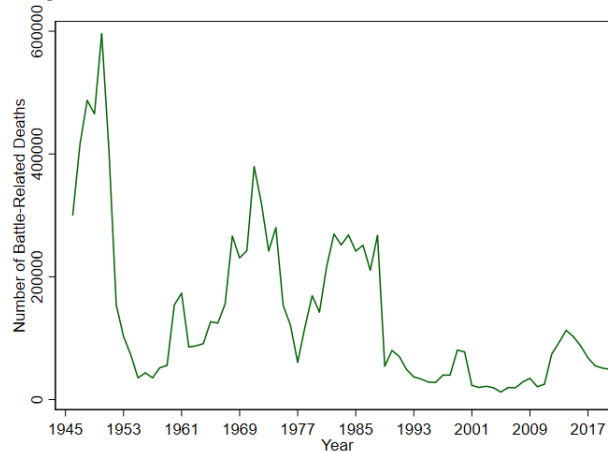
Significant violence or human rights violations, as the first optional characteristic, enter the description of refugee crises because it was mentioned by virtually all authors presented in Table 3.2. In describing a particular refugee crisis, the authors presented in Table 3.2 usually referred to war or a large conflict in the source country as the core reason to flee for large masses of people. For example, civil wars in Lybia (2011) and Syria (2011-present time) (Miltner, 2015a), Ethiopia-Eritrean wars (Hodges, 1984), a sequence of wars in Iraq (O'Donnell and Newland, 2008) and many others. Thus, a war can be seen as one of the main signals for the development of a refugee crisis.

Figure 3.2.3.2: Number of Wars since 1945



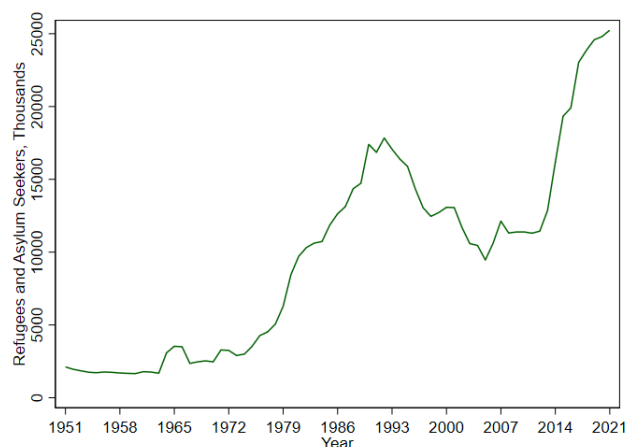
Source: Author’s own calculations using the data by Gleditsch et al. (2002) and Petterson et al. (2021)

Figure 3.2.3.3: Number of Conflict-Related Deaths



Source: Author’s own calculations using the data by Lacina and Gleditsch (2005), Petterson et al. (2021), and Petterson (n.d.)

Figure 3.2.3.4: Number of Refugees and Asylum Seekers by UNHCR



Source: Author’s own calculations using UNHCR (2022b)

Moreover, this criterion holds significant importance as an indicator of a refugee crisis in the host country, as it indirectly influences economic, migration, and international policies of the hosting nation. A notable example is the

proactive measures implemented by European countries in response to the influx of Syrian refugees, such as the EU-Turkey deal involving a financial commitment of €3 billion Miltner (2015b). In essence, if it had been anticipated that the war in Syria would end within a few months, such an international agreement would not have been necessary, as it would have been expected for asylum seekers to return home rather than seeking entry into the EU.

These circumstances also prompt the evaluation and revision of migration policies, as demonstrated by the extensive assessment of the Dublin regulations by the EU in 2015 and subsequent decisions to revise migration management policies in 2016 EU Council (2013); European Commission (2023). Similar arguments can be extended to other refugee-generating conflicts, such as the EU's directed migration regulation assistance policies towards Libya European Union External Action (2017).

Consequently, if financial and political resources are allocated to address the consequences of wars or severe human rights violations in the countries of origin for refugees and asylum seekers hosted by another nation, these resources are diverted from internal usage that could otherwise enhance the host country's GDP, welfare, and other economic and political indicators. This underscores the necessity of including the discussed criterion in the measurement of refugee event severity.

The definition of war for this dissertation is adopted from Pettersson et al. (2021)⁵, which is the primary source of conflict information for this research.⁶ The authors use a simple rule to distinguish war from minor military conflicts. A minor conflict has > 25 deaths, while a war is a conflict with > 1000 deaths. Therefore, when applying this criterion strictly (for the benchmark classification), the refugee movements induced by the conflicts minimum of 1001 people dead are counted as candidates for refugee crises. For the alternative classification used for the robustness checks of the empirical estimations, the minor conflicts with $[26; 1000]$ people dead cut-off level are employed.

From the analysis of each country-year for the selected countries (presented in the [Online Appendix](#)), one may see that the major refugee-producing events are wars. The fear of persecution is at the core of the legal definition of a refugee (United Nations Conference of Plenipotentiaries on the Status of

⁵Developed on the original dataset by Gleditsch et al. (2002)

⁶The formal definitions can be found in Appendix B.

Refugees and Stateless Persons, Geneva, 1951). The relevance of the wars in the *source country* to identify a crisis in the *host countries* is based not solely on its presence in the literature picked for this investigation. Rother et al. (2016) suggest that deteriorating effects of the conflicts on a home economy have a spillover impact on the neighbouring countries. They argue that their estimations suggest that the countries directly bordering the war areas have experienced significant drops in their economic growth and increases in inflation through multiple possible channels. One of the channels is involuntary migration.

The above further underlines the complexity of refugee crises, and, therefore, it can have a more complex effect on receiving countries. However, in the empirical estimations part of the dissertation, it is implicitly expected that the refugees entering *any* country can have an impact on the receiving society, similar to Rother et al. (2016). This hypothesis is generally confirmed in Chapter 5.

Apart from the wars and conflicts, there can be other significant human rights violations as a reason people flee their native countries, which was associated with Refugee Crises. Several types of human rights violations are legally bound in the definition of a refugee⁷. In the papers chosen for the study, there were even more references to events that can be counted as significantly violating human rights, which were not wars or military conflicts, for example, the 1994 Rwandan genocide (Hodges, 1984), which is claimed to have taken more than 800,000 lives away in three months. It was not a war but an expression of violence by a direct violation of Article 3 of the 1948 UN Universal Declaration of Human Rights (Assembly, 1948).

Other authors from the list in Table 3.2 studied less violent but also significant violations of human rights, for example, in South-East Asia. One can call the ethnic cleansing in Bhutan and Myanmar such significant violations because of the following. Bhutanese government “...carried out a series of arrests and atrocities against the Lhotsampa and forcefully evicted them from their homes and land. As the violence and atrocities escalated, the Lhotsampa began to flee Bhutan simply to save their lives, even though they had lived in Bhutan for generations.” (Rizal, 2004). Severe discrimination and

⁷The formal definition of a refugee can be found in Appendix A.1

threats against Lhotsampa in Bhutan have been present for decades, similarly to the discrimination in Myanmar against Rohingya (Wildman, 2017; Prasse-Freeman, 2017; Parnini et al., 2013). For instance, the Government of Bhutan's 1985 Citizenship Act and the ensuing policies deprived the Lhotsampa people of their nationality. That is a direct violation of Article 15 of the Human Rights Convention (Assembly, 1948): "Every one has the right to a nationality. No one shall be arbitrarily deprived of his [sic] nationality or denied the right to change his [sic] nationality" (as quoted in Rizal (2004)). Another example is the Rohingya people in Myanmar, who experience a lot of discrimination in education (Article 26), employment (Article 23), public health (Article 25), housing (Article 25), religious activity (Article 18), movement (Article 13), and family life (Article 16) (Wildman, 2017).

The above brings one to the conclusion that the refugee-producing event for a refugee crisis can be something else rather than a war. It may take the form of unilateral mass violence or mass discrimination and deprivation based on some characteristic, for example, racial, social, religious, political, sexual, or other. The criterion number 1 in the definition, thus, recognises both types of severe violence when applied to a particular country-year to identify a refugee crisis for the benchmark classification:

- A war in the source country (> 1000 dead);
- Other types of severe violence (> 1000 dead) or life-threatening human rights violations in the source country.

The alternative classification relaxes the two types of violence, still providing a clear cut-off level:

- A minor conflict in the source country (between 26 and 1000 dead);
- Other types of relatively minor violence or life-threatening human rights violations in the source country (e.g. significant discrimination based on race, education, employment, public health, housing, religious activity, movement, and family life).

To sum up, the life-threatening events, such as wars, genocides, and human rights violations, can constitute one of the characteristics signalling the presence of a refugee crisis in the *host country* not only from the humanitarian but also from the economic point of view.

3.2.4 Appearance of Large-Scale, Long-Term Camps or Detention centres

Many of the authors from Table 3.2, who investigated various refugee events, associated them with large refugee camps. Even in developed countries, almost all refugee influxes are accompanied by the appearance of refugee camps in the host country. They can vary in size and organisation structure: from a few families that just penetrated a porous border and temporarily settled in some rural areas of a host country to huge camps managed by the local governments and UNHCR, with thousands of refugees, even in urban areas.

In particular, the refugee crises are usually associated with only large refugee camps (see publications mentioned in Table 3.2). However, the question of how 'large' is enough to be counted as a crisis was overlooked in the literature. This dissertation, somewhat subjectively, suggests counting camps to be 'large' from 10,000 people as, roughly, the minimum value for settlements to be called towns around the world. Supporting that, the camps studied by the authors, who examined refugee events, were generally larger than 10,000 people in size.

For instance, Hodges (1984) refers to 700,000 Ethiopians in Somalia residing in 35 camps (approximately 20,000 in each) and 35,000 refugees of the same origin in Djibouti in only two camps as crisis inducing numbers. According to Calderón-mejía et al. (2015), 633,644 Syrians were residing in camps in Jordan, and 2.18 million were living in camps in Turkey. Whereas the Lhotsampa refugee crisis was associated with a Khundunabari camp in Nepal accommodating 12,183 refugees (Rizal, 2004).

Therefore, whenever there was at least one camp with 10,000 refugees in a particular country-year, it can be recognised as signalling a crisis. In addition to that, this research extends the understanding of refugee crises further, requiring a camp of this size to be present for a minimum of six months. This period of time captures seasonal changes in the weather, which would require more funding and cause more financial and humanitarian challenges for refugees, hosting states, and relief organisations. That theoretically can have a significant influence on the economy of the receiving state.

For the alternative classification, the appearance of several camps and de-

tention centres of smaller size in terms of people but of the same time period is considered to be signalling a refugee crisis.

3.2.5 Significant Human Rights Violations in the *Host Country*

The next significant characteristic of the Refugee Crises is the human rights violations but, in contrast, to the previous subsection, in the *host country*. Usually, these violations are incomparable in danger to those in the source country, although shaping the lives of refugees and their relations with the welcoming society and economy. According to the analysis of the chosen papers (Table 3.2), the most common violations are:

- Prevention of entrance for refugees and asylum-seekers;
- Labour market restrictions for refugees;
- Mobility restrictions inside the host country;
- Forced returns of refugees or unsuccessful asylum applicants;

Prevention of entrance is a common violation described as one of the important attributes of refugee crises even by some authors who attempted to define the term. This violation was also present in almost each of the publications presented in Table 3.2.

For example, Miltner (2015b) is discussing the operations of Frontex (European Border and Coast Guard Agency) in the Mediterranean sea, which, effectively, diverges arriving vessels with asylum seekers trying to cross the sea to enter the EU through Greece or Italy. Diaconu et al. (2015) talks about the Hungarian policies that banned the entrance of migrants that initially arrived in Greece. O'Donnell and Newland (2008) have described the policies of the Middle Eastern countries regulating the entrance of Iraqi refugees. For instance, Syria introduced visa requirements for them, while Jordan completely closed its borders at the end of 2005. Saudi Arabia responded by building a wall on the border in 2014-2015. Similar policies were present in Bangladesh to Rohingya refugees (Prasse-Freeman, 2017), Jordan (Francis, 2015), and even Australia (Leach, 2003).

Border closures and other entrance prevention activities are the direct violations of the 1951 Geneva Convention and 1967 Protocol (General Assembly Resolution 2198 , xxi), refusing protection, and sometimes refouling refugees to the countries where they are abused or threatened to be abused. *Refoulement* is defined as the return of refugees to areas dangerous for them. Nonrefoulement is the fundamental obligation of the host country according to international refugee law. See Appendix A.1 for the formal definition.

Labour market restrictions are also a direct violation of the aforementioned convention and protocol's Chapter III regarding wage-earning employment, which should be attainable for the refugees residing in the signatory countries. Such restrictions were present in almost all events that the discussed authors called refugee crises, for example, in Africa (Hodges, 1984), Syrian refugees residing in the Middle East (Anderson, 2015), Iraqi refugees in the countries of their resettlement (O'Donnell and Newland, 2008) and several others.

Employment is essential for the refugees to be self-sufficient, which, in turn, should have a two-fold effect. First of all, self-sufficiency should remove some financial and moral responsibility from the hosting government and society, with a simultaneous potential of increasing the GDP of local economies. There are several publications studying examples of successful labour market integration, for example, in Kenya (Naohiko, 2016), (for other examples see Zetter and Fiddian-Qasmiyeh (2011)). On the other hand, many academics would argue against the labour market integration of refugees as they would impede the outcomes of the natives, for example, decreasing their wages and increasing unemployment (Borjas and Crisp, 2005). The unemployment aftermath of a refugee crisis is studied in the empirical part of this dissertation.

Employment restrictions are usually accompanied by *mobility restrictions* inside the host countries. That also explicitly breaks the refugee's rights, even though it is a widespread policy. The common practice in the refugee-receiving states is to allocate the protected contingent in camps or certain settlements. In many cases, these camps are managed (stayed under the authority of) by the UNHCR or the host government itself. In several instances in the literature in Table 3.2, refugees were not allowed to leave the camps unless they proved the necessity to do so and obtained official permissions to leave the camps or

places of their location (e.g. in Francis (2015) or Miltner (2015a), respectively). Mobility is one of the elements of the refugees' self-sufficiency. Thus, when restricted, it impedes the possibility of becoming self-reliant.

Forced repatriations are the direct violations of the Article 33 of the 1951 Geneva convention (General Assembly Resolution 2198 , xxi) "nonrefoulement", which is considered to be the key in the international refugee legal structure. They are mostly done because of political reasons. The hosting state usually takes such an extreme measure whenever there is political pressure from within. For example, the recipient society is taking a more "rightist" position, as happened in Norway and Australia in 2011 for Afghan asylum seekers. In Australia, Stanzel (2016b) mentions quick forced repatriation of the unsuccessful Afghan asylum seekers. This example does not lose its relevance since such a situation does not allow a true refugee, whose claim was mistakenly declined, to re-apply, providing more evidence or appealing the authorities' mistakes. Another reason for forced repatriation can be international agreements with the source countries due to political relationships and agreements between them, such as between China and North Korea since 1986 (Chang et al., 2006). Finally, forced repatriation can be due to pressure from other countries. For example, the source country, as it was described in Wain (1979) for the case of Kampuchea refugees being forcibly repatriated from Thailand after the 1975 Khmer Rouge events because of the Thai government's fear of its spreading from Cambodia.

Chapter 5 demonstrates empirical estimations of the effect of refugee crises on the votes for right-wing parties as a percentage of total votes in an election in order to capture the changes in attitudes of the natives after a refugee crisis in the chosen European countries.

Therefore, the significant human rights violations are mostly done to refugees with respect to their mobility from the outside of the host country or from within the host county. These are the most common policies and are in line with publications on the refugee crises discussed in the literature review. Forced repatriation is a practice that is less and less common nowadays. However, several authors associated it with refugee events together with another prevalent practice – labour market restrictions.

For the alternative classification, the same human rights violations of a mi-

nor extent are counted as sufficient to indicate a crisis or to generally increase the severity of a refugee event.

3.2.6 Reports of Underprovision for the Refugees in the *Host Country*

One of the signals of central importance for the determination of a refugee crisis is the reports of shortages in resources and services of highest importance for a particular cohort of refugees in the hosting country, which are usually submitted by the UNHCR or NGOs working with the refugees. The most common features of this characteristic reported in the narratives of the literature studied are shortages in:

- Food and water;
- Medicines and health services;
- Housing or shelters;
- Education;
- Administration and other.

Reports of *lack of food and water* for refugees in the host countries are pervasive issues associated with refugee crises by the majority of the authors reviewed in this part. As one might expect, such issues arise in the regions traditionally associated with problems with food and water even for the native populations due to geographical reasons: some parts of Africa - eastern Sudan and Somalia (Hodges, 1984; Kalipeni and Oppong, 1998)), Egypt (Calderón-mejía et al., 2015), and some parts of the Middle East - Lebanon (Anderson, 2015; Murphy et al., 2016a), Kurdish region of Iraq (Yip and Sharp, 1993), Jordan (Francis, 2015). Such problems may, however, appear in other regions also. They can contribute to increases in criminal activities, from the simple growth of grey and black markets to the radicalisation and militarisation of refugees. Similar consequences were described in Rizal (2004) but due to the continuing encampment of refugees.

Chapter 5 is studying the effect of refugee crises on the shadow economy of the host country and the overall crime levels.

Shortage of health services and medicines for refugees and asylum seekers is also a widespread issue in the same countries that may have food and water problems. Usually, it is the developing countries which, nevertheless, have accepted much more refugees than the developed world throughout the period starting with the second half of the 20th century (Weiner, 1995; UNHCR, 2018). For instance, from the studied cases, one can see that the underprovision of health services and medicines as one of the core relief resources for the displaced was associated with the refugee crisis in Syria for Iraqis (O'Donnell and Newland, 2008) in 2008 or Syrians in Lebanon Murphy et al. (2016b) in 2015. The same problems, according to Kalipeni and Oppong (1998) increased crude mortality rates in Somalia in 1980. Another example is a deficit of drugs in camps and hospitals in Macedonia for Kosovar refugees in 1999.

Several cases were called refugee crises due to the scarcity of medicines, causing an inability to stop the spread of infectious diseases or causing the mortality rates to be higher than normal. It was illustrated by the HIV and AIDS spread in Rwanda after 1994-1995, measles spread in Somalia, Sudan, Ethiopia and Malawi in different years (Kalipeni and Oppong, 1998), whereas higher mortality rates of some categories of people were reported for the case of "Kurdish Refugee Crisis" in 1991 (Yip and Sharp, 1993).

In most countries chosen for this research, health services are a public good. The lack of this public good as a refugee crisis signal might emphasise the economic difficulties of the refugee-receiving state (in any part of the world) and the international relief system, which is supposed to assist countries with refugee influxes.

Housing or shelters is also the key element of the relief that is necessary for refugees' survival. In most cases, the receiving societies organise camps for the incoming people. However, in some cases, there can be a lack of resources for various reasons resulting in refugees struggling to cope with even everyday duties and issues. Thus, such shortages can signal a potential crisis with multiple possible effects, from pressure on the rental and house prices to increases in various criminal activities. For instance, the pressure on local housing services was reported in Lebanon after the arrival of Syrian refugees in 2015 (Anderson, 2015; Murphy et al., 2016a). Limitations for housing and shelter were also reported for many cases called refugee crises in Africa by

Kalipeni and Oppong (1998). The Jordanian housing market also experienced excessive demand from refugees from Syria in 2015, leading to the rises in rental prices (Francis, 2015).

Another component of the shortage reports as signals of refugee crises is *underprovision of education* services for refugees. In cases that were called refugee crises in the articles outlined in Table 3.2 the movements of large masses of people very often consisted of whole families escaping violence. Hence, the children of these refugees require to continue their schooling, which brings an increased burden on the local education systems. This issue was identified, for example, with the refugee crisis in Lebanon and Iraq for Syrian refugees by 2015 (Anderson, 2015; Murphy et al., 2016a)). Similarly, Wildman (2017) and Rizal (2004) argued that the Rohingya (by 2017) and Lhostampa (by 2004) refugee crises were characterised by the shortage of schools and education services for these cohorts in the whole region (several countries that they disseminated across). Finally, Francis (2015) describes the overcrowding of classes in schools due to the refugee crisis in Jordan in 2015. Furthermore, the author argues that the plans to abolish double-shifting in Jordan schools were interrupted by the arrival of the Syrian refugees.

Lastly, a few papers referred to refugee crisis described *shortage of resources for administrative activities*, for instance, for managing camps, for registration of refugees, or provision of necessary documents for them. These issues were found to be present in the Lebanese case (Anderson, 2015), as well as generally in the Arab countries receiving refugees nowadays and in the past (Calderón-mejía et al., 2015). Special attention can be paid to the case of Jordan and its waste management. According to Francis (2015), the already dramatic problem reached its peak threatening the lives of not only refugees but of natives as well due to the recent arrival of Syrians. The author quotes the United States Agency for International Development (USAID), which estimated the total fiscal cost for the municipal governments in Jordan to be \$25.4 million in 2013 and \$33.0 million in 2014. The author argues that this increase is due to the “Jordanian Refugee Crisis”.

As a result of the analysis of the narratives above, the relief organisations’ reports of underprovision for the refugees in the *host country* can signal a refugee crisis in a variety of roughly equally important criteria. When a par-

ticular country-year is evaluated with the measure of the refugee crisis, any combination of these criteria may be counted as signalling this type of crisis. For the alternative classification, the more relaxed treatment of the sources of reports for the underprovision for refugees is executed, for example, taking into account news publications and surveys of refugees.

3.2.7 International Agreements for Financial and Physical Relief

Another essential characteristic that signals a presence of not a simple refugee arrival but rather a refugee crisis is the appearance or presence of the international relief agreements designed exclusively to support the particular cohort of refugees in a particular country. For example, Syrian refugees residing in Lebanon received extensive support from many international organisations. The organisations which help can be counted as international relief are the UNHCR or other international NGOs (e.g. Oxfam, Red Cross, WHO, WFP, Amnesty International, Medecins Sans Frontieres) or, simply, international resettlement agreements between the host countries.

For example, Miltner (2015a) associates the refugee crisis with the EU-Turkey agreement of 2015 for hosting refugees on the territory of Turkey and preventing them from going to the EU for €3bn. Referring to this case, De Genova et al. (2016) noted the nature of the special handling of the crisis in Europe - exporting crisis from "EU-rope" (Ibid.) to the neighbouring countries. Nevertheless, despite targeting the refugees that never entered the EU, that event satisfies this criterion since, in this case, international funds target a specific group of refugees that was supposed to arrive in Europe. The EU, however, was not alone in funding the refugees (even indirectly). Across the world, the funds were raised to support the Syrians that had to seek refuge in other countries. For example, \$272 million was financed for Jordan. Including that sum, unfortunately, the international community had raised only 23 per cent of the requested budget for the 2015-2016 Regional Refugee Resilience Plan (Francis, 2015).

African countries, since 1980, established International Conference on Assistance to Refugees in Africa (ICARA), which raised \$560 million for different

hosting countries to assist refugees. Separately from ICARA, a special international programme was arranged to repatriate Ethiopians from Djibouti (\$8.2 million) described by Hodges (1984). O'Donnell and Newland (2008) describing the Iraqi refugee case reported the agreement between the United Nations Assistance Mission for Iraq and the government of Iraq in December 2007 to assist refugees.

Due to the long-lasting wars and conflicts in Afghanistan, refugees from that country tend to end up in protracted displacement, as underlined by Stanzel (2016a). Therefore, Afghani refugees in various countries get international recognition and support, e.g. from China, the development aid of which reached \$240 million. Furthermore, despite its treatment of North Korean refugees, China is a leading state in helping refugees in Asia. Solely Guanxi province, not counting several much smaller contributions, had managed to secure more than \$4.5 million from WFP and more than \$32.8 million from the United Nations Human Rights Council (UNHRC) for the refugees from Vietnam.

A considerable bulk of international agreements that were associated with the refugee crisis are the *arrangements for resettlement* in the host country or other countries. Hodges (1984) mentions several settlement agreements: 1972 resettlement in Tanzania for 60,000 refugees, 1983 settlement of 420,000 refugees to the organised rural settlements in Sudan and other host country settlements. The author refers to an even greater number of repatriation agreements: in 1962, 200,000 Algerian refugees returned to Morocco and Tunisia, or 1972-1973 repatriation of Sudanese refugees from CAR and Uganda, and several others.

According to Stanzel (2016a), Sweden and Afghanistan signed an agreement to assist the voluntary repatriation of Afghans. Whereas, Rizal (2004) refers to the Nepalese and Bhutanese governments' arrangement to repatriate Lhotsampa refugees to Bhutan (although based on several conditions applied to the refugees).

Finally, Lischer (2005) showed that refugees can be an important vehicle of violence spread. Their possible militarisation associated with the politics and conflicts around the initial reason for their flight, according to the author, can be effectively (but maybe involuntary) supported by the international relief

efforts. For example, as it happened after the Rwandan genocide, when the groups responsible for the genocide established their military training camps next to the refugee camps facilitating an easy access to new recruits and supplies provided by aid organisations.

In all cases described above, such international agreements show a worldwide recognition of a certain refugee event and signal that it can be a refugee crisis. Furthermore, such agreements usually involve raising funds for a particular cohort of refugees and their movements inside or across countries, which may influence the economies of the involved countries. Thus, international help as a part of such a complex event as a refugee crisis may have an impact on a whole range of agents and variables in the receiving country apart from refugees, for example, via an increase in the supply of particular goods in the host country.

For the alternative classification, the international programmes only partly financed by the international bodies and the relief (potentially in-kind) of smaller size were considered. For example, the UK's Gateway Protection Programme for refugee resettlement was counted as an indicator of a crisis situation for the alternative classification.

3.2.8 Presence of a Significant Number of IDPs in the *Source Country*

Another phenomenon that many of the authors mentioned in the Table 3.2 associated with the refugee crisis is the presence of Internally Displaced People (IDP) in the origin country. Being a common feature of many events that the authors studied, it has direct relevance for the term of interest as a large number of IDP can raise the severity of the crisis by indicating the potential increase in the number of refugees that may arrive. The argument is particularly evident as the difference between refugees and IDPs is only in the fact that the former crossed an international border and the latter stayed within the national border of the source country. However, IDP can theoretically cross the border anytime.

The existence of internally displaced persons (IDPs) in the source country is taken into consideration by countries already hosting refugees due to the

possibility of IDPs becoming asylum seekers in the near future. This becomes particularly evident when a large number of refugees from the source country with a large number of IDPs arrive in the host country. In such cases, host countries, especially developed ones, allocate resources, whether economic, political, or otherwise, to address factors that may influence the decision of IDPs to cross international borders and join their compatriots.

For instance, in 2018, the Italian government dedicated \$4.9 million to the Italian agency for development cooperation, which was aimed at assisting Sudanese refugees and internally displaced people residing in South Sudan, Ethiopia, and Uganda (UNOCHA Financial Tracking, 2014-2020). The European Union (EU) as a whole has also funded various projects related to IDPs. As an example, in 2023, support was provided to address the needs of IDPs in South Kivu, Democratic Republic of Congo, which is one of the source nations for asylum seekers coming to the EU (UNOCHA Financial Tracking, 2023).

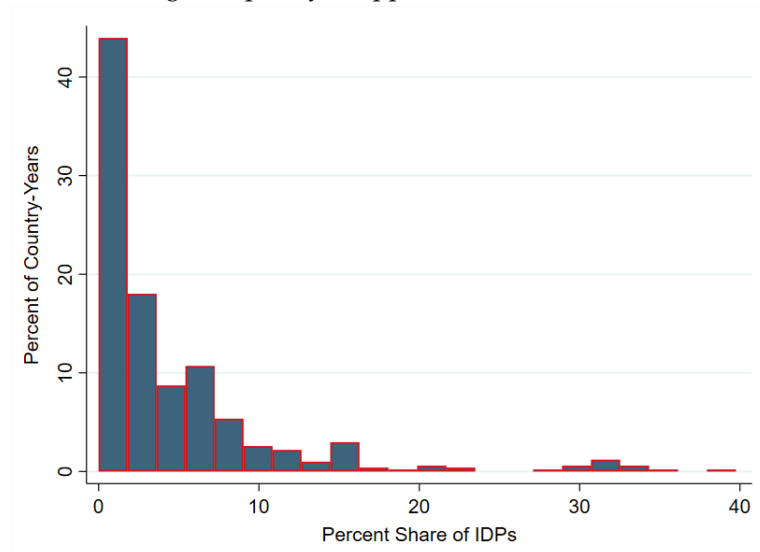
Therefore, this criterion serves as a crucial indicator of the severity of a refugee event and necessitates inclusion in the measurement. A similar argument to the one used for the "Significant Violence or Human Rights Violations in the Source Country" criterion can be applied here. The potential future refugee flow's indirect impact on the host country prompts the allocation of various resources to proactively address the issue of IDPs in the source country, thereby reducing the likelihood of those IDPs becoming refugees in the same host country. Consequently, the dimension captured by the refugee event severity index under discussion may have economic, social, and other implications for the host country.

The presence of IDP is a common issue in the traditional refugee-producing countries from Africa and the Middle East. For instance, Miltner (2015a) and Anderson (2015) mentioned the Syrian IDP as a part of the problem with the recent "Syrian Refugee Crisis", O'Donnell and Newland (2008) associates 2 million Iraqi IDPs with the "Iraqi Refugee Crisis" before 2008, which number raised up to 3.2 million by 2015 (Calderón-mejía et al., 2015). Hodges (1984) refers to 1 to 2 million refugees on the African continent in total by 1984, with 750,000 IDPs in Angola.

Similarly to the determination of the necessary cut-off level for the share of refugees and asylum-seekers in the total population in the host country to

be enough to signal a crisis, the distribution of IDPs to the total population of their countries worldwide was analysed using the data supplied by the UNHCR. Using the distribution of IDP shares to the total population in the source country, the cut-off levels were chosen according to the mean and the median of the distribution: 4.61% and 2.46%. The mean is the cut-off level for the benchmark classification, while the median is used to produce the alternative, more relaxed classification of severity of refugee events used for robustness checks. The worldwide distribution of shares of IDP in the total population of source country-years can be seen in Figure 3.2.8.1.

Figure 3.2.8.1: Distribution of Percentage Shares of IDP in the Total Population worldwide per Country-Year; Percentage Frequency of appearance.



Source: Author's own calculations using UNHCR (2022b) and The World Bank (2022b)

The current dissertation suggests the relevance of the IDP in the source country for a refugee crisis in the host country as they can theoretically become refugees within a relatively short timeframe. In addition, the presence of IDPs in the refugee-hosting countries should also contribute to the deterioration of a refugee crisis happening in the host country because IDP and refugees are sharing and putting pressure on the same institutions and budget. The country that has displaced within the borders of its territory may struggle to fulfil any international obligations to the refugees from other countries.

3.2.9 Smuggling of Asylum Seekers into the Host Country

According to the description (measure) proposed in this research, the last criterion that may identify the refugee crisis is the smuggling of asylum seekers

into the host country and the irregular migration in general. It was mentioned in Miltner (2015a) and Murphy et al. (2016a) concerning a large number of smugglers assisting refugees on their way deeper into the EU and to the border of the EU in the first place. Stanzel (2016a) described the situation with the higher class Afghani refugees being able to pay for their way to Europe, while the rest can afford only to pay for the routes to nearby Iran and Pakistan. Chang et al. (2006) mentions the smugglers that are constantly working to assist North Korean refugees to escape to China. A few other papers that associated the refugee crisis with human smuggling and irregular migration, including the case of human trafficking into Australia by Leach (2003) were used in building the measure of a refugee crisis.

This characteristic signals the severity of a refugee event not only because it was mentioned by the authors studied but also because such activities may contribute to the growth of shadow economies, leading to higher fiscal losses for the receiving states. Additionally, these activities may deteriorate the humanitarian and security situations in the host countries. That may result in shortages of resources for the refugees and natives and even the spread of terrorism, respectively (Diaconu et al., 2015).

The data on irregular migration and refugee smuggling is usually obtained from the ministries of the interior of the studied countries. Nevertheless, minor news reports and refugee surveys are also used to conclude if the smuggling of asylum seekers happened in a particular country-year, especially for the alternative classification of the refugee events.

As mentioned above, the impact of refugee crises on shadow economies and government spending is studied in the empirical part of this dissertation.

3.2.10 Environmental and Economic Reasons to Flee

None of the above characteristics takes into consideration environmental degradation and economic reasons for fleeing as signals for Refugee Crises. The reason for not including the former is that refugee influxes due to environmental problems were so far very rarely called refugee crises. Only in one of the studied papers, by Kalipeni and Oppong (1998), ecological crisis and *life-threatening* economic deterioration (drought and famine) were mentioned as the reasons that made Mozambican refugees return to Malawi in the early

1990s.

In the literature on this problem, the environmental crisis term was instead usually used, with refugees not constituting the centre of focus of research. The international attention to environmental refugees, though, is growing with a general awareness of environmental problems and global warming and with the expansion of the specific literature, starting with Jacobson (1988), Cooper (1997). The review of publications in this field is beyond the scope of this work. However, the attention for further research can be directed by Myers (2002), who was among the first to predict the appearance and dramatic rise of numbers of this type of refugees in the 21st century using Haiti as an example. The area is also represented by the works of Dun and Gemenne (2008), Beine and Parsons (2017) and many others.

The economic reasons to flee were mentioned only in Gilbert (2013), and, partly, in Chang et al. (2006) and Wain (1979). In the two latter cases, the economic deprivation was *life-threatening* for quite a large number of people in North Korea (almost the whole population) over the last 30 years and in Vietnam (Hoa people) for a few years after 1975, respectively. Despite that, this economic deprivation was due to the government policy, constituting various types of discrimination, implicit and explicit violations of the 1948 UN Universal Declaration of Human Rights (Assembly, 1948), thus, falling into the characteristic of the refugee crisis but strictly through violation of human rights.

Gilbert (2013) is looking at the case of Mexican 'refugees' fleeing economic recession, what is wrong from the legal point of view as economic reasons are not included in the formal definition of a refugee (United Nations Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons, Geneva, 1951). Thus, these situations cannot be called refugee events, let alone refugee crises⁸.

⁸Gilbert (2013) also does not argue for calling the event he studies a refugee crisis, criticising the media in Canada, who called the issue in this way merely due to 'moral panic', despite all controversies that the author identified.

3.2.11 Concluding Remarks for Refugee Crisis Characteristics and Weights

To conclude, based on the literature describing various refugee events in different countries, presented in Table 3.2, only the following eight dimensions of the refugee crisis were chosen to be relevant due to the reasons presented above. The first one is considered to be necessary for a refugee event to be a candidate for a refugee crisis, while the other seven, if appearing, are increasing the severity of the refugee event.

1. A large share of refugees and asylum-seekers in the population of the host country;
2. Significant violence or human rights violations in the *source country*;
3. Appearance of large-scale, long-term camps in the host country;
4. Significant human rights violations in the host country;
5. Relief organisations reports of underprovision for the refugees in the *host country*;
6. International agreements for financial and physical relief;
7. Presence of a significant number of IDPs in the *source country*;
8. Smuggling of Asylum Seekers into the Host Country;

Thus, if in a particular *country-year* several criteria from the list along with the necessary condition are satisfied according to the rule below, one can claim that there was a *Refugee Crisis*, while the final sum of the weights gives the measure of severity for it.

The Rule. Each of the criteria has different importance⁹. If in a *country-year* these weights sum ≥ 5 , then it can be called a crisis. The necessary condition for the share of refugees in the recipient country plus the criteria 1 and 2 each weigh 1.5 in the severity of refugee events measure, the criteria 3-5 weigh 1, and 6-7 weigh 0.5. This rule allows one to extract more information from the research than simple binary data, providing a possibility to measure refugee

⁹The importance is founded on subjective evaluation of the frequency of appearance among refugee events.

events and distinguish between the severity of refugee events proposed below.

Table 3.2.11: Severity of Refugee Events

Range	Severity of Crisis
[0; 4.5)	No Refugee Crisis
[4.5; 5)	Borderline Situation
[5; 6]	Minor Refugee Crisis
[6.5; 7]	Refugee Crisis
[7.5; 8.5]	Severe Refugee Crisis

The selection of a threshold of 5 for the minor refugee crisis is based on the following rationale. To illustrate this reasoning, a hypothetical scenario can be constructed. In this scenario, let's assume that all first three criteria in the proposed measure with a weight of 1.5, indicating their higher relative importance, occur simultaneously in a specific country and year. For instance, there is a substantial proportion of refugees and asylum seekers in the total population, fleeing from a war, and residing in large camps for more than 6 months. Consequently, in the absence of any other criterion, the severity measure of the refugee event would reach 4.5. According to this proposal, such an event would not be considered a crisis since there are no additional criteria indicating further "problematic" or "trouble-oriented" circumstances associated with the hypothetical refugees in that specific country. Therefore, it is suggested that a measure of at least 5 should be met to classify an event as a crisis. In the above hypothetical example, the threshold includes the aforementioned three criteria, along with at least one additional criterion with a weight of 0.5, indicating at least another additional problem with the arrival of those refugees. On the other hand, any other combination that has an equivalent weight of 5 should suffice for a crisis as well.

By employing this approach, the measure identifies a crisis when refugees arrive in a country where there are at least some accompanying issues within the host nation.

3.3 An Example of the Refugee Event Measurement

To demonstrate how the new measure of refugee events is used to evaluate an event in a host country in a particular year, the Syrian refugee arrival in

Germany in 2015 was chosen as one of the key influxes in recent history.

3.3.1 Identifying a Year with Sufficient Number of Refugees and Asylum Seekers

To begin with the analysis, one must study the number of refugees registered in the host country in a particular year. According to UNHCR data (UNHCR, 2022b), there were 736,672 refugees and asylum seekers registered in Germany. That constituted to more than 0.9% of the total population in Germany in that year. Hence, one can count that year to have a sufficient number of people of concern to be a candidate for the refugee crisis even for the benchmark classification.

Next, one must study the refugees' and asylum seekers' origin in Germany in 2015. Referring again to the UNHCR data (UNHCR, 2022b), one may find that there were refugees from 134 source countries registered in Germany and asylum seekers from 123 countries. Then the values for all refugees and asylum seekers are summed, and the dominant cohorts are identified. A dominant cohort is a group of refugees and asylum seekers from one source country, registered in the host country, counting 500 people and more. As a result, one can find 56 such cohorts.

Their relative weights in the total number of refugees and asylum seekers are calculated to identify only the groups of refugees which constitute more than 1% of the total number of refugees and asylum seekers in the recipient country. These groups are studied to evaluate the severity of the refugee event in Germany in 2015. There were 15 such groups found. They are presented in Table 3.3.1 below with their shares.

After finding the value of refugee event severity for each cohort, the weighted average using the presented shares is calculated to obtain the final value of severity for 2015 in Germany. Because of the size, the other cohorts present in Germany that year are assumed to be represented by the obtained weighted average.

Table 3.3.1: Core cohorts of refugees and asylum seekers found in Germany in 2015

Source country	Per Cent Share
Afghanistan	9.962
Albania	4.495
Bosnia and Herzegovina	1.021
Eritrea	3.799
Iran (Islamic Rep. of)	3.999
Iraq	10.517
Nigeria	1.506
North Macedonia	1.932
Pakistan	2.698
Russian Federation	2.412
Serbia and Kosovo	7.445
Somalia	2.233
Syrian Arab Rep.	27.048
Turkey	3.323
Unknown	3.311
Total	85.7

Source: UNHCR (2022b). The per cent share is referred to the number of refugees and asylum seekers in the total number of refugees and asylum seekers in Germany in 2015.

3.3.2 Identifying Significant Violence or Human Rights Violations in the Source country

To check satisfaction of the criterion, it is necessary to identify the reason for the Syrian refugees' flight from their country to Germany in 2015. Based on the Uppsala Conflict Data Project (Pettersson et al., 2021; Gleditsch et al., 2002) one can see that there has been a civil war in Syria from 2011 to nowadays. Thence, it is concluded that this criterion of a refugee crisis is satisfied.

There were different resources from various disciplines reviewed to check if all other characteristics of refugee crises are satisfied for the years since the beginning of the Syrian civil war (2011 onward). Nonetheless, only the resources relevant for Germany in year 2015 for Syrians are cited below to avoid confusion and repetition.

3.3.3 Identifying large Long-term Camps and Detention Centres for Syrian Refugees and Asylum seekers

According to the German agency on asylum and migration (Hoffmeyer-Zlotnik, 2022c) there were 3 types of organised accommodation for asylum seekers distinguished in Germany in 2015:

- Initial reception centres;
- Collective accommodation centres;
- Decentralised accommodation.

In addition, in 2015 and 2016, there were emergency shelters in use. There was at least one initial reception centre in each of the 16 German Länders, however, the majority of them had several facilities of this type, around 62 overall. One of the largest centres could take in up to 3,400 people as the one in Bavaria, but it never had more than 1,500 people in it at one time.

Nevertheless, the duration of stay in initial reception has been generally set at a maximum of 18 months, but only after the reform in 2019. In 2015, the maximum time was only 6 month, but could have been extended by the authorities on an individual basis (Hoffmeyer-Zlotnik, 2022b). After the initial reception period, asylum seekers were obliged to stay in the collective accommodation centres awaiting the final decision on their asylum application. The overall time spent in the government-provided accommodation could often take several years because the stay was also obligatory during the appellation procedures or in cases when the refugees' claims were rejected, but their presence on the territory of Germany was tolerated, for example, due to the non-refoulment principle, i.e. the asylum-seekers were not deported not to put their lives in danger (Hoffmeyer-Zlotnik, 2022a).

To conclude, since the stays in organised accommodation could last years but were not that large individually, the criterion of the refugee crisis is not satisfied for the strict benchmark classification. However, it is satisfactory for the alternative, the relaxed one.

3.3.4 Identifying Significant Rights and Freedoms Violations or Restrictions

First of all, following Hoffmeyer-Zlotnik (2022c), one can see apparent mobility, education, and employment restrictions as a result of being obliged to stay in the detention centres for sometimes longer than six months. In addition, the recognition rates were decreasing over time, multiplying the potential restrictions for the asylum seekers.

According to Casey (2019), the local authorities, for example, in Bavaria, were reluctant to grant permits for work or access apprenticeships even to recognised refugees. Furthermore, they were restricting refugees' movement under the threat of a fine.

In addition to the above, OECD (2016) finds that the asylum seekers and the temporarily admitted people had access exclusively to emergency health care for at least 15 months, while before 2014, it was 48 months.

Based on the facts presented above, it was concluded that the "Significant Rights and Freedoms Violations or Restrictions" criterion was satisfied for the Syrian refugees and asylum seekers in Germany in 2015, even for the benchmark classification.

3.3.5 Identifying Reports of Underprovision for Refugees and Asylum Seekers

Schührer (2021) shows that among those asylum seekers and refugees requiring assistance in Germany, around 68% did not receive education, work or housing support, and 35% did not receive help to resolve various asylum issues. Nevertheless, the author shows that for the period from 2016 to 2018.

There were no specific reports found on Syrians in Germany in 2015, suggesting that the criterion under consideration is satisfied neither for the benchmark classification nor for the alternative one.

3.3.6 Identifying International Financial or Physical Relief

The Islamic Relief Worldwide has been actively participating in providing help and assistance to refugees from Islamic countries across Europe. For example, in 2015, that NGO sent food support to 1,025 families and 5,000 gifts to children refugees. The overall assistance amounted to €1.1 million, and the Syrians, among others, received hygiene kits and blankets in Germany from Islamic Relief Worldwide (Islamic Relief Worldwide, 2015).

Further reports of international relief on a more global scale reviewed the programmes in 2017 and later. For example, the programmes by International Organisation for Migration (IOM, 2017) and the UNICEF Support Initiative in Germany (SM160351) (UNOCHA Financial Tracking, 2017).

As a result, one can consider this criterion satisfied only for the relaxed measure of severity of refugee events for 2015 in Germany because of the sheer size of assistance, making it useful for the alternative classification but not for the benchmark one.

3.3.7 Identifying the Number of IDP in Syria

According to the data by UNHCR (UNHCR, 2022b), there were 6,563,462 people internally displaced in the Syrian Arab Republic in 2015. That comprised around 36.469% of the total population of Syria. It is much more than the chosen cut-off level of 4.61% for the benchmark classification.

As a result, this criterion of refugee events is satisfied for both classifications for Syrian refugees in Germany in 2015.

3.3.8 Identifying the Number of IDP in Syria

Finally, to identify the cases of smuggling of Syrian asylum seekers and their irregular migration, the book by Gatrell (2019) was used. The author told the story of a Syrian asylum seeker who travelled through Lebanon, Turkey, Greece, Macedonia, Serbia, Hungary, and Austria to arrive in Germany, relying on the services of people smugglers. That asylum seeker informed about many other people taking the same well-established route. In addition to that, Gatrell (2019) suggests that in 2015 the European Union's Operation Sophia was designed to intercept the boats with asylum seekers in the Mediterranean, further proving the presence of smuggling of Syrians into Europe and, specifically, into Germany.

Hence, the criterion is considered to be satisfied for both strict and relaxed measures of refugee events severity.

3.3.9 The Overall Value of the Refugee Event Severity for Syrians in Germany, 2015 and Discussion

Based on the conclusions above, the obtained values of severity for the refugee arrival of Syrians in Germany in 2015 for both classifications are as presented in Table 3.3.9.

Table 3.3.9: Value of Refugee Event Severity for Syrians in Germany, 2015

classification Type	Value
Benchmark (Strict)	5
Alternative (Relaxed)	7.5

Source: Author's own calculations based on applying the new measure of refugee event severity for the facts associated with the arrival of Syrians in Germany in 2015.

The process described above comprises an example of applying the proposed measure of refugee events severity to determine the value of the measure for a particular country-year for a particular cohort of refugees.

To calculate the final value of this index across all cohorts of refugees, it is necessary to study each of the core cohorts in a specific year to compute their values of refugee event severity. After obtaining the values for each cohort, one has to compute a weighted average of them to calculate the final refugee event severity value.

The above procedure was applied to Austria, Germany, Italy, Spain, and the UK for each year from 1951 to 2019 to find the refugee event severity for each country-year and conclude if the countries ever experienced a refugee crisis. For the pre 1989 period only Western Germany (Federative Republic Germany) was studied, while since the breakdown of the Berlin Wall, Germany in its current borders and political structure was under investigation.

One critical limitation of the approach outlined above is the necessity to apply judgement for a few of the criteria above. However, the borderline cases were not included in the strict version of the measure to mitigate the potential error but were used in the relaxed one.

Chapter 4 continues with the description of the obtained index of refugee events for the five countries for both classifications and the methodology used in the empirical part of the dissertation.

Part II

Estimating Impact of Refugee Crises

Chapter 4

Data and Methodology

The first half of this chapter is dedicated to describing and analysing data used in the empirical estimations. It begins with describing the intrinsic characteristics of the data used for Chapter 5. It describes the availability and limitations of the refugee events measure, compares the benchmark classification with the alternative classification for refugee events built for this dissertation, and presents the macroeconomic, socio-economic and political variables, which responses to refugee crises are studied in the empirical estimations. Finally, the data description part ends with the proof of weak exogeneity of the refugee events measure to the economic, socio-economic and political situation in the recipient country, therefore justifying the possibility of employing the newly built refugee crises index in the impulse response functions estimations.

The methodology part of this chapter is dedicated to presenting and discussing the Local Projections method of estimating impulse response functions used in Chapter 5.

4.1 New Measure of Refugee Event Severity and the Response Variables

4.1.1 Benchmark classification of the Refugee Events

The level of detail for the data by the United Nations High Commissioner for Refugees (*UNHCR*) varies within the available period 1951-2019. Generally, only the overall stock values of refugees and asylum-seekers are reported for the host countries before the end of the 1980s. At the same time,

the more recent time period provides the availability of the breakdown of the refugees' overall number by a source country. Because of that, where possible, the numbers for the first part of the period were investigated, and the data was matched with the information on historical refugee flows from various resources on the chosen countries.

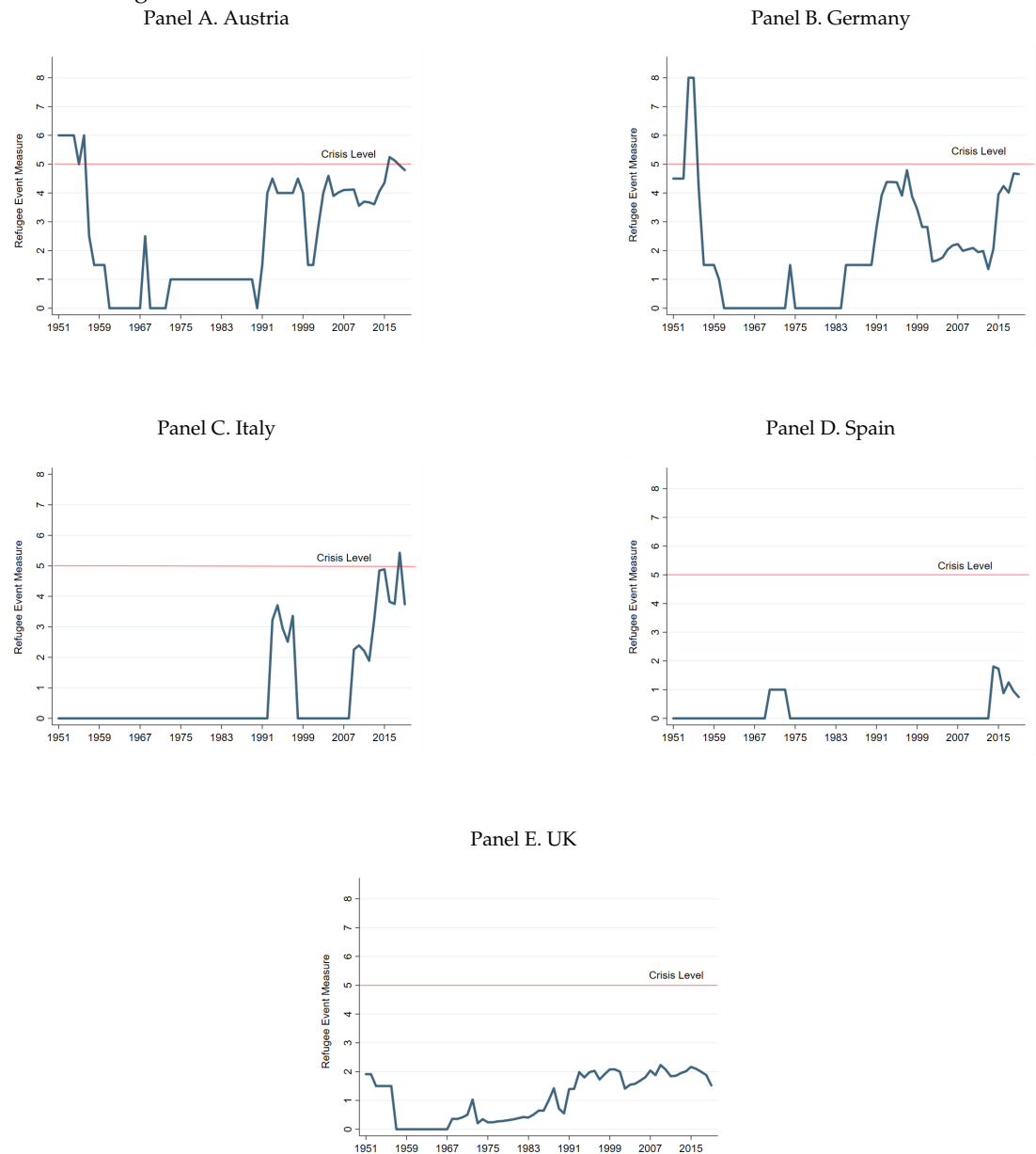
As a result, the *Measure of Refugee Event Severity* is the first such measure, allowing one not only to establish if there is a refugee crisis in the recipient country in a given year but also allows tracking the cohorts of refugees and asylum seekers historically. Furthermore, it measures the severity of the crises. It comes from the fact that the measure is continuous in contrast to a simple 0-1 metric, permitting a finer tuning for the model specification. Figure 4.1.1 shows the new *Measure of Refugee Event Severity* for the countries chosen for the whole period 1951-2019.

It is evident that Austria experienced periods of refugee event severity reaching crisis levels of 5 and above. The first such period occurred from 1951 to 1954, resulting from the arrival of "Volksdeutsche" - German refugees displaced from territories in Eastern Europe that were liberated from the Nazis during the final stages of World War II. Alongside them, a mixture of other refugees were also placed in Austria. According to UNHCR reports from 1951 to 1956, there were approximately 300,000 people, with around 50,000 residing in large governmental camps (at least until 1956), and approximately 35,000 being non-German refugees (General Assembly, 1952, 1954).

The UNHCR reports from the same period also highlight the lack of funding amounting to millions of US dollars, as stated by the High Commissioner himself. The rights of the displaced individuals were significantly restricted, ranging from mobility constraints due to new passport and alien police laws, to the challenging requirement of obtaining labour market permits that limited the refugees' ability to support themselves (General Assembly, 1956, 1957, 1958). Furthermore, direct international support was consistently provided to these refugees, as noted in General Assembly (1957). Smuggling of refugees across the border was also reported during 1952-1956 (General Assembly, 1953).

Another significant refugee event in Austria occurred in 1956, following the Hungarian Revolution, which resulted in an inflow of approximately 46,000

Figure 4.1.1: Timing and Severity of Refugee events in Austria, Germany, Italy, Spain, and United Kingdom



Hungarian refugees (General Assembly, 1958). These refugees were placed in camps for approximately a year and faced similar or even more restrictions compared to the Volksdeutsche and World War II refugees who arrived earlier. Direct international assistance was dedicated to the Hungarian refugees in Austria from 1956 to 1958, and there were reports of significant housing shortages for them as well (General Assembly, 1957, 1958).

The combined impact of these two events contributed to the increase in the severity index. The most recent period reaching crisis level was 2016-2017, characterised by the arrival and continued presence of several large cohorts of refugees in Austria. These included Chechen refugees from the Russian Federation, as well as refugees from Afghanistan, Syria, Iraq, Iran, and Somalia.

Each of these groups faced various individual challenges, having fled violent conflicts and experiencing significant rights restrictions in Austria. Many of them also received direct international assistance, and a considerable number of internally displaced persons (IDPs) from their respective countries of origin sought refuge in Austria. Moreover, a significant portion of these refugees arrived in Austria through human smuggling routes. For further details on Austria and other countries, please refer to the Online Appendix accessible at the following link: [Online Appendix](#).

In the strict classification, Germany (then FRG) had its severity measure exceed 5 only in the years 1954 and 1955, during a period when the country experienced a significant influx and accumulation of refugees in the aftermath of World War II. This included approximately 1.5 million refugees from Eastern Germany (Volksdeutsche) and around 100,000 refugees from various other groups (General Assembly, 1952). Additionally, there were 9 million expellees who fell outside the mandate of the UNHCR. Until around 1961, these refugees were accommodated in camps and faced several notable employment restrictions. A large proportion of them were also homeless, which further hindered their ability to exercise their rights. The refugees in Germany during this time received direct international assistance. Moreover, active smuggling channels were prevalent, particularly from Eastern Germany to Western Germany (General Assembly, 1952).

Unlike Spain and the UK, Italy also experienced a refugee crisis based on the newly proposed measure. This crisis occurred in 2018 and involved a combination of various refugee groups in the country. The refugees originated from Afghanistan, Albania, Bangladesh, Bosnia and Herzegovina, Cote d'Ivoire, Croatia, Eritrea, Ethiopia, Gambia, Iran (Islamic Rep. of), Iraq, Libya, Mali, Nigeria, North Macedonia, Pakistan, Senegal, Serbia and Kosovo, Somalia, Sudan, Syrian Arab Rep., Tunisia, and Turkey. Each group was thoroughly analysed, and their individual severities were weighted based on the proportion of each cohort within the overall number of refugees and asylum seekers. On average, these refugees were fleeing from wars and found shelter in camps, with Lampedusa Island being particularly prominent as a "hotspot". In these camps, they faced harsh penalties for irregular immigration, endured prison-like conditions, and experienced inadequate satisfaction

of their refugee needs (Global Detention Project, 2023). Additionally, numerous international projects were dedicated to assisting the refugees. For example, in 2018, specific funding of \$61,000 was allocated for the psychological support of Syrian refugees, and Germany provided \$3.6 million through the World Food Programme (WFP) to support refugees in Italy (UNOCHA Financial Tracking, 2014-2020). It is worth noting that the arrival of asylum seekers through the Mediterranean Sea, facilitated by smuggling networks, has been ongoing since the late 1990s and continues to the present day (Vermot-Mangold, 1998; IOM, 2018).

Several other general features are clear from the figure. First of all, there were no episodes that can be counted as Refugee Crises in Spain and the United Kingdom throughout the whole time period. Germany and Austria show an overall U-shape, suggesting that there were relatively minor events in the middle of the second half of the twentieth century. Similar uneventful patterns after 1960 and until 1990 can be found on the graphs for the other countries.

Germany and Italy experienced significant increases in refugee events during the 1990s because of the Yugoslavian wars. In addition to that, the period of 2014-2016 stands out. There are expected raises for almost all countries related to the events associated with the Syrian refugee arrival in Europe.

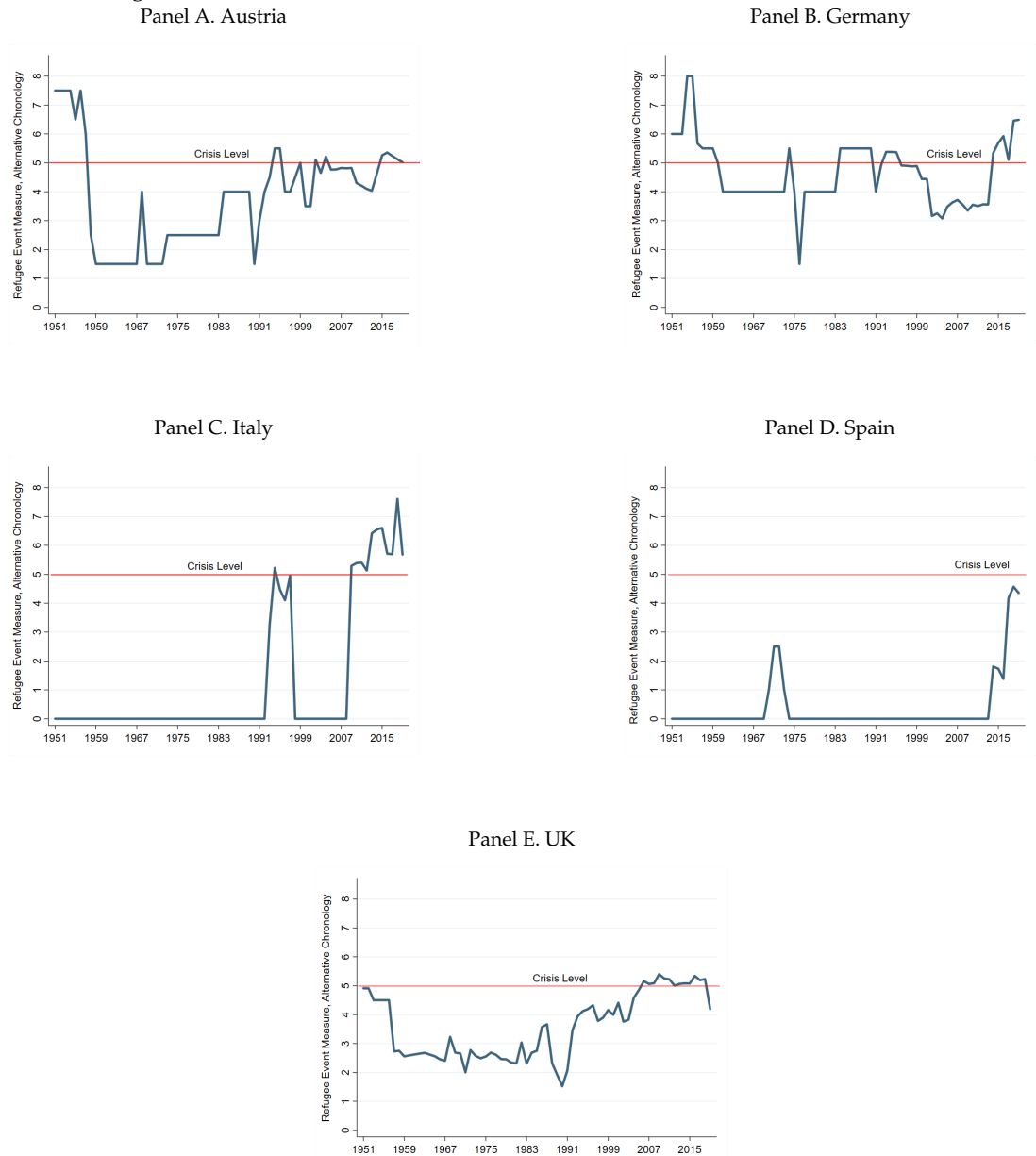
It is also clear from Figure 4.1.1 is the vast variation in the evolution of refugee events. For instance, Spain and Italy experienced acute jumps, sometimes from zero to crisis level, which resolved relatively quickly. In contrast, the UK showed relatively stable slow growth of the event severity level with small fluctuations in the short-run. That said, there is evidence of a henn rise since the 1960s or thereabouts. Austria and Germany seem to fall somewhere between the two types above, exerting both features: sudden rises and falls and regular periods with fluctuations. Finally, it is also evident that the recent event, commonly labelled the European Refugee Crisis of 2014-2016 affected countries unevenly.

4.1.2 Alternative classification of the Refugee Events

Based on the relaxed version of the new measure of the refugee events in the recipient country, it is possible to build an alternative classification of events.

Since each of the characteristics of the measure was relaxed for this classification, it should capture more events. Therefore, more events with the measure of 5, which is the level for a refugee event to be called a crisis. The figure (4.1.2) below illustrates the alternative version of the measure of refugee event severity graphs for each country.

Figure 4.1.2: Timing and Severity of Refugee events in Austria, Germany, Italy, Spain, and United Kingdom, Alternative classification



In the alternative classification, additional years were classified as refugee crises for Austria. These years include 1994-1995 and 1999, which coincided with the Yugoslavian wars that took place from 1991 to 2001. During this period, a significant number of refugees, primarily from Bosnia, arrived in Austria. However, rather than receiving formal refugee status, they were granted temporary protection under the Temporary Protection Scheme. As

a result, they were excluded from accessing legal employment, social security, health services, and unemployment benefits (Franz, 2005). There were international repatriation agreements for refugees from Bosnia and Herzegovina, along with direct international assistance provided during this time (Van Selm, 2000). It's important to note that there were also many internally displaced persons (IDPs) who were potential candidates for seeking refuge in Austria (UNHCR, 2022b).

In addition, Austria experienced refugee crises in 2002, 2004, and 2015-2019, during which the same cohorts as discussed in the strict classification were present. These cohorts included refugees from various countries such as Chechnya, Afghanistan, Syria, Iraq, Iran, and Somalia. These refugees faced similar challenges and restrictions, including living in camps and encountering difficulties in accessing their rights. They also received direct international assistance. These years were characterised by a high number of asylum seekers and a prolonged presence of refugees in Austria (Global Detention Project, 2023).

According to the relaxed classification, Germany experienced several more years with refugee crises. These years include 1951-1960, 1974, 1984-1990, 1993-1995, and 2014-2019.

The period from 1951 to 1960 corresponds to the post-World War II refugees, including the influx of Hungarian refugees. In 1974, there was a surge of Iranian refugees following the revolution in Iran. During this time, the German government adopted a defensive attitude and imposed restrictions on this group of refugees (Poutrus, 2014).

From 1984 to 1990, the refugee crisis in Germany was related to Afghan refugees who were escaping the continuous armed conflicts in Afghanistan since 1979 (Committee et al., 2016). Similar to the Iranian refugees, Afghan refugees faced various challenges and restrictions during their stay in Germany (Poutrus, 2014).

The crisis period from 1993 to 1995 was influenced by the refugees from the Yugoslavian wars, including Bosnians, Kosovars, and ethnic Kosovo Serbs. During this time, the International Organisation for Migration (IOM) provided direct assistance to these refugees, and there were also a significant number of internally displaced persons (IDPs) involved (Van Selm, 2000; UN-

HCR, 2022b).

Finally, the period from 2014 to 2019 consisted of a combination of different refugee cohorts arriving in Germany, including refugees from Afghanistan, Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Eritrea, Ethiopia, Iran, Iraq, Nigeria, North Macedonia, Pakistan, Russia, Serbia, Kosovo, Somalia, Sri Lanka, Syria, Turkey, and Unknown origin (UNHCR, 2022b).

Throughout these years, Germany faced significant challenges in managing the arrival and integration of refugees, with each crisis period characterised by specific factors and circumstances.

According to the relaxed classification, Spain did not reach crisis levels. However, Italy experienced several refugee crises.

In Italy, there was a refugee crisis in 1994 related to the Yugoslav wars, with a large number of Bosnians arriving in the country. During this period, Bosnians and Kosovars experienced mass refolements from Italy. There were also direct international assistance from the International Organisation for Migration (IOM), a significant number of internally displaced persons (IDPs), and instances of asylum seekers smuggling (Van Selm, 2000).

Italy also experienced a period of intensive refugee arrivals from 2009 to 2019, with refugees originating from the same countries identified in the strict classification. This period involved a significant influx of refugees and asylum seekers, particularly on Lampedusa island and other “hotspots”. The arrival of these refugees led to severe penalties for irregular immigration, prison-like regimes, and challenges in meeting the needs of refugees (Global Detention Project, 2023). There were also international projects and financial assistance dedicated to helping refugees in Italy during this period (UNOCHA Financial Tracking, 2014-2020).

Regarding the United Kingdom, according to the relaxed classification, there were moderate crisis levels from 2006 to 2018. This crisis level was a result of the combined arrival of various refugee cohorts from different countries, including Vietnamese, Sri Lankan Kurds, Iranians, Iraqis, Ghanaians, Ugandans, Eritreans, Ethiopians, Congolese (from Zaire), Yugoslavians, Somalians, Rwandans, Afghans, Algerians, Angolans, Bangladeshis, Burundians, Chinese, Colombians, Gambians, Indians, Lebanese, Libyans, Nigerians, Pakistanis, Russians, Sierra Leoneans, Sudanese, Syrians, Turkish, Zimbab-

weans, Albanians, and more. Each cohort had its own specific circumstances and variability within their situations.

Notably, the refugee crisis in the UK was influenced by the introduction of the 1993 Asylum Act, which introduced several restrictions into the asylum procedures in the country (Knox and Kushner, 2012; Beaton et al., 2018). After its introduction the severity of refugee events has been climbing upwards. It is also interesting to observe that the post-World War II refugees in 1951 did not reach the crisis level of 5 according to the classification (reaching borderline case 4.9).

From Figure (4.1.2), one can notice that each graph is similar to its counterpart in Figure (4.1.1). Finally, the U-shape in the graphs is more diluted yet still present, with its minimum being around 1.5 for all countries except Italy and Spain. The reason behind it is the presence of refugees and asylum seekers in the numbers above the relaxed cut-off level but below the strict cut-off level used for the benchmark classification.

4.1.3 Data for the Empirical Estimations

After creating a new continuous measure of refugee events for a sample of advanced countries, the next step is to examine what socio-economic outcomes one can expect in the post-refugee crisis event. The average outcomes for the selected variables are presented in this section.

The primary focus is on the responses of several key macroeconomic indicators following a refugee crisis. However, the character of the measure for refugee events requires an investigation of the potential impact on at least a few socio-economic and political variables such as the level of the shadow economy, the overall level of crime, the human capital, and the share of votes going to a right-wing political party in the post-refugee crisis period. The latter group of variables is chosen so that it would be possible to investigate the responses of those indicators most commonly associated with the impact of refugees on a host nation.

To begin with, real GDP per capita is chosen as it is a standard and broad representation of real economic activity. It is used, permitting one to control for the size of the population that always increases with arriving refugees. Nonetheless, it can be difficult to measure, implying that the numbers across

countries may vary in quality and methodology of calculation. To compensate for the potential drawback, other indices of economic activity are considered: inflation, unemployment, and the level of government consumption. That said, these alternative macro indicators also provide additional insights into the impact of crises, and not merely on the level of economic activity.

Therefore, an annual unbalanced panel dataset is created containing real GDP per capita, the inflation rate, the unemployment rate, the level of government consumption, human capital, the overall level of crime per thousand of population, the share of votes to a right-wing political party, the new refugee events severity measure, and a set of control variables for Austria, Germany, Italy, Spain, and the United Kingdom.

The table below presents the descriptive statistics of the response variables by country. The combinations of the control variables relevant for each estimation are presented in the appendix B along with the variables' overall descriptive statistics.

Real GDP per capita is measured as the expenditure-side real GDP at chained Purchasing Power Parities (2017 USD) per person and calculated using the data of the relevant GDP and total population number presented in the data by Feenstra and Timmer (2015). Real government consumption is calculated also using the data by Feenstra and Timmer (2015) and measured as the expenditure-side real GDP at current PPPs in millions of 2017 USD. Inflation of the consumer prices in annual percentage is obtained from the World Development Indicators (The World Bank, 2018) as well as the unemployment, measured as a percentage of the total labour force, using national estimates. The shadow economy variable was calculated using a model by Elgin and Oztunali (2012) and presented in Teorell et al. (2022). It is measured as a per cent of GDP. Total crime per 1000 people is calculated by the author using Eurostat (2021) and the population data by Feenstra and Timmer (2015). Finally, the Right-wing party votes are measured as a percentage of total votes calculated by Swank (2015) and reported in Teorell et al. (2022).

The human capital variable is based on years of schooling and returns to education calculated by Feenstra and Timmer (2015). The original index was introduced into the Penn World Tables (PWT) in version 8.0, but in the later versions (as used for this dissertation, version 9.1) it was improved to account

Table 4.1.3.1: Descriptive statistics of the **response** variables by country

Response Var.	Country	Mean	Std. Dev.	Min	Max	N
Real GDP pcap	Austria	26584.68	15127.42	5994.249	55613.24	69
	Germany	26244.75	13557.03	5596.993	51592.6	69
	Italy	23494.61	12311.85	5048.452	41426.94	69
	Spain	19551.9	11314.87	4359.448	41120.83	69
	UK	25287.99	11446.04	10079.44	46186.63	69
Real Gov Consumption	Austria	32815.34	21378.13	7912.973	85265.23	69
	Germany	327165.5	196315.7	56685.75	783987.1	69
	Italy	199161.2	113334.6	40765.48	392402.9	69
	Spain	121898.1	105706.1	11675.74	349794	69
	UK	269185.4	141134.2	95150.3	592081.3	69
Inflation	Austria	3.252999	1.992854	.5063089	9.521789	60
	Germany	2.608448	1.726181	-.1294128	7.032026	60
	Italy	5.80137	5.513499	-.0940167	21.06417	60
	Spain	6.448355	5.606862	-.5004613	24.53806	60
	UK	5.158528	4.86946	.3680468	24.20729	60
Unemployment	Austria	3.861961	1.400616	1.2	6.01	51
	Germany	7.061892	2.097772	3.14	11.17	37
	Italy	9.174898	2.130427	5.38	12.68	49
	Spain	14.36804	7.255424	1.1	26.09	51
	UK	6.801224	2.521861	2.6	11.51	49
Shadow Economy	Austria	11.95927	2.281822	9.34	16.89	55
	Germany	16.51325	.9910714	15.14	18.57	40
	Italy	34.89017	7.133157	26.43	50.25	59
	Spain	30.69186	7.525353	21.87	45.67	59
	UK	15.28	2.061306	11.94	18.55	59
Human Capital	Austria	2.877629	.3114778	2.403941	3.381046	69
	Germany	3.211644	.3957736	2.469304	3.675378	69
	Italy	2.437493	.4302211	1.805325	3.158385	69
	Spain	2.391304	.4916177	2	3	69
	UK	3.110397	.4454412	2.444694	3.773596	69
Tot Crime per 1000 peop.	Austria	45.83058	14.76003	27.19484	79.20853	67
	Germany	52.45864	22.27376	21.02246	83.18033	69
	Italy	25.11892	13.43956	6.355008	50.19218	64
	Spain	30.47695	15.90972	10.90782	52.70034	40
	UK	54.94452	32.97521	8.526544	110.2314	68
Right-wing Party Votes	Austria	13.47541	9.424448	5	31	61
	Germany	45.04615	5.063444	36	54	65
	Italy	20.67692	19.07396	5	54	65
	Spain	41.06667	4.950403	22.7	46	39
	UK	41.47692	5.889895	31	50	65

for average years of schooling from Barro and Lee (2013) and an assumed rate of return to education based on Mincer equation estimates around the world by Psacharopoulos (1994). Hence, the constructed index is as follows.

$$\phi(s) = \begin{cases} 0.134 \cdot s & \text{if } s \leq 4, \\ 0.134 \cdot 4 + 0.101(s - 4) & \text{if } 4 < s \leq 8, \\ 0.134 \cdot 4 + 0.101(s - 4) + 0.068(s - 8) & \text{if } s > 8 \end{cases}$$

where s is the average years of schooling.

Overall, the data provided by Feenstra and Timmer (2015) is the most complete, while the other variables have at least one country with missing values. Because of that, in addition to the estimations reported in the main body of the dissertation, there are the empirical results reported in Appendix C with the exclusion of the countries with the smallest data availability for unemployment, total crime, and right-wing party votes. It is done to check the robustness of the results for the full sample and potentially improve the precision of estimates.

To conclude, the descriptive statistics for the benchmark and the alternative classification shock variables are presented in the tables below. The apparent differences between them are the increased means for all countries. Minimums, standard deviations and maximums for some countries also increase from the benchmark to the alternative classification. Therefore, obtaining qualitatively similar results in the empirical estimations would imply that despite the differences, the approaches capture the events of the same nature.

Table 4.1.3.2: Descriptive statistics of the Measure of Refugee Event Severity for the **Benchmark** classification (strict measure). The sample consists of Austria, Germany, Italy, Spain, the UK. The sample period is 1951-2019.

Country	Mean	Std. Dev.	Min	Max	Number of Obs
Austria	2.518	1.969667	0	6	69
Germany	1.995	1.950	0	8	69
Italy	0.786	1.520	0	5.429	69
Spain	0.165	0.423	0	1.807	69
United Kingdom	1.093	0.801	0	2.23	69
Total	1.311	1.689	0	8	345

Table 4.1.3.3: Descriptive statistics of the Measure of Refugee Event Severity for the **Alternative** classification (relaxed measure). The sample consists of Austria, Germany, Italy, Spain, the UK. The sample period is 1951-2019.

Country	Mean	Std. Dev.	Min	Max	Number of Obs
Austria	3.800	1.736	1.5	7.5	69
Germany	4.646	1.124	1.5	8	69
Italy	1.268	2.375	0	7.607	69
Spain	.363	1.021	0	4.570	69
United Kingdom	3.576	1.126	1.522	5.399	69
Total	2.731	2.254	0	8	345

4.2 Exogeneity of the Measure of Refugee Event Severity

In the process of deriving the measure of severity of refugee events, the timing and the level of asperity are aimed to be identified consistently and accurately. However, to use the resultant index of refugee events in the empirical work, it is necessary to establish the validity of employing it in the chosen estimation method.

For this dissertation, the Local Projections method of estimating the impulse response functions of the chosen macroeconomic, socio-economic and political variables to a refugee crisis shock was chosen. The usage of the refugee crisis measure as the shock variable can be valid only if there are no endogeneity problems, thus, only if there is no reverse causality from the response (dependent) variables to the refugee event severity. Some may say that a high level of economic activity, for example, may attract and multiply refugee inflows. However, a few reasons are presented below, providing evidence of at least a weak exogeneity (predeterminedness) of the measure of refugee events, which is necessary for unbiased estimations of the impulse responses of the chosen economic, social and political indicators.

The core reason for this argument is that the proposed method for measuring the severity of refugee crises allows one to track the initial reasons for a particular refugee event in the overwhelming majority of cases. That allows one almost to neutralise that potential endogeneity issue.

This section continues with the proof of predeterminedness of each characteristic of the refugee events measure one by one with additional attention to the reasons for exogeneity of involuntary migration as the key necessary criterion for a refugee crisis to be present in a host country.

4.2.1 Exogeneity of Involuntary Migration

There are several established and widely used migration theories or groups of theories that can be used to demonstrate the weak exogeneity of the refugee event severity measure from the past and present economic conditions in a host country. The migration theories chosen here are following the over-encompassing overview by de Haas et al. (2020).

Functionalist Theories

The Functionalist group of theories is arguable closest to modern economics. Generally, this theory treats each migrant as a rational agent, maximising expected utility, weighing costs versus benefits of migrating under the effect of 'push and pull' factors. The push and pull factors are usually economic in nature. de Haas et al. (2020) argue that this theory may become useful for analysing the refugee flows, however, mostly secondary, where some pecuniary economic factors may enter the decision-making process.

The countries chosen for this research were countries of the first asylum throughout the whole chosen period, with a few exceptions. For instance, the UK has been employing two relocation schemes for refugees recognised by UNHCR from around the world, thus being a country of secondary allocation. However, such policies are controlled by the hosting government itself. Based on a lottery among a specific category of displaced people, it excludes the refugee's agency in choosing a destination country and even an area of allocation. The chosen countries are also signatories to Dublin Regulations (EU Council (1997) - Dublin Convention, EU Council (2003) - Dublin Regulation II, EU Council (2013) - Dublin Regulation III), requesting an asylum seeker to receive the refugee status in a country that is a signatory of the Dublin regulations, where the first registration as an asylum-seeker happened. It limits the secondary migration between those countries to almost zero. Notwithstanding that Germany paused their Dublin obligations the events in 2014-2016, it was only temporary and only for Syrian refugees. The above support the exogeneity of the studied refugee events to the conditions in the host countries from the point of view of functionalist migration theories.

Neoclassical Migration Theory

At micro-level Neoclassical Migration Theory generally treats a refugee as a migrant with a similar set of traits as push-pull models omitting its involuntary nature. At the macro-level, this theory treats migration as a process optimising the allocation of production factors. Specifically, at any level, the labour market or a wage-earning potential for a migrant is at its centre. However, involuntary migration is mostly randomly directed at an aggregate level, irrespective of the prices for labour and capital in origin and destina-

tion countries, and can be based on social relationships networks, foreign language abilities and the various non-economic expectations of asylum-seekers (e.g. Robinson and Segrott (2002), Richmond (1988), McAuliffe and Jayasuriya (2016)). A refugee, in the majority of cases, can not assess the labour market conditions in the destination country. Thence, providing further basis for treating refugee stock as at least weakly exogenous variable.

Human capital theory

This theory treats migration as an investment into knowledge and skills implies voluntariness of the decision-making process, which is not existent or severely limited for refugees, hence also supporting the exogeneity of refugee flows from the host country conditions.

Historical-Structural Approaches

The family of historical-structural approaches view the control and exploitation of labour as the vital activities for the continuity of the capitalist system. Even though the modern capitalist systems were built on the structural inequality caused by past migration, colonialism, and wars, they could not have blossomed in the lack of large-scale recruitment of labour (de Haas et al., 2020). One of the historical-structural approaches is the dependency and the world systems theory, which, similarly to the neo-classical approaches, concentrate on labour reasons for migration, which are generally not applicable for involuntary displacement, also justifying exogeneity.

Dual Labour Market Theory

The theory is built around the key idea that natives tend to view some jobs as unprestigious or below their skill level with economic development. Albeit, foreigners want to fill this gap as they have a different frame of reference in their host countries. This theory may be stretched to accommodate involuntary migration as refugees have a reference point in their home country, and usually, anything is better than the conditions in the country of origin. They, however, apart from not being able to access the host country's labour market (de Haas et al., 2020), do not make a decision to fill a particular gap in the exist-

ing labour market. There is no informed decision or self-selection at or before the arrival in the host country, as in the case of voluntary labour migration.

A similar argument can be applied when trying to use **New Economics of Labour Migration theory**, which treats a migrant as rational individual weighing costs vs benefits. Hence, further ensuring exogeneity and suitability of this dimension of the refugee event severity measure for the purposes of this dissertation.

Migration Transition theories

These theories concentrate on the relationship between development and a country's immigration plus emigration, predicting a non-linear effect of economic development on both. According to that theory, emigration first grows with development (with an increase in people's capabilities to migrate) and then drops with higher perspectives at home. Thus, immigration generally rises with the possibilities in the country. Applying this theory to the refugee migration flows, one can note that there are several examples of countries generating large refugee (emigrants) flows irrespective of their level of development. For instance, millions of Syrians decided to leave their country since 2015 due to the war, not economic conditions (Cherri et al. (2016), more than \$2500 real GDP per capita) so did various Yugoslavs (more than \$11,500 real GDP per capita in 1987).

Aspirations-Capabilities model

Only this theory generates some space for an involuntary migrant. The theory suggests that the refugees have the capabilities to migrate back to their home country but no aspiration to do so, resulting in involuntary migration or, sometimes, "voluntary immobility". Though useful, the theory does not attempt to discuss if the capabilities to migrate for refugees are based on the economic or social attractiveness of a potential host country, hence also justifying exogeneity of involuntary migration flows from host country conditions.

Migration Systems theory

The Migration Systems approach is based on the fact that migration, by its very nature, is linked to flows of goods, ideas, and money (de Haas et al.,

2020). Furthermore, this link can go both ways and even result in *cumulative causation*: when migration brings changes, and the changes result in further migration.

Similarly, the **Theory of Migration Networks** suggests that established migrants facilitate the migration of both labour *and* forced migrants through establishment of migration networks. The development of such networks and migration systems, in general, is related to the economic and social success of the already migrated, which, in turn, is related to the development of the host country. Such networks always involve intermediaries (sometimes from third countries) impeding (e.g. border control agencies as Frontex) or assisting migration (IOM, UNHCR, smugglers) (de Haas et al. (2020) p. 70). The informal structures that benefit from that view both forced and voluntary migration as income-generating activities (apart from everything else). Thence, further providing support that usage of established networks by asylum seekers does not depend on the economic conditions of the receiving country, even if it attracts new migrants (e.g. asylum-seekers). Instead, it extracts the resources from the population of the origin country.

Furthermore, for the involuntary migrants, the migration networks are helpful for making their way out of a particular situation of danger. However, they are never the reason to migrate in the first place, hence ensuring exogeneity.

To sum up, the above overview of the migration theories suggests that involuntary mass migration as the necessary characteristic of a refugee crisis can be considered at least weakly exogenous or predetermined to the economic, social and political conditions in the recipient country. Therefore, it can be validly employed in econometric analysis using the Local Projection method of estimating impulse response functions.

4.2.2 Exogeneity of Other Characteristics of Refugee Crises

Significant Violence or Human Rights Violations in the Source Country

This characteristic of a refugee crisis is exogenous to the host country's economic activity as there is almost no scenario when, for example, the host country's real GDP per capita or unemployment level can have an impact on

whether or not there is a war or other violence in the source country, especially during the chosen study period.

Similarly, the level of crime or the support of the right-wing political powers in the host country can not be the reason for severe atrocities in the source country. A counterexample may be of the sort when a host country begins a war with the source country because of an economic decline or political decisions. In this case, however, it is challenging to expect mass numbers of refugees to come to find asylum in the country-aggressor, except, probably, the events in Armenia and Azerbaijan or Russia and Ukraine¹. There are political disputes over territories leading asylum-seekers from different territories to seek safety in the opposing territories. Nevertheless, the four countries mentioned above are not included in this study.

Appearance of Large Camps

Large camps for refugees or asylum-seekers where they stay longer than six months are built in the cases when their numbers are especially large, and a country may not possess physically any other way of accommodating such a large influx. Camp accommodation is common to recipient countries irrespective of their economic, criminal or political conditions (for example, the Kakuma camp in developing Kenya², or the camp of Ponte Galeria in the developed Italy³).

Significant Rights, Freedoms Restrictions in Host Country

A host country may sometimes restrict refugees' or asylum seekers' rights or freedoms, such as the freedom of movement or the right to work to mitigate potential negative impacts or even realise conceivable positive implications of a particular refugee allocation. Being undoubtedly connected to the past, any restrictive decision is a measure taken as a reaction to the post-arrival economic, political and social conditions, hence supporting the predeterminedness of this characteristic to a host country's previous conditions. For example, the distribution of refugees to the Kakuma camp in Kenya and restricting their freedom of relocation as explained in Alix-Garcia et al. (2018), or the

¹See UNHCR (1995) or UNHCR (2022a).

²See Alix-Garcia et al. (2018).

³See Open Access Now (2014).

introduction of a quota system for distribution of refugees in Germany and restriction of the labour market entrance in Austria (Konle-Seidl, 2018).

Reports of Underprovision for Refugees and International Relief

These two characteristics of a refugee crisis can be considered weakly exogenous because such reports and actions appear some time after the arrival of refugees. They take time and/or international effort to appear, which is also limited and allocated only in the cases of severe problems associated with the mass arrival of asylum-seekers, requiring cooperation from the hosting nation irrespective of its development. In the same manner, as above, the international actions are targeted mostly at the post-arrival economic impact rather than the economic conditions before the mass influx.

For example, Germany, because of the large number of Bosnian refugees on their territory, participated in the International Organisation for Migration (IOM) programme of monetary assistance to help their voluntary return, despite having no trouble in accommodating the refugees initially as described in Koser (2000). Another example is the case of the reports of underprovision for Afghani refugees, who had been arriving before and during the mass influx of Syrians in 2015. While the Syrian's claims were efficiently handled, Afghans had to spend prolonged time in many facilities lacking personal security (Informationsverbund Asyl und Migration, 2018).

Large Number of IDP in the Source Country

In many cases, internally displaced people (IDP) can be counted as potential asylum-seekers by a host country already accommodating refugees in its territory. However, the depth and the scope of the problem causing the number of IDPs to grow are clearly not influenced by the hosting country's economic, political or social conditions.

Asylum seekers smuggling

Finally, the problem of smuggling involuntary migrants into a hosting society targets the resources of the population in the source country instead of depending on the economy of the host, as shown in the description of the

exogeneity of involuntary migration. Social development, crime levels, or political parties' preference of the host country's nation do not induce the asylum seekers' smuggling across borders. Organised crime tends to establish smuggling routes only when the legal routes of asylum-seeking shrink. It usually happens after a part of the mass influx established its status in the country of destination and because of the actions of the hosting government (Brenner et al., 2019; McAuliffe and Jayasuriya, 2016), making it a demand-driven activity irrespective of the human capital of the recipient nation.

Concluding Remarks on Exogeneity of Refugee Events Severity Measure

To sum up, it is necessary to note that the common theme of the migration theories discussed here is that the labour-related choices are made by a migrant actively. The nature of forced migration is, on the contrary, reactive. It may be seen by some as if involuntary migration is similar to the historical-structural approach. However, it concentrates on making labour choices instead of safety-seeking choices, as it is the case with involuntary migrants.

Moreover, not only the flow of occasional asylum-seekers effect is exogenous to the conditions of the host economy and social or political sphere, but so are the other characteristics of the measure of severity of refugee crises, which are proposed in this dissertation. Therefore, the proposed measure and the calculated index of refugee events for Austria, Germany, Italy, Spain and the UK can be validly used in the empirical estimations of impulse responses of the selected macroeconomic, social and political variables to a refugee crisis.

4.3 Methodology

4.3.1 Local Projections Method Description

For this research, the estimation of Impulse Response Functions (IRF) using the Local Projections (LP) method is chosen to determine the average impact of a refugee crisis. This method, pioneered by Jordà (2005), has recently become very popular in empirical macroeconomics and finance research. For example it is used extensively in the studies aiming at the estimation of the aftermaths of financial and other crises as in Jordà et al. (2011), Funke et al.

(2015), Romer and Romer (2017). The main features of the method, a theoretical example, and a discussion of the method are presented below.

Following Jordà (2005) an IRF can be defined as the difference between two forecasts:

$$IR(t, s, \mathbf{d}_i) = E(\mathbf{y}_{t+s} | \mathbf{v}_t = \mathbf{d}_i; \mathbf{X}_t) - E(\mathbf{y}_{t+s} | \mathbf{v}_t = \mathbf{0}; \mathbf{X}_t) \quad s = 0, 1, 2, \dots \quad (4.1)$$

where the operator $E(\cdot)$ denotes the best, mean squared error predictor; \mathbf{y}_t is an $n \times 1$ vector of chosen variables; $\mathbf{X}_t \equiv (\mathbf{y}_{t-1}, \mathbf{y}_{t-2}, \dots)'$; $\mathbf{0}$ is of dimension $n \times 1$; \mathbf{v}_t is the $n \times 1$ vector of reduced-form disturbances; and D is an $n \times n$ matrix, whose columns \mathbf{d}_i contain the relevant experimental shocks.

Jordà (2005) suggested that the above impulse response function can be estimated by first, projecting \mathbf{y}_{t+s} onto the linear space that is spanned by $(\mathbf{y}_{t-1}, \mathbf{y}_{t-2}, \dots, \mathbf{y}_{t-p})$:

$$\mathbf{y}_{t+s} = \alpha^s + \mathbf{B}_1^{s+1} \mathbf{y}_{t-1} + \mathbf{B}_2^{s+1} \mathbf{y}_{t-2} + \dots + \mathbf{B}_p^{s+1} \mathbf{y}_{t-p} + \mathbf{u}_{t+s}^s \quad s = 0, 1, 2, \dots, h \quad (4.2)$$

where α^s is an $n \times 1$ vector of constants, the \mathbf{B}_i^{s+1} are the matrices of coefficients for each lag i and horizon $s + 1$, \mathbf{u}_{t+s}^s is the error term for the corresponding horizon s estimation.

Then, the collection of h regressions Jordà (2005) called Local Projections and using equation (10.1) the impulse responses from the LPs in equation (10.2) are

$$\hat{IR}(t, s, d_i) = \mathbf{B}_1^s d_i \quad s = 0, 1, 2, \dots, h, \quad (4.3)$$

normalising $B_1^0 = I$. An extensive literature (e.g. Weiss (1991)) had established the consistency and asymptotic normality of the direct multi-step forecasts such as in the equation (10.2).

The advantages of the chosen method are specifically useful for the relationship studied in this dissertation as it allows one to obtain consistent and, under some standard conditions, unbiased estimation of the IRFs without knowledge of the true multivariate dynamic system. The measure of the

refugee event severity is a novelty not used in any model before. Because of that, the consistent estimation of the impact of refugee crises on the host country without knowing the true data generating process is certainly helpful.

In addition, the IRFs (as in equation (4.3)) can be estimated simply by the least squares method, providing appropriate inference (individual or joint) that does not require transformation, decomposition or a numerical technique for the calculation, in contrast to, for example, the Cholesky decomposition required for the estimation of impulse response functions from a vector autoregressive models (VAR models). The standard VAR IRF would also require the assumption of the way the shock disseminates in the estimated system. Therefore, because of their simplicity, the local projections can also be estimated by available standard econometric software.

Finally, despite the errors from t to $t + s$ for each horizon $s = 1, 2, \dots, h$ estimation being $MA(h)$, Jordà (2005) shows that in his examples that they are uncorrelated with the regressors dated $t - 1$ to $t - p$, furthermore, they are not compounded with the forecast horizon as they are in a VAR estimation, which is optimally designed only for one-period ahead forecast.

Apart from the advantages above, the local projections can capture some nonlinearities and asymmetries better than in VAR IRF, as noted by Jorda himself in the original paper and by Brugnolini (2018) or Funke et al. (2015). Finally, the local projections is a non-parametric method without reference to the unknown data generating process. It allows one to estimate impulse responses even if the Wold decomposition does not exist. This property permitted Romer and Romer (2017), Jordà et al. (2016), and Jordà et al. (2013) to estimate the impulse responses for such non-stationary variables as a natural logarithm of GDP.

Furthermore, a recent study by Montiel Olea and Plagborg-Møller (2021) provides explicit justification for employing lag-augmented local projections with heteroscedasticity robust Eicker-White (1980) standard errors to estimate impulse response functions (IRFs). Consistent with this approach, the estimations conducted in this dissertation precisely follow this methodology, effectively addressing potential challenges associated with non-stationary data.

As with any other econometric method, there are a few potential disad-

vantages of LPs. First, if a VAR is a correct specification, local projections will be consistent but inefficient, especially with small samples. Jordà (2005) found that in his experiments, the loss is small. Herbst and Johannsen (2021), though, showed that there could be an extensive (usually negative) bias in the estimators, especially when the sample sizes are similar to those typically used in macroeconomics literature. It is particularly evident in cases lacking control variables.

This dissertation uses annual panel data with time dimension $T = 69$ at the most. Therefore, having noted the potential small sample bias in the empirical results, various specifications with controls are employed.

The conclusions of Herbst and Johannsen (2021) are based on the simple linear DGPs. Since the model for the influence of the refugee crises on the recipient country is unknown but assumed to be linear in parameters and variables for this research, the empirical estimations aimed to mitigate the potential bias. In spite of that, both the conclusions of the authors and of this work are treated with care.

Herbst and Johannsen (2021) also find that not only the IRFs may have a bias, but also the standard errors of the LP estimators can have a significant downward bias, influencing inference. This property is becoming evident specifically in small samples when a researcher uses heteroscedasticity and autocorrelation consistent standard errors (such as Newey and West (1987) estimator or Driscoll and Kraay (1998)) instead of simple heteroscedasticity robust SE such as Eicker-White (White, 1980; Eicker, 1967; Huber, 1967)). Therefore, Herbst and Johannsen (2021) come to a conclusion, similar to the one of Montiel Olea and Plagborg-Møller (2021), that the latter type of standard errors is preferable. To account for this bias, the two types of standard errors of the estimators were chosen for the benchmark specifications - simple and only heteroscedasticity robust.

In addition to the issue identified above, for each horizon $s = 0, 1, 2, \dots, h$ the estimation requires s leads of the dependent variable, each time decreasing the degrees of freedom. In the case of the panel data with k panels, the total number of observations is decreased by k each time, implying that at the final horizon, the number of degrees of freedom has decreased by hk . It can shrink the time dimension of a panel dataset, enlarging the confidence intervals for

distant periods as well as the chances of small sample bias. All empirical results for this work are obtained with this problem in mind. The data for each dependent and control variable is chosen so that the dataset has the longest time dimension and is as balanced as possible.

Notwithstanding a few disadvantages discussed above, the general reliability of local projections is presented in several papers, among them are Brugnolini (2018), Plagborg-Møller and Wolf (2021), and Li et al. (2021). The former article criticises the conclusions of Kilian and Kim (2011) proving that for cases where there is a misspecification in both VAR and LP, the Local Projections are able to outperform the VAR IRFs even with a small sample, common for the present macroeconomics literature. Plagborg-Møller and Wolf (2021) show that under mild conditions, VAR IRFs are the same as LP impulse responses with the appropriate controls. That conclusion is also taken into account when the controls are introduced to the benchmark estimations. Lastly, the main result of Li et al. (2021) is that under misspecification, which may be common under the unknown DGP, LP have a smaller bias but a larger variance on intermediate or long horizons. Thence, LP is the relatively more appropriate method for this work.

4.3.2 Specification for Empirical Estimations

Based on the features of the method and the discussion outlined in the previous subsection, the following specification was chosen for the benchmark estimation of the impulse responses of the chosen macroeconomic, socio-economic and political variables.

$$y_{i,t+j} = a_i^j + \gamma_t^j + \beta^j R_{j,t} + \sum_{s=1}^m \phi_s^j R_{i,t-s} + \sum_{s=1}^p \theta_s^j y_{i,t-s} + e_{i,t+j}^j \quad j = 0, 1, \dots, 10, \quad (4.4)$$

where the i subscripts indicate countries, the t subscripts indicate time, and the j superscripts denote the horizon (years after time t) under consideration. Then $y_{i,t+j}$ is one of the macroeconomic variables chosen for this dissertation, the level of one of the chosen socio-economic indicators, or a political variable for country i at time $t + j$. The natural logarithms are used for the real GDP per capita, Human capital, Level of Household and Government consumption

expenditure as an outcome variable. Other variables are entered in levels. In the local projections method, the dependent variable is commonly called the Response Variable. The α 's are the country fixed effects used to pick up the differences in the normal behaviour of the response variable across countries. In addition to the country fixed effects, the specification contains the time fixed effects (the γ 's) to capture the economic, the socio-economic or the political circumstances shared by all countries in a given year.

The horizon j is chosen to be 10 years based on the evidence that asylum seekers' or refugees' impact and outcomes on the chosen variables can be expected to materialise after a few years since the arrival. The economic and social integration outcomes of refugees in Europe before and after 2014 were studied by UNHCR (2013) and Dumont et al. (2016), respectively. The authors suggest that a large share of refugees stays, for example, in protracted unemployment and even after five years since their arrival, only 25% of them are employed. In the course of the empirical experiments, the horizon $j = 5$, $j = 6$, $j = 8$, and $j = 10$ were estimated. The obtained IRF were equivalent to each other. Therefore the longest horizon $j = 10$ is chosen to be reported in this dissertation as allowing to take into account the protracted integration problems of refugees.

Opening the summation operators, the following sequence of regressions, therefore, is estimated using ordinary least square (OLS) for the sample of five European countries for the period 1951-2019.

$$\begin{aligned}
 y_{i,t} &= a_i^0 + \gamma_t^0 + \beta^0 R_{i,t} + \sum_{s=1}^m \phi_s^0 R_{i,t-s} + \sum_{s=1}^p \theta_s^0 y_{i,t-s} + e_{i,t}^0, \\
 y_{i,t+1} &= a_i^1 + \gamma_t^1 + \beta^1 R_{i,t} + \sum_{s=1}^m \phi_s^1 R_{i,t-s} + \sum_{s=1}^p \theta_s^1 y_{i,t-s} + e_{i,t+1}^1, \\
 &\dots \\
 y_{i,t+10} &= a_i^{10} + \gamma_t^{10} + \beta^{10} R_{i,t} + \sum_{s=1}^m \phi_s^{10} R_{i,t-s} + \sum_{s=1}^p \theta_s^{10} y_{i,t-s} + e_{i,t+10}^{10},
 \end{aligned}$$

Then the IRF are built with LP estimations of the β^j 's and can be represented as the collection of s differences of the two conditional expectations for the 10-year paths ($s = 0, 1, \dots, 10$) as per equation 10.1:

$$IR(t, s, r) = [E(y_{i,t+s}|R_t = r; \mathbf{X}) - E(y_{i,t+s}|R_t = 0; \mathbf{X})], \quad \text{then} \quad (4.5)$$

$$IR(t, s, r) = \beta^s r \quad (4.6)$$

where t represents time, s - horizon, r is the size of the shock to the measure of the refugee event severity, and \mathbf{X} represents the other variables, including the controls. The β 's are obtained in the estimations above, and their standard errors are used to build a 95% confidence interval around the average response of a dependent variable. The sequence of these response coefficients for successive horizons is an impulse response function of the dependent variable to innovation in the measure of refugee event severity of r . By default $r = 1$, so to capture the effect of an event counted as a refugee crisis, the r is set to 5. To do so, the variable of the refugee event severity measure is divided by 5. This accommodates for the easier interpretation of the impulse response functions. In this way IRF shows the reaction of a chosen economic, socio-economic or political indicators to a relatively large shock in the refugee event severity.

At this point, there is a question of how to choose the number of lags m and p in equation 4.4. Jordà (2005) suggests that they can be chosen by the information criteria but do not need to be common to each horizon s . Both Akaike and the Bayesian information criteria (AIC and BIC) were tested for the estimations in this dissertation. As presented in Greene (2012), the latter is penalising more for the additional regressors included, and the AIC tend to overfit the model. For the majority of the dependent variables and specifications used in this dissertation, BIC identified a more parsimonious model as the preferable one. Therefore, it is used for obtaining a benchmark specification for each dependent variable.

In addition to that, both criteria suggest using a different number of lags for m and p . This novelty in the local projections approach allows one to choose the specification that better suits the data. It should mitigate the potential misspecification, excluding, nonetheless, the possibility of comparing the results with the VAR IRFs.

According to Brugnolini (2018), fixing the number of lags to be the same for each horizon is superior to choosing it at each j . Thus, for this dissertation,

the specification decision is established in the following way:

1. The m_{max} and p_{max} are set. Because of the sample size, they are both set at the $Ceilling[T_{max}/10] = 7$ for the benchmark estimations. However, the higher maximums were also tested, for example, 10;
2. For each $j = 0, 1, 2, \dots, 10$ estimate equation 4.4 with the first combination of $m = 0$ and $p = 0$;
3. Sum up the values for the selected information criterion for each j
4. Repeat steps 2) and 3) for other combinations of m and p , where $m = 0, 1, \dots, m_{max}$ and $p = 0, 1, \dots, p_{max}$;
5. Compare the resulting sums for all combinations between each other and choose the combination with the lowest sum of information criteria.

This procedure is also an improvement from choosing the model specification based on one value of an information criterion at one particular horizon, for example, at horizon 0 or 1. Therefore, the model specification chosen for estimation is overall better for all horizons used in this work. Expectedly, however, based on the chosen specification, the sample shrinks correspondingly, while the sample start and end dates vary depending on the horizon being estimated.

To mitigate an omitted variable and the small sample biases shown by Herbst and Johansen (2021) and other researchers discussed above, the specifications with a set of control variables are also used.

4.3.3 Methodology Summary

To sum up, Chapter 5 further presents the results of the estimation of impulse response functions using the Local Projections method. To take into account the latest research on the method, the specifications for the estimations are chosen using the Bayesian Information Criterion. The BIC is applied innovatively, incorporating the value of the BIC for each of the horizons for a specification tested. The number of horizons is chosen to be ten, considering the facts about the refugees' outcomes found for the European countries as described in the previous articles on the topic.

All estimations are done using the country fixed effects and time fixed effects for both benchmark and the alternative classifications. In addition, bearing in mind the latest research on Local Projections suggesting that there can be the small sample bias present in the estimations, the specifications with the control variables are used for comparisons and robustness checks. Finally, the estimations are done with two types of standard errors: simple and heteroscedasticity-robust, as the heteroscedasticity and autocorrelation standard errors tend to have a negative bias in the small sample Local Projections impulse responses estimations.

Chapter 5

Empirical Results

5.1 Empirical Estimations.

Benchmark classification

The aim of this empirical section is to take a preliminary look at how refugee crises—as measured by the measure or refugee events severity constructed earlier—affects the macroeconomy and other socio-political variables. Although, some behavioural interpretation is offered on these impulse response functions we emphasise that this interpretation is a tentative at this stage.

5.1.1 Impulse Responses of Economic Variables

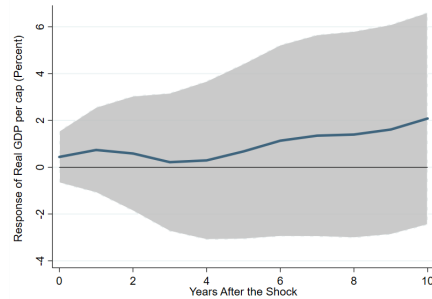
Real GDP per capita. Figure 5.1.1.1 shows the graphs of impulse response functions for the real GDP per capita estimated for the whole sample with the 95-per cent confidence interval bands based on the standard errors. Panels A and B demonstrate the results for the specifications with country and time fixed effects, without and with heteroscedasticity robust standard errors. The BIC chose the specification with zero lags of the shock variable and seven lags of the response variable (0,7). Panels C and D show the same results without time fixed effects but with the set of control variables, where the best specification is (0,2) (as presented at the bottom of Figure 5.1.1.1).

Both Panels A and B demonstrate that the response estimations with time FE are statistically insignificant at all ten horizons irrespective of the type of standard error choice. Nevertheless, there seems to be a steady positive reaction to a refugee crisis (when the measure of refugee event severity reaches 5).

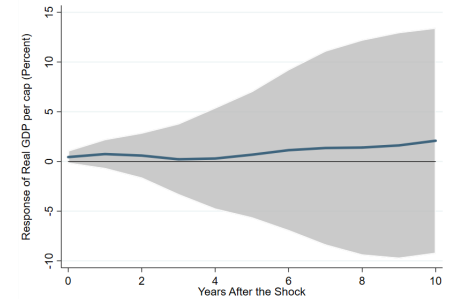
One peculiarity to note here is that the heteroscedasticity standard errors are much larger than the simple ones.

Figure 5.1.1.1: The Response of Real GDP Per Cap to a Refugee Crisis, Full Sample, OLS

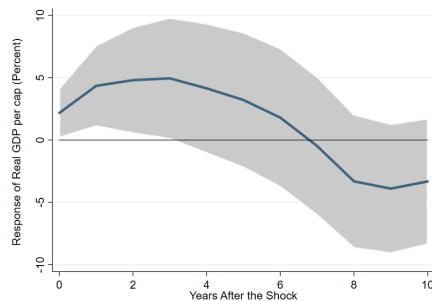
Panel A. Real GDP per capita, Country and Time FE



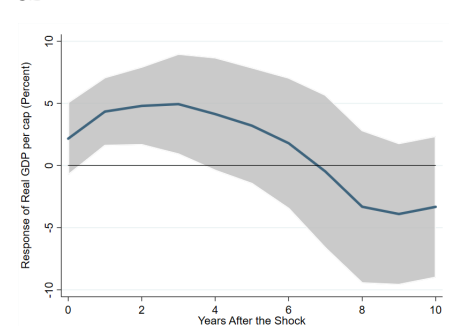
Panel B. Real GDP per capita, Country and Time FE, Heteroscedasticity Robust SE



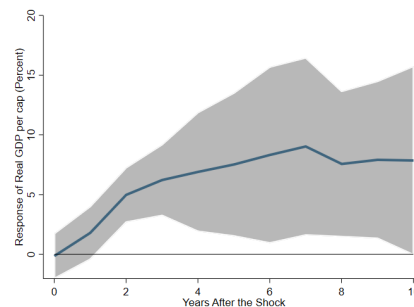
Panel C. Real GDP per capita, Country FE, Control Variables



Panel D. Real GDP per capita, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Real GDP per capita, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Real GDP Per Capita* to the impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,2) for Panels C and D, and (7,7) for Panel E where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

In contrast, the estimations with the control variables (*Panels C and D*) exhibit a rising and then falling behaviour, indicating that the first specification

estimation (Panels A and B) has a potential bias. From Panel C, it is evident that the immediate reaction of the GDP per capita is an increase by 2.167 per cent ($t=1.805^1$) continued until the year six after the shock, reaching the peak at 4.946 per cent in the year 3. However, only the year 1 response is statistically different from zero at 5% confidence level ($\beta_1 = 4.347$ and $t_1 = 1.968$), while years 0, 2, and 3 are significant at 10% level only ($\beta_2 = 4.802$ and $t_2 = 2.589$, $\beta_3 = 4.946$ and $t_3 = 2.951$). The estimated positive aftermath disappears after year six and drops into the negative zone, although none of the coefficients is statistically significant even at 10%.

The different subsets of control variables were tested, providing qualitatively equivalent results. The estimation with the broadest scope of economic, socio-economic, and political controls is reported in Figure (5.1.1.1). Similarly, the largest subset of control variables is used for each of the IRF estimations presented further in this chapter. The list of controls, their descriptive statistics are presented in the Appendix (B).

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-Huber-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts an increase in real GDP per capita, which suggests that the results are generally consistent across different specifications. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

To sum up, the estimated average behaviour of the real GDP per capita seems to correspond to the initial increase of the GDP because of the necessity for a host government to take care of the mass influx (provide health, housing, processing and integration services). It is usually paid by the hosting govern-

¹ t stands for the absolute value of t -statistic.

ment in the developed nations, driving up the real government consumption and, consequently, the real GDP per capita. As can be seen from the estimations, this effect tapers off with time because of integration, resettlement, or repatriation of the asylum seekers and refugees.

Real Government Consumption. The responses of real government consumption on Panels A and B (Figure 5.1.1.2), despite being statistically insignificant, are similar in shape to the responses of the real GDP per capita shown above. It supports the interpretation that the GDP impulses may be driven by the increases in real government consumption (as argued in Tan et al. (2016)).

Panels C and D show the different paths of the responses. The reactions of the government consumption to a refugee crisis corrected for a potential bias are expected to grow over the chosen horizon, reaching almost 15% by the year 10. Such high numbers should be treated with care, especially since the impulse responses become statistically insignificant after correcting for heteroscedasticity.

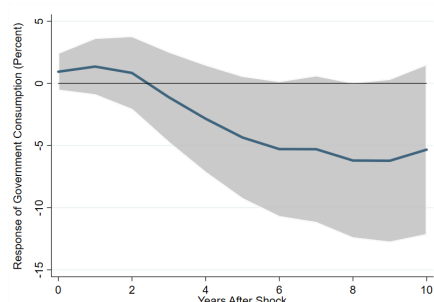
The estimated effect and its interrelation with the GDP per capita supports the arguments presented in Aiyar et al. (2016). The authors show that the 2015 refugee events in Europe trigger an increase in government expenditure that should lead to a "modest increase" in a host country's GDP.

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-Huber-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

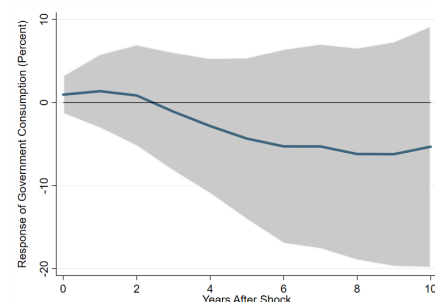
Interestingly, the estimation in Panel E predicts an increase in real government consumption, which suggests that the results are generally consistent across different specifications. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

Figure 5.1.1.2: The Response of Real Government Consumption to a Refugee Crisis, Full Sample, OLS

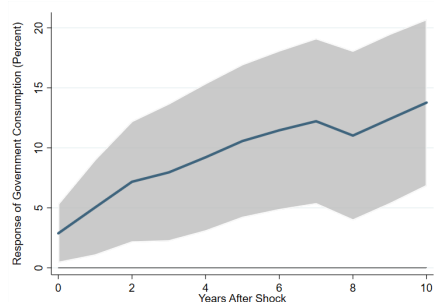
Panel A. Real Government Consumption, Country and Time FE



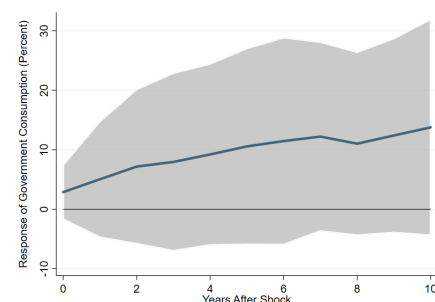
Panel B. Real Government Consumption, Country and Time FE, Heteroscedasticity Robust SE



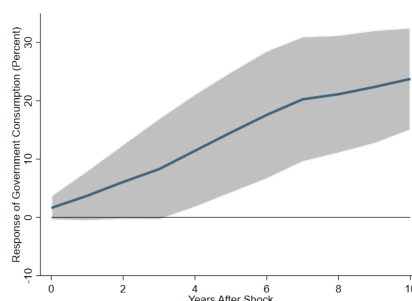
Panel C. Real Government Consumption, Country FE, Control Variables



Panel D. Real Government Consumption, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Real Government Consumption, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Real Government Consumption* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,1) for Panels C and D, and (0,7) for Panel E, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

As with the real GDP per capita, the list of control variables and the descriptive statistics table are presented in the Appendix (B).

Consumer Prices Inflation. The graph of the average response of the in-

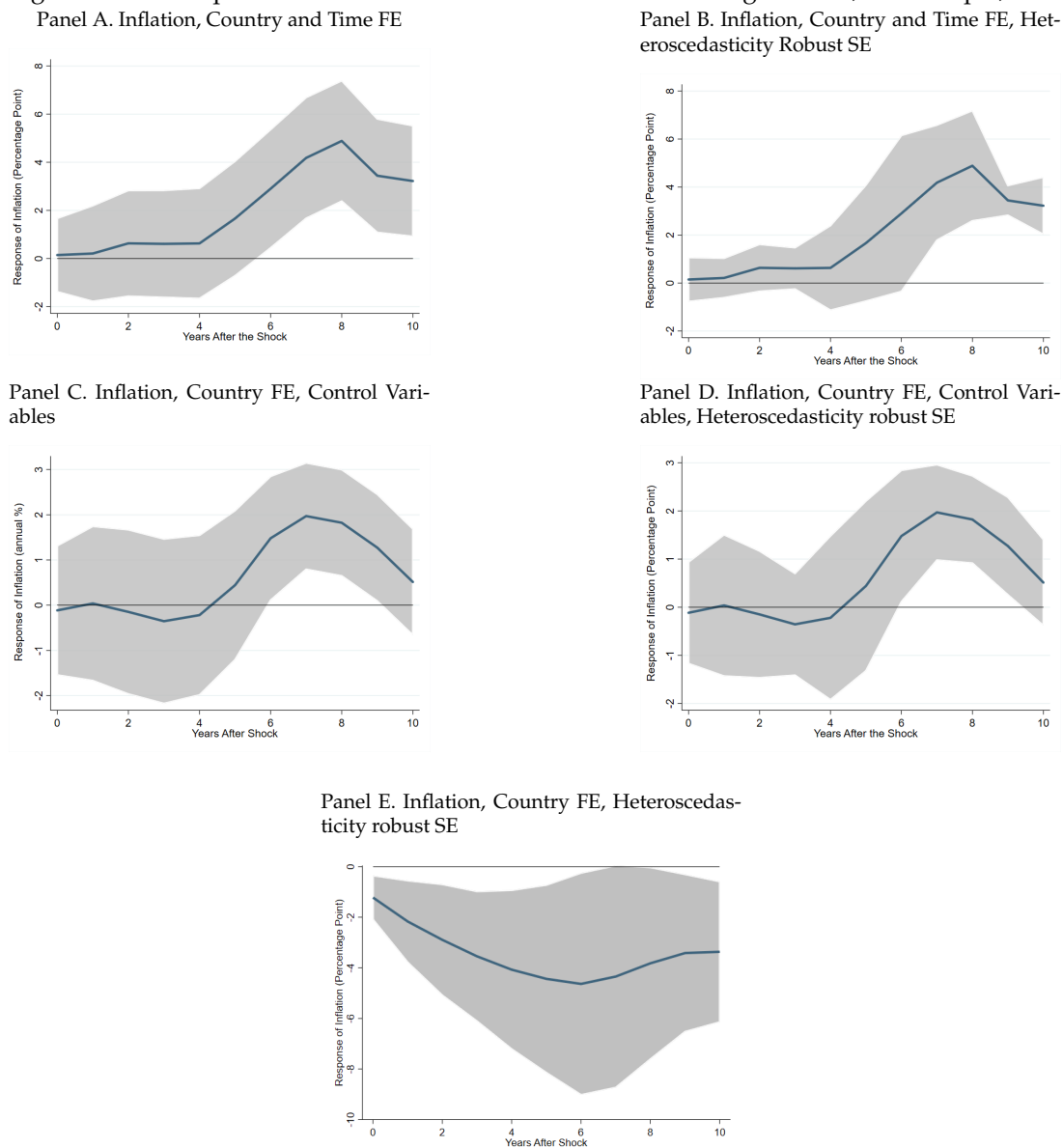
flation to a refugee crisis in the first panel exhibits a small statistically and economically insignificant growth (between approximately 0.15 and 0.63 percentage points) in the first five years after the shock. The increase becomes statistically significant at the 10% level starting from year six. Thus, at year 6, inflation is estimated to grow by 1.664 percentage points ($t_6 = 1.939$). The response in the years 7 and 8 is reaching almost five percentage points (4.183 and 4.887 respectively). The t-statistics for the corresponding coefficients are $t_7 = 2.738$ and $t_8 = 3.209$ showing significance even at 1% confidence level. The impulse response functions in Panels A finish with the years 9 and 10 being statistically significant at 5% level: $t_9 = 2.399$ and $t_{10} = 2.406$ attaining 3.443 and 3.221 percentage points increases correspondingly.

Panel B demonstrates that the robust standard errors do not dramatically change the inference conclusions from Panel A. Nonetheless, because of the increased confidence interval, the year 6 is no longer significant at 10% level with $t_6 = 1.467$ and the years 7-10 gained significance with the corresponding t-statistics being $t_7 = 2.865$, $t_8 = 3.496$, $t_9 = 9.084$, $t_{10} = 4.443$, becoming statistically different from zero even at 0.1% level.

Panel C shows the IRF estimation for the specification with the inclusion of the control variables, which are presented in the Appendix (B). Overall, the average impulse response path is similar to the responses in Panels A and B. However, the initial five periods (years 0-4) are predicted to drop a bit below zero. Nevertheless, the years 0-5 are statistically insignificant even at the 10% level. Similarly to Panel A, one can notice that the $\beta_6 = 1.480$ with $t_6 = 1.774$ is significant at the 10% level. The years 7 and 8 are positive but smaller in absolute value than the corresponding predictions from Panels A and B: $\beta_7 = 1.971$ and $t_7 = 2.753$, $\beta_8 = 1.823$ and $t_8 = 2.550$. Based on the t-statistics, the responses in the years 7 and 8 are statistically significant at 1% and 5%, respectively. In the year nine after a refugee crisis, inflation is predicted to be on average 1.272 percentage points higher than before a refugee crisis, although it is statistically different from zero only at the 10% level. Finally, the period ten after the shock is still positive but not statistically significant at any conventional confidence level.

The impulse responses observed in Panel D are the same as in Panel C (expectedly), but the confidence intervals changed with the introduction of

Figure 5.1.1.3: Response of Inflation of Consumer Prices to a Refugee Crisis, Full Sample, OLS



Notes: The panels show the impulse response functions for *Inflation of Consumer Prices* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (4,7) for Panels A and B, (0,1) for Panels C and D, and (0,7) for Panel E where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

the heteroscedasticity robust standard errors, widening at the beginning of the 10-year horizon and narrowing closer to the end. Hence, all the years that were insignificant stayed insignificant, the year 6 remained significant only at 10%, and the year 7 - at 1%, while the years 8 and 9 acquired statistical

significance up to 0.01% and 5% respectively ($t_8 = 3.303$, $t_9 = 2.06$).

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-Huber-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts a decrease in consumer prices inflation, which suggests that these results is not consistent across different specifications. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

Consumer prices are commonly considered a candidate to be influenced by the arrival of any immigrants. In contrast to the direct demand increasing effect of voluntary migrants, the mass refugees' arrival should increase the aggregate demand also indirectly. The direct effect comes from the refugees' necessity to consume various goods and services. Such impact can be exceptionally high as the involuntary migrants need to satisfy the whole spectre of their needs at once: from housing and medical requirements to everyday consumption of other goods and services (food, hygiene, phone, internet and transportation). The indirect impact comes from the government consumption spending dedicated to refugees' emergency provision, thus, driving the inflation upwards.

The IRF estimations show that the overall influence of a severe refugee event on inflation has a significant lag. It is probably related to the fact that the indirect effect dominates the direct one in the first few years. Recognised refugees and asylum-seekers initially rely on government benefits and support, which, in the majority of cases, can be in the form of reallocation of the pre-budgeted resources. Therefore, such reallocation does not have a significant positive effect on inflation or inflation expectations. However, the effect of the crisis becomes significant with the refugees' gradual integration into

the welcoming economy directly raising the demand. From the estimations, it seems that the direct impact on the aggregate demand plays a more economically and statistically significant role.

The lag for the above-described effect seems to be around six years after a refugee crisis. It can be associated not only with the end of governmental benefits but also with the slow entrance of refugees and asylum-seekers into the labour market of the recipient country. Evidence of inability or troubles in employment finding by refugees was found in the previous research by, for example, UNHCR (2013) or Dumont et al. (2016)). The later fading of this effect can be explained by the eventual integration of refugees into the receiving economy and society and engagement in the economic activities, which boosts not only the demand but also the supply of goods and services (see Dumont et al. (2016), UNHCR (2013)). On the other hand, refugees can eventually repatriate (voluntary or involuntary) or resettle in third countries, thus, also removing the pressure on the aggregate demand.

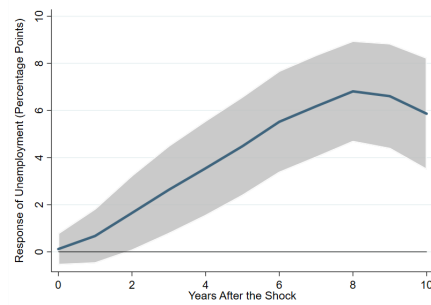
To sum up, the timing differences between losing benefits and integration or leaving are causing the uneven in time and scale influence of refugee crises on the supply and demand in the host economy. Therefore it can lead to the estimated shapes of the average impulse responses of the annual consumer prices inflation to a refugee crisis.

Unemployment. Figure (C.3) shows the impulse responses estimations for the level of unemployment. For the first two panels, the IRF shows that the unemployment levels are expected to grow significantly after a refugee crisis, with only years 0 to 1 being statistically insignificant in Panel A. The peak rise for the predicted response is at year 8, with an average response of unemployment reaching 6.813 percentage points ($t_8 = 5.233$, significant at 0.1% confidence level). The heteroscedasticity robust SE analogue of the first estimation exhibits a very significant increase in the two-standard-error bands from period seven after the crisis so that β coefficients for years 7-10 lost some significance. Thus, β_7 is significant at 1% now, β_8 - on 5%, while years 9 and 10 are significant only at 10%.

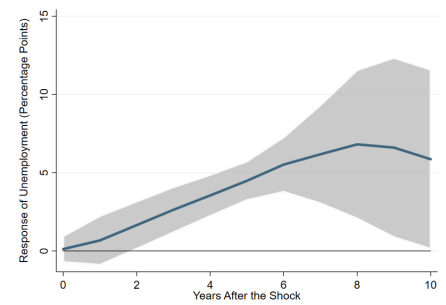
Panels A and B generally support the inference made for the estimations of the inflation IRF to a refugee crisis. There is a highly statistically significant positive effect of the crisis on unemployment. The effect is estimated to have

Figure 5.1.1.4: Response of Unemployment to a Refugee Crisis, Full Sample, OLS

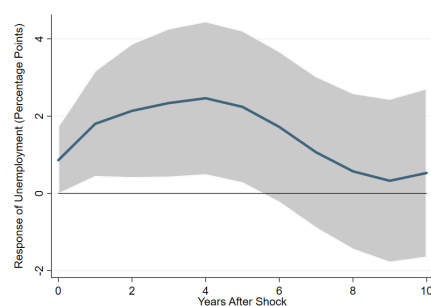
Panel A. Unemployment, Country and Time FE



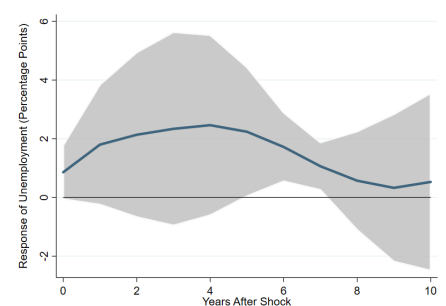
Panel B. Unemployment, Country and Time FE, Heteroscedasticity Robust SE



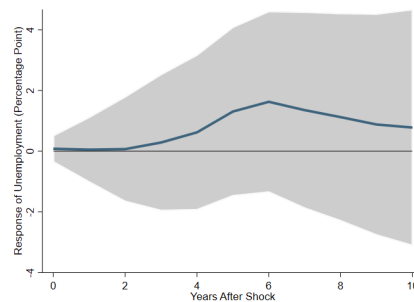
Panel C. Unemployment, Country FE, Control Variables



Panel D. Unemployment, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Unemployment, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Unemployment* as a percentage of total labour force to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,7) for Panels C and D, and (0,7) for Panel E where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

a concave shape, decreasing after the peak in the year 8 (around 7 percentage points). For the heteroscedasticity robust SE estimation (Panel B), the confidence interval suggests that the decrease can be relatively quick, making the year 10 β_{10} almost statistically insignificant.

In contrast to the inflation IRFs above, the Panel C and D show that after including the control variables, the average response of unemployment to a refugee crisis changes dramatically, indicating a potential bias in the estimations without the controls². At the same time, the inference based on the inflation IRF is still supported.

Hence, Panel C shows that the impulse responses become smaller, especially at longer horizons. The IRF reaches its peak in the year four after a refugee crisis (2.463 percentage points). Furthermore, the graphs from Panels C and D converge close to zero after year 8. Panel C suggests that the reactions of unemployment to refugee crises in years 1 to 4 are statistically significant at 5% while all other periods are statistically insignificant. However, after correcting for potential heteroscedasticity, the confidence intervals changed their shape to a "butterfly" (see Panel D) with wide insignificant intervals for the years 0 to 4 and 8 to 10. The significant years are 5-7: $\beta_5 = 2.50$ with $t_5 = 1.67$ (only at 10%), while $\beta_6 = 1.720$ ($t_6 = 2.412$) and $\beta_7 = 1.063$ ($t_7 = 2.156$) are significant at 5%, indicating rather small but economically and statistically important positive effect on unemployment. In addition to that, it rather quickly decreases with time, correlating with the fact that refugees eventually find a job and integrate or leave the hosting country.

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts a similar wave-like behaviour of the unemployment, which suggests that these results are generally consistent across different specifications. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

²The list of controls and their descriptive statistics are presented in Appendix (B)

To sum up, the responses predicting a protracted (several years) positive *ceteris paribus* unemployment reaction on the macro level correspond to the facts found in Dumont et al. (2016), UNHCR (2013) and many others who studied the labour outcomes of refugees on the micro level. It was usually done through surveys and other qualitative research methods for a particular group of refugees in a particular refugee event in a particular country. In contrast to them, this dissertation uses macroeconomic data from 5 countries and 69 years. The estimated IRFs are statistically and economically significant, corresponding to the timelines emphasised in the previous studies and further supporting the previous findings.

The aforementioned finding represents an average response observed across the selected countries, with slight variations expected at the individual country level. Additionally, referring to Panel D of Figure 5.1.1.4, it is evident that the response of unemployment is estimated to occur with a delay of several years. This delay aligns with the common challenges faced by many asylum seekers in accessing legal employment opportunities and the time it takes for refugees to secure jobs, as highlighted in previous studies (Dumont et al., 2016; UNHCR, 2013).

Finally, it is worth noting that Germany's data availability is limited for the unemployment variable. Therefore, in addition to the estimations presented here, the IRF is calculated for the sample excluding Germany. In this way, the robustness of the results can be tested, and the precision can be improved. One can find the IRF for the data without Germany in Appendix C. The responses follow almost exactly the same paths as the responses with Germany qualitatively and even quantitatively. The precision of the estimates seems to improve, although not for the specification with the control variables and heteroscedasticity robust SE.

Shadow Economy. This variable is borrowed from Teorell et al. (2022) which used the method by Elgin and Oztunali (2012) to update their data on estimates of the size of the shadow economy in a country using a two-sector dynamic general equilibrium model beyond the original period 1950-2009. In their work, Elgin and Oztunali (2012) used the definitions of shadow economy given by Hart (2008), Ihrig and Moe (2004), and many others in their model and its calibration. For example, Hart (2008) argues that it is a set of economic

activities that takes place outside the framework of bureaucratic, public and private establishments. In contrast, Ihrig and Moe (2004) suggest calling it a sector of the economy producing legal goods but not complying with government regulations.

The paper by Elgin and Oztunali (2012) has gained significant attention and has been widely cited in the literature. However, it is important to note that this paper was not peer-reviewed, which may raise questions about the quality and reliability of its findings. There is an available dataset by Medina and Schneider (2018) that could serve as a potential counterpart. However, estimating the size of the shadow economy is a challenging task, as it inherently involves measuring something that seeks to remain hidden. Therefore, it is difficult to establish the estimates of shadow economy with absolute certainty.

Nevertheless, numerous studies published in peer-reviewed journals have utilised the data from Elgin and Oztunali (2012) and Teorell et al. (2022). These studies, including works by Wu and Schneider (2019); Bittencourt et al. (2014); Elgin and Birinci (2016); Berdiev and Saunoris (2016); Owolabi et al. (2022), among many others, have relied on the shadow economy data for their analyses. Given the substantial body of literature that has used these data sources, this dissertation also utilises the shadow economy data from Elgin and Oztunali (2012) and Teorell et al. (2022). However, it is worth noting that the data by Medina and Schneider (2018) could be explored in future research to further investigate the relationship between refugee crises and the shadow economy.

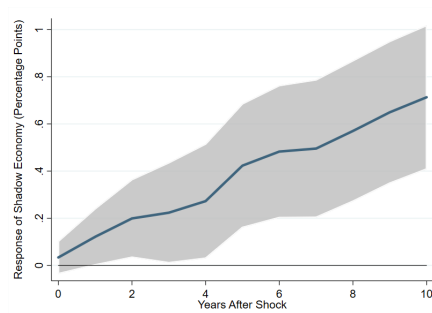
Figure (5.1.1.5) shows the estimations of the impulse responses of the shadow economy to a refugee crisis. The first two panels suggest that one can expect the shadow economy to grow for all ten years after the shock. Furthermore, only the year 0 in Panel A is not statistically significant even at the 10% level. After correcting for heteroscedasticity, the confidence interval widens for later periods under concern and narrows for the earlier. Nevertheless, those significant coefficients stayed significant, and those that were insignificant kept being the same.

Panels C and D show that after correcting for potential bias³ in the estimations of Panels A and B, the average responses of the shadow economy to a

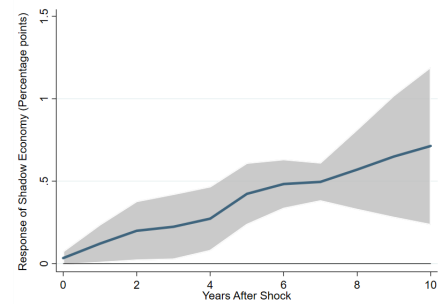
³The list of controls and their descriptive statistics are presented in Appendix (B)

Figure 5.1.1.5: Response of Shadow Economy as % of GDP to a Refugee Crisis, Full Sample, OLS

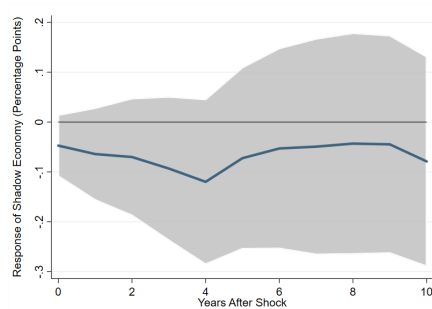
Panel A. Shadow Economy, Country and Time FE



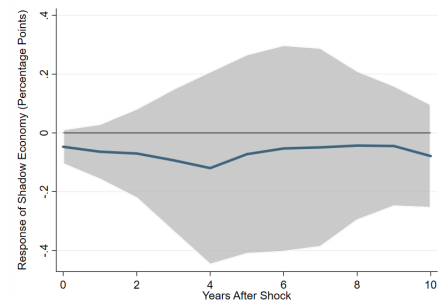
Panel B. Shadow Economy, Country and Time FE, Heteroscedasticity Robust SE



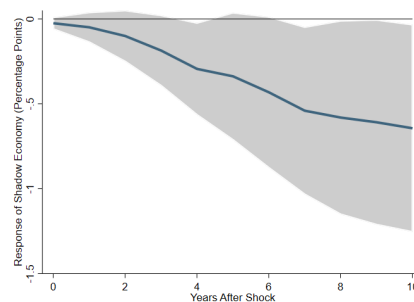
Panel C. Shadow Economy, Country FE, Control Variables



Panel D. Shadow Economy, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Shadow Economy, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Shadow Economy* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,1) for Panels C and D, and (0,7) for Panel E, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

refugee crisis become negative from year 0 onward. However, the β 's become statistically insignificant, bringing one to the conclusion that the impact of a refugee crisis tends to be, on average, statistically insignificant on the shadow economy of developed European countries, if not negative. This finding con-

tradicts the general belief that the long time that it takes to obtain legal status or find employment drives asylum-seekers and refugees to the shadow economy, therefore increasing it, as presented, for example, in Bourne (2022) or Brochmann (2020).

The insignificant result, nonetheless, does not explain whether the refugees and asylum seekers are simply not participating in the shadow economy or crowd out those already involved in the shadow economy by the time of their arrival. That requires further investigation.

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts a decrease in a size of the shadow economy, which suggests that these results are generally consistent across different specifications. Furthermore, the estimation in Panel E even has two years predicted to be negative and statistically significant. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

5.1.2 Impulse Responses of Socio-economic Variables

Human Capital. Studying the reactions of the average human capital in the recipient country to a refugee crisis is necessary to check the common belief that refugees decrease the overall human capital in the country (for example, Baez (2011), Green and Iversen (2022), Borsch et al. (2019)). Such a conclusion is understandable for a developed European country, where according to the UNHCR statistics (UNHCR, 2022b), or Connor (2016), the asylum seekers are mostly young, relatively undereducated males. Moreover, it is worth considering that even highly developed European nations with robust education systems can experience refugee crises characterized by mass influxes of

people. When these individuals are granted refugee status and remain in the host country for extended periods, often accompanied by their families, there is a potential impact on the average years of education over a certain time frame. Consequently, examining whether this phenomenon has occurred in the selected countries of interest holds academic significance.

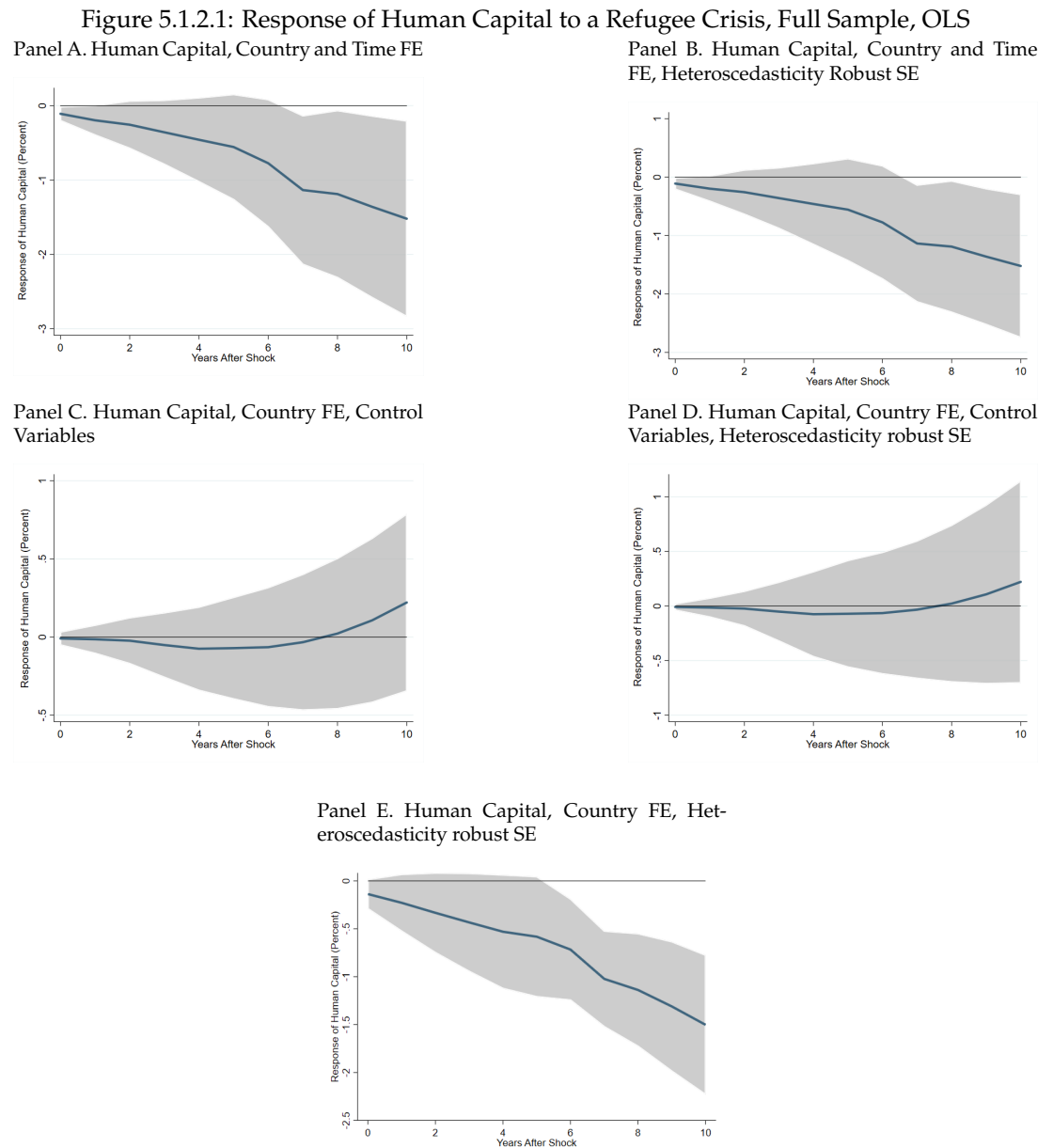
The impulse responses estimated with the specification, which included time fixed effects (Panel A and B), show an overall downward trend. The statistically significant coefficients are closer to the end of the 10-year period. The average reaction of human capital in the recipient country goes down by more than 1.52%. However, after including the control variables⁴, it seems that the potential negative bias is removed. The response to a refugee crisis changes to a slightly negative until year eight and then becomes positive, although not statistically significant throughout the whole 10-year horizon.

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts a decrease in the human capital of the refugee hosting country, which suggests that these results are generally consistent across the specifications with no control variables. Furthermore, the estimation in Panel E even shows earlier and more proliferated significant negative impact. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

Therefore, the estimations suggest against the common belief that refugees significantly decrease the average human capital, especially in developed countries. As described in Haan et al. (2017), refugees want to integrate into the host society properly, aiming to build their human capital. Furthermore, Mot-

⁴The list of controls and their descriptive statistics are presented in Appendix (B)



Notes: The panels show the impulse response functions for *Human Capital* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

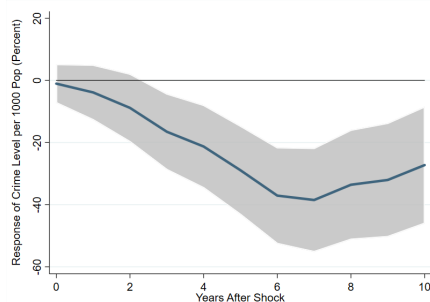
BIC chose the specification (7,2) for Panels A and B, (0,2) for Panels C and D, and (7,2) where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

taghi (2018) argues that the investments in refugees' human capital are a public good, allowing to obtain the better economic outcomes for the natives as well.

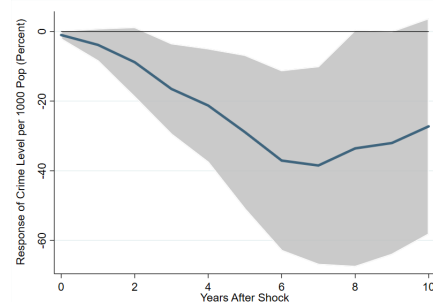
Crime per thousand people.

Figure 5.1.2.2: Response of the Crime Level to a Refugee Crisis, Full Sample, OLS

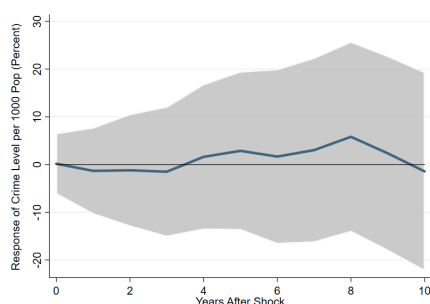
Panel A. Crime Level Per 1000 People, Country and Time FE



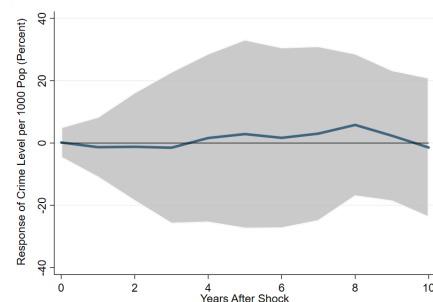
Panel B. Crime Level Per 1000 People, Country and Time FE, Heteroscedasticity Robust SE



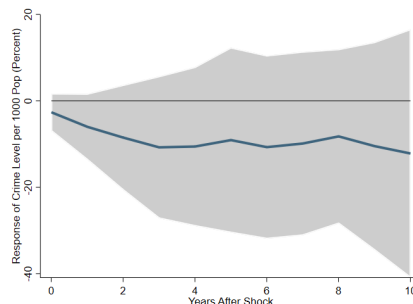
Panel C. Crime Level Per 1000 People, Country FE, Control Variables



Panel D. Crime Level Per 1000 People, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Crime Level Per 1000 People, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Crime Level Per 1000 People* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,7) for Panels C and D, (0,7) for Panel E, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

There were several news reports arguing that asylum seekers and refugees participate in and provoke crimes in the recipient country (for example, BBC (2018), Mail Online (2016)). The results presented in Figure (5.1.2.2) suggest the opposite. The specification without the control variables shows a signif-

icant negative reaction of the overall crime level to a refugee crisis. The impulse responses in Panels A and B predict a very significant negative drop in the number of registered crimes per 1000 people in the host country, reaching even 40% at year 6. It is worth noting that, with the heteroscedasticity robust standard errors, the precision of estimates is decreasing significantly. In addition to that, a large negative result may indicate a potential bias in estimates. That is supported by the estimations with the control variables⁵.

After controlling for human capital, population density and the lag of a share of males in the population⁶, the IRFs become much smaller in absolute value and statistically insignificant over the whole 10-year horizon regardless of the standard error estimation choice. Therefore, a more reliable specification estimation suggests against the conclusions from the news publications but instead supports the findings from the academic literature, for instance, Kayaoglu (2022), or Feltes et al. (2018), who, using various methods, show that the number of crimes is rather declining after the refugees' arrival. Kayaoglu (2022) conjectures that the higher expected costs of committing a crime (e.g. deportation) may play a significant role in that.

Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts a decrease in the crime level per 1000 people of the refugee hosting country but not statistically significant, which suggests that these results are generally consistent across the specifications, being somewhere in between Panels A and B and Panels C and D. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

It is worth noting that the IRF for crime per thousand people (per cent) to

⁵The list of controls and their descriptive statistics are presented in Appendix (B.)

⁶This list of controls and their descriptive statistics are presented in Appendix (B)

a shock of 5 of the new measure of a refugee event severity (benchmark classification) reported here are for all countries included in the research. Based on the table of descriptive statistics for the response variables, one can note that Spain has the smallest availability of crime data, which may decrease the precision of estimates. Therefore, Appendix C shows the impulse responses without Spain.

Overall, the differences between the estimations with the time fixed effects and with the control variables for the sample without Spain are similar to those reported here. Furthermore, the impulses are qualitatively the same, indicating that, on average, there is no statistically significant impact of a refugee crisis after taking into account the control variables reported in Appendix (B) and correcting the standard errors for heteroscedasticity.

5.1.3 Political Indicator

Votes for a right-wing party. It is commonly believed that the refugee events and the media coverage of them can shape the public opinion of the recipient nation about such unexpected immigrants. The beliefs and attitudes (usually negative) of people are then transformed into votes on referendums changing the paths and destinies of countries, for example, as it happened in the UK (Outhwaite and Menjívar, 2019; Hall, 2016; Stewart and Mason, 2016). The negative attitudes to asylum seekers and refugees can also transform into votes for right-wing parties in the next elections as presented in Karacuka (2021) and Sekeris and Vasilakis (2016).

The variable for votes for a right-wing political party as a percentage of total votes is taken from the dataset by Swank (2015) (reported in Teorell et al. (2022)). The dataset captures characteristics of political parties in many developed countries for the period from 1950 to 2015. As one can see in the descriptive statistics table, Spain has minimal data availability among the five countries, similarly to its crime level variable availability. Therefore, apart from the estimations for the entire sample reported here, there are the estimations of IRF without Spain presented in Appendix C, aiming to increase precision and check their robustness to sample selection. Overall, both IRFs exhibited qualitatively and quantitatively almost equivalent responses to a refugee crisis.

From Figure (5.1.3.1), it is evident that the impulse responses for the votes to a right-wing political party demonstrate a pattern similar to the estimations of other variables above. Thus, the IRF with time fixed effects seems to exhibit a biased behaviour that changes dramatically after adding the control variables ⁷.

Therefore, Panels A and B show negative responses to a refugee crisis for some years. Panel A has the years 2 and 4-5 being statistically significant. However, Panel C shows a significant positive impact of a severe refugee event with measure five (benchmark classification) proposed in this dissertation. Hence, the inclusion of the control variables seems to mitigate the potential bias in estimates. The peak of the reaction is reached in year 3, with $\beta_3 = 10.4$ being statistically significant even at the 1% level. It implies that in just a few years after the minor refugee crisis, the recipient nation gives, on average, about ten percentage points more in votes to a right-wing political party. Nevertheless, after correcting for potential heteroscedasticity, the significance of the responses almost disappears, except in the year five after the shock, where the $\beta_5 = 9.461$ is statistically significant at 10% confidence level with $t_5 = 1.716$.

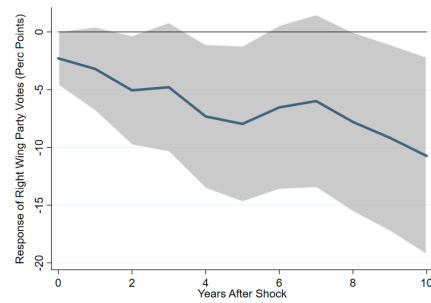
Panel E in the analysis demonstrates the estimation with country fixed effects (FE) only, along with heteroscedasticity robust standard errors (SE) using the Eicker-White SE, following the approach by Montiel Olea and Plagborg-Møller (2021). This specification is similar to Panel D, but without any control variables. The purpose of this estimation is to provide robustness and consistency checks.

Interestingly, the estimation in Panel E predicts an increase in the votes to a right-wing party of the refugee hosting country but not statistically significant, which suggests that these results are generally consistent across the specifications, being very similar to Panel D but less precisely estimated. However, it is important to note that the estimation in Panel E is likely to suffer from omitted variable bias since there are no control variables included. Due to this limitation, the estimation in Panel D with the control variables remains the preferred specification, as it accounts for potential confounding factors and provides a more comprehensive analysis of the relationship.

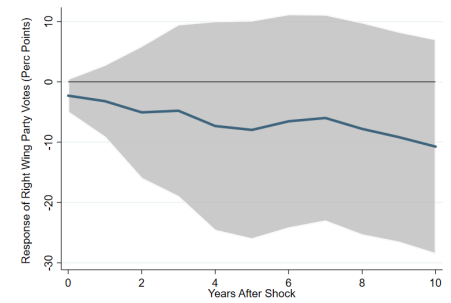
⁷The list of controls and their descriptive statistics are presented in Appendix (B.)

Figure 5.1.3.1: Response of Votes to a Right-Wing Party to a Refugee Crisis, Full Sample, OLS

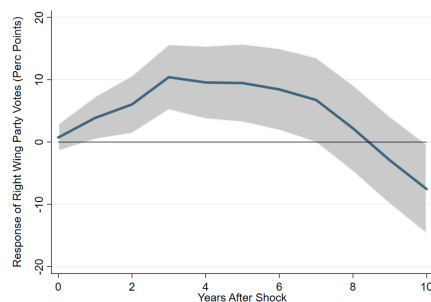
Panel A. Votes to a Right-Wing Party, Country and Time FE



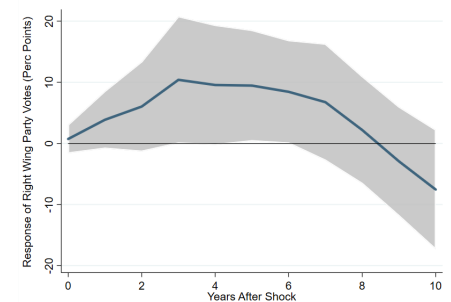
Panel B. Votes to a Right-Wing Party, Country and Time FE, Heteroscedasticity Robust SE



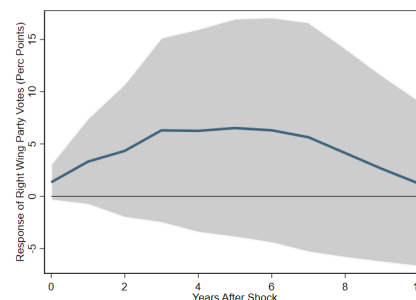
Panel C. Votes to a Right-Wing Party, Country FE, Control Variables



Panel D. Votes to a Right-Wing Party, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Votes to a Right-Wing Party, Country FE, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Votes to a Right-Wing Party* to an impulse of 5 in the measure of refugee event severity. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected for both specifications presented in this figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0,7) for Panels A and B, (0,7) for Panels C, D, and E where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

To sum up, the estimations of IRF for the votes to a right-wing political party support the findings in the previous research (Karacuka, 2021; Sekeris and Vasilakis, 2016), which argued that the recent European refugee crisis increased the number of votes the right-wing parties received. Those authors

focused only on one event (2014-2016 European refugee inflows) in one particular country (Germany or Greece, respectively), while the empirical results presented in this dissertation used five countries over a 69-year period. Such data employment allows one to extrapolate these results to the similar European nations.

5.2 Empirical Estimations.

Alternative classification

The alternative classification of refugee events, based on relaxing each of the characteristics of refugee crises, is necessary to allow for the results' robustness check. The relaxed version of the cut-off levels captures more events as crises and increases the overall severity of the measure, as can be seen from Tables 4.1.3.2 and 4.1.3.3). Therefore, obtaining qualitatively or even quantitatively similar results for the estimations with the alternative classification would imply the ability of the measure for refugee events severity to capture crises and evaluate their severity robustly. At the same time, obtaining less profound results also supports the original measure and its validity owing to the fact that the less severe crises can be expected to have a smaller effect in absolute value.

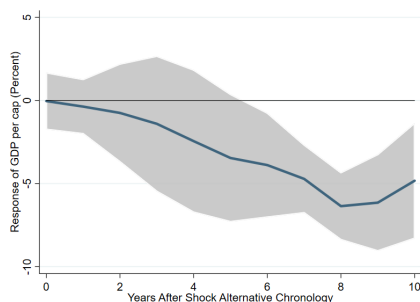
Overall, the estimations obtained with the alternative classification presented in Figures (5.2.1) and (5.2.2) mainly were qualitatively the same as the impulse response functions with the benchmark classification. Thus, it brings one to similar inference conclusions as with the original classification and reinforces them.

To prevent repetition in the description of the results, only the specifications with control variables and heteroscedasticity robust standard errors are reported here. The other estimations are presented in the [Online Appendix](#).

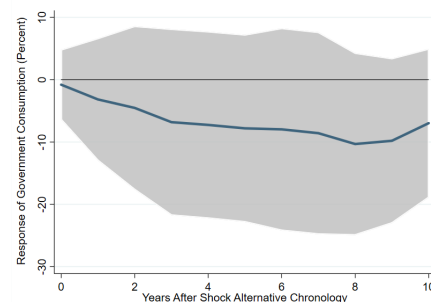
Real GDP Per Capita. The noticeable differences are with the real GDP per capita and the real government consumption IRFs. The former impulse responses do not react positively to the shock in the alternative classification at the beginning of the 10-year horizon. In addition, the negative values closer to the end of the horizon, while being similar in value, become statistically significant. Thus, Panel A of Figure (5.2.1) shows that the real GDP per

Figure 5.2.1: Response of the Economic & Socio-economic Variables to a Refugee Crisis, Alternative classification, Full Sample, OLS

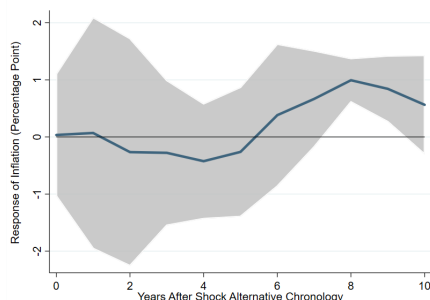
Panel A. Real GDP per capita, Country FE, Control Variables, Heteroscedasticity Robust SE



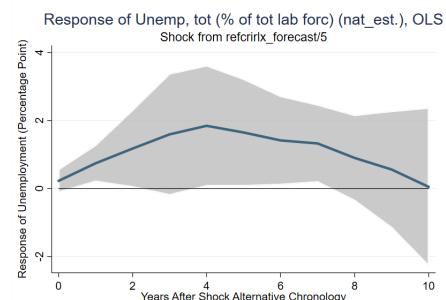
Panel B. Real Government Consumption, Country FE, Control Variables, Heteroscedasticity Robust SE



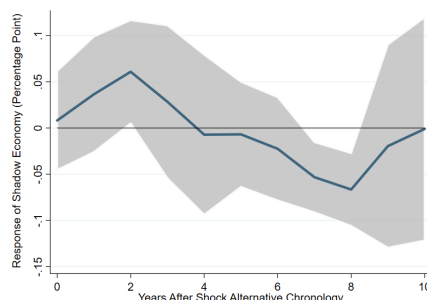
Panel C. Inflation, Country FE, Control Variables



Panel D. Unemployment, Country FE, Control Variables, Heteroscedasticity robust SE



Panel E. Shadow Economy, Country FE, Control Variables, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for the *Economic Variables* to an impulse of 5 in the measure of refugee event severity, alternative classification. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the five IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected. The hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification for: Panel A - (0,2), Panel B - (0,1), Panel C - (0,1), Panel D - (0,7), and Panel E - (0,6), where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

capita is expected to decrease from approximately zero at the year of crisis down to -6.359% at the lowest point in year 8, recovering a little by year 10 ($\beta_{10} = -4.829$). The responses for years 6 and 10 are statistically significant at the 5% level, and those for years 7, 8, and 9 are statistically different from zero

even at 0.1% confidence level.

The host nation's government decision-making can explain such a dramatic difference in the impulse responses between classifications. The estimations with the benchmark classification seemed to be driven by the real government consumption spending on refugees. It is argued here that the IRF of the real GDP per capita to a refugee crisis is also pushed by the responses of the host nation's government.

Real government consumption is predicted to be negative, although statistically insignificant, throughout the whole 10-year horizon. The implications of this result are complex. First, the results support the initial mechanism suggested with the benchmark classification in the following way. The positive average impact of a refugee crisis on real GDP per capita is dictated by the increases in real government consumption dedicated to providing care for the large influx of refugees associated with this type of crisis. Under the alternative classification, the events that would not be labelled as crises under the strict application of the measure's characteristics are now called a crisis. Therefore, these, generally less troublesome events, are not considered that problematic by the host government, so they decide not to allocate additional funds for the incoming asylum-seekers and refugees as much as they would for the more significant influxes.

Such policy, in turn, does not compensate for the potential later negative effect on the host country's economy due to the raises in unemployment and inflation estimated as the aftermath of the refugee crisis by both classifications presented in this research. Hence, potentially allowing the real GDP per capita to decrease in the middle term.

Inflation in Panel C exhibits a pattern similar to the one where the benchmark classification was used, although the responses of the inflation are slightly less profound. Under the alternative classification, only years 8 and 9 are positive and statistically significant at 0.1% and 5%, respectively. The response of the consumer prices inflation is reaching its peak in year 8 of about 0.994 percentage points.

The smaller absolute value reaction of the inflation can be explained by the fact that the events called crises under the alternative classification are smaller quantitatively and qualitatively than in the benchmark. It implies that

a smaller but significant number of refugees require integration, resulting in a smaller direct demand effect they can cause after integrating into the recipient economy.

The impulse responses of inflation seem to be connected with the IRFs for unemployment and the real GDP per capita time-wise, complementing each other.

The Unemployment IRF shows positive and statistically significant responses to a refugee crisis under the alternative classification in the years 1-2 and 4-7. The latter period is precisely before the rise in inflation and before the pivotal point of the real GDP per capita reaction to a refugee crisis. This way, the unemployment response drops and becomes statistically insignificant in year 8, precisely the year of the expected rise of inflation and the year for the responses of the real GDP per capita to start the recovery from the initial decrease.

Dumont et al. (2016), UNHCR (2013) show that in Europe, the period of protracted unemployment of refugees lasts for 5-6 years. Hence, as one can see from Panel D in Figure (5.2.1) and Panels C, D in Figure (5.1.1.4) the unemployment IRF estimations in this work for both classifications generally support that approving the usage of the new measure of refugee events.

In addition to the above, the coincidence of the turning points in the graphs of impulse responses for the real GDP per capita, inflation and unemployment further supports the robustness of the estimations and the reliability of the measure for the refugee event severity.

Shadow Economy. Finally, Panel E shows the average reaction of the shadow economy in a developed European country to a refugee crisis. The IRF demonstrates the largest difference from the one estimated using the benchmark classification. Instead of the overall insignificant negative response (Figure 5.1.1.5), the shadow economy first goes up, reaching a rather economically insignificant 0.0608 percentage points rise (statistically significant at 10% level). Nevertheless, approximately after the time, it takes for refugees to integrate (5-6 years), the shadow economy as a percentage of real GDP is expected to decrease by about 0.0666 percentage points (significant at 5% level). The response is probably economically insignificant, given that the overall mean of the shadow economy is a little over 22 per cent with a standard deviation of

over 10.5 per cent, as presented at the beginning of this Chapter.

The estimations here use the alternative classification, implying that apart from the large-scale refugee crises, smaller events are also under investigation. As shown above, those less significant effects do not receive much support from the welcoming government, resulting in no extra benefits and not for a long time. That is why some refugees can be driven into the shadow economy or drive the demand for the shadow economy's output. Nonetheless, according to the estimations here, even if some refugees or asylum-seekers are driven into the shadow economy when formal employment opportunities are limited, a similar number of refugees seem to leave the grey economy with more integration possibilities. Another possibility of the eventual decrease is refugees resettling elsewhere or being deported for breaking the law, for example, while participating in the shadow economy.

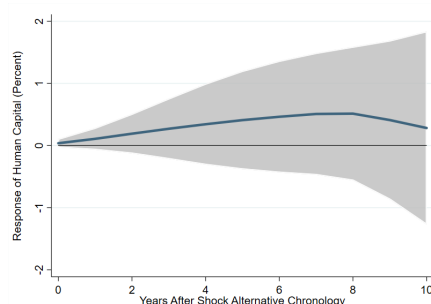
To sum up, the IRF of the shadow economy with the alternative classification seems to support the same conclusion made for the benchmark classification for several reasons. First, the economic insignificance of the predicted responses suggests that even if the impact exists, it is close to negligible. Second, the year two response is statistically not different from zero at the standard 5% level, leaving only the negative responses down the 10-year horizon statistically significant, which is similar in size and sign to the benchmark estimation.

The Human Capital IRF is qualitatively similar to the responses with the benchmark classification, as can be seen in Figure (5.2.2) below. The difference is quantitative, though: the reactions flipped signs and changed from economically insignificant negative reactions rising above zero with time to being also very small but positive going down with the horizons. The smaller refugee events usually involve asylum-seeker influxes of smaller size, meaning that either the conditions are not so adverse or the cost of making the trip to a safe area is higher. That being said, one can expect that in the smaller refugee events, the asylum seekers are the people with abilities to migrate and who, as a rule, possess higher human capital. Therefore, the positive effect is as expected since the human capital variable is based on the years of education.

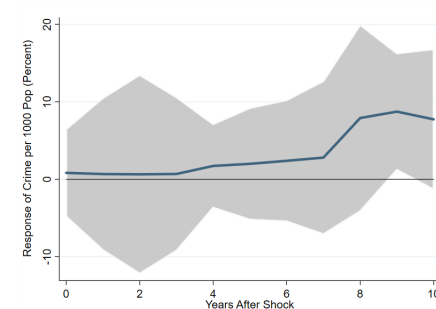
Nevertheless, the effect is not statistically significant as the alternative classification calls more events by the label 'refugee crisis' than the benchmark

Figure 5.2.2: Response of the Socio-Economic & the Political variables to a Refugee Crisis, Alternative classification, Full Sample, OLS

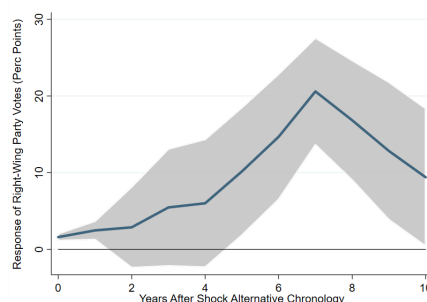
Panel A. Human Capital, Country FE, Control Variables, Heteroscedasticity Robust SE



Panel B. Crime Level Per 1000 People, Country FE, Control Variables, Heteroscedasticity Robust SE



Panel C. Votes For a Right-Wing Party, Country FE, Control Variables



Notes: The panels show the impulse response functions for the *Socio-economic & Political Variables* to an impulse of 5 in the measure of refugee event severity, alternative classification. All countries are included in the estimations using OLS for the whole sample period. The grey area around the average impulse response exhibits the two-standard-error confidence interval.

For each of the five IRFs, the null hypothesis that the country fixed effects are jointly statistically zero is strongly rejected. The hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification for: Panel A - (0, 2), Panel B - (0, 7), Panel C - (0, 7), where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

classification diluting the statistical significance of the responses.

Crime Level Per 1000 People reacts mostly positively but statistically insignificantly. Only the year nine response is predicted to be different from zero statistically at the 10% level, estimating a little jump to 8.7%. Hence, the prediction suggests that a refugee crisis under the alternative classification can cause a slight increase in the overall number of crimes per thousand people in the recipient country. Nonetheless, the fact that the statistical significance of the jump is low and that this effect disappears next year proposes that this estimation can be considered following the results from the benchmark classification, suggesting no significant impact of refugee crises on the crime level in the host country. The IRF is also quantitatively similar to the responses with

the benchmark classification.

Hence, supporting the findings of Kayaoglu (2022) and Feltes et al. (2018) as crime commitment can be even more costly when the influx is not large and a ministry of interior of the host country is not preoccupied with the refugees' registration and their asylum applications.

The Votes for a Right-wing Political Party responses are qualitatively equivalent and even more profound quantitatively than the benchmark classification IRF. They reach more than 20 percentage points rise at the year 7. They are also generally more statistically significant, with only years' 2-4 and 10 t-statistics below the critical values even for the 10% confidence level.

Therefore, the interpretation of the IRF for the right-wing political party votes as a percentage of total votes again supports the facts found in Karacuka (2021) and Sekeris and Vasilakis (2016) similarly to the IRF with the benchmark classification. The higher responses can be explained by the size of the events counted here as refugee crises. The smaller asylum-seeker arrivals, happening more often than large influxes, do not get that much attention in the media. Thence they do not always cause the compassionate humanitarian responses from the recipient population, which are common in the most dramatic refugee events. For the more prominent cases, such compassionate humanitarian reactions may work as a 'welcome', especially if supported and propagated by the media, raising the tolerance level of the host nation to the foreigners. However, after the small-scale events, the recipient population seemed to develop more negative attitudes toward the uninvited visitors, as in the cases counted as crises by the alternative classification.

In addition to the above, the conclusions of the right-wing political party votes may propose an explanation for the positive response of the crime level. The jump may be due to the crimes against the refugees that can become more tolerated after the right-wing political party receives higher support in the recipient country.

5.3 Summary of the Empirical Results

The impulse response estimations of economic, socio-economic and political variables to a refugee crisis showed a predominantly positive or statistically

insignificant *ceteris paribus* impact of a refugee crisis with a few exceptions. The central attention among the economic variables' estimations should be drawn to the unemployment and inflation IRFs.

The timing of predicted reactions of the two macroeconomic variables seems to be consecutive. First, there is an increase in unemployment, and then the positive effect on inflation appears. The time of the unemployment effect coincides with the average period that refugees require to find employment, i.e. integrate into the hosting economy of an open developed democratic European country. This relationship is preserved irrespective of the classification used.

It is possible that the protracted unemployment effect can translate into the estimated negative impact on the real GDP per capita. It, in turn, seems to be mitigated if the hosting government decides to spend extra on the asylum seekers' and refugees' welfare. Such additional government consumption expenditure is estimated to be present using the benchmark classification. That classification uses the strict cut-off levels for the characteristics of the refugee crisis. Thus, the estimations imply that the extra government spending tends to occur in the year of a particularly significant crisis, potentially as a compassionate humanitarian action of the hosting nation. It can not only mitigate the later negative effect on the real GDP per capita but also give a positive drive to it in the short-run after the shock.

The main interpretation for the responses of the above economic variables is that the refugee crisis impacts in the short term like a demand shock – boosting output (via government consumption) and with prices starting to rise with a lag. That is what one might expect with sticky prices. However, given that prices rise significantly only some years later, thus possibly having little to do with sticky prices, another explanation may be that in the longer run the crisis looks more like a supply shock, with prices and inflation higher than they otherwise would be. Nevertheless, the statistical significance of these responses is somewhat variable across specifications.

On the other hand, the socio-economic indicators of a receiving economy do not exhibit a statistically significant reaction to a refugee crisis.

The shadow economy size or crime levels, on average, do not seem to change after the crisis significantly. The mechanisms behind no significant

ceteris paribus effects are unclear. For example, for the shadow economy, it is unclear if the statistically insignificant effect is due to refugees' non-participation or the crowding-out effect. Is it that refugees in the developed European countries do not join the shadow economy activities in the absence of legal employment, or is it them taking the places of those giving up the shadow economic activities?

The crime levels' response seems to be in line with the recent literature, studying similar processes on micro levels. Even if the effect is present, according to the estimations in this research, it is rather negative.

The IRF of the other socio-economic variable - human capital of the host country was not statistically significant regardless of the classification tested. The sign of the estimations changed depending on the classification used, where the potential explanation for that hides in the different demographic characteristics of people arriving during different refugee events. Less dramatic events, which were counted as refugee crises during the alternative classification, involved fewer people but with higher human capital. In contrast, the more significant events (benchmark classification) involved mass movements of people implying the possession of lower overall human capital by them.

Finally, the votes to a right-wing political party variable is estimated to react very statistically significant. The responses are also politically significant. A relatively minor refugee crisis is estimated to drive the post refugee crisis votes to right-wing parties up by approximately 10-20 percentage points ceteris paribus, depending on the classification of the events chosen for the estimations. Therefore, suggesting the receiving nation tends to gain the anti-immigration attitudes, leading to increased support for right-wing parties.

There is an almost two-fold difference between the reactions depending on the classification used. The peak reaction for the benchmark classification is about 10%, while for the alternative, it is about 20%. The possible explanation for the difference is that for the less significant events, the refugees are less expected and, therefore, less welcomed. Their arrival may bring negative attitudes, causing more people to vote for a right-wing political party.

On the other hand, maybe a bit counterintuitively, the bigger and more problematic refugee events get more media coverage. That makes the host

government respond quicker to resolve asylum seekers' humanitarian problems, and so does the hosting nation because of a more tolerable attitude. Nevertheless, despite all the media and government attention to the refugee crisis, the intolerable stands of the accommodating nation still appear and transform into the votes for the right-wing parties, but to a lesser extent than for the smaller events.

The mechanisms described above do seem to correlate with the facts observed in Europe in the recent past. The most recent examples are Brexit, the presidential election in France in 2022, the presidential election in Hungary in 2022, and votes for the Freedom Party in Austria in 2017.

The [Online Appendix](#) contains the estimations for various other specifications and types of robust standard errors. For example, there are the alternative classification estimations for all the specifications with the time fixed effects and control variables, as well as the estimations with the Driscoll and Kraay standard errors. The Driscoll and Kraay SE are the heteroscedasticity and autocorrelation robust standard errors where the error structure is also assumed to be possibly correlated between the panels (Driscoll and Kraay, 1998). The estimations with these standard errors are not reported in this dissertation and should be treated with care as these SE can be downward biased, influencing the inference, as shown in Herbst and Johannsen (2021). Nevertheless, the results presented there are qualitatively similar to the results reported in this dissertation.

5.4 Discussion of the Empirical Results

The empirical results reported in this dissertation are estimated using a relatively new but well-established methodology. The estimation approach is based on choosing the best specification with the Bayesian Information Criterion, as argued in the academic literature studying the method (Brugnolini, 2018). Furthermore, the information criterion approach to the model selection is also novel, taking into account the value of the BIC at each horizon for the Local Projection estimation. In addition to that, two types of information criteria were tested: Akaike and Bayesian, giving preference to the latter to choose a more parsimonious specification in terms of lags of the response and shock

variables used in the local projections estimations of IRFs.

On the whole, the empirical estimations do not contradict each other or the conclusions made in the most recent academic literature on the outcomes related to refugees in the host country. The IRF results are robust to the choice of classifications. Nevertheless, to further support the robustness of the conclusions, it may be necessary to employ bootstrapping techniques.

One of the main limitations of the method used to estimate the impulse responses in this dissertation is incomparability to the matching VAR specification. Since the BIC allows a flexible choice of lags for the response variable separately from the choice of lags for the shock variable, the resulting specifications become asymmetric. Theoretically, such asymmetry can make the specification match the data better than a rigid symmetric specification. However, such IRFs become incomparable with the equivalent vector autoregression models. Hence, it can be worth checking the robustness of the results using a symmetric specification by, for example, applying the same information criteria approach, which would allow comparison of the local projections IRF with the IRF obtained from a vector autoregression estimations.

The second core limitation of this work is the group dimension of the panel data. There are only five countries: Austria, Germany, Italy, Spain, and the United Kingdom studied deep enough to ensure a value for the new measure of refugee event severity for each country-year within the 1951-2019 period. Thence, the inference made using the local projections IRF estimations can be extrapolated only to similar open democratic developed economies in Europe. This limitation also influences the precision of estimates for the average responses. To improve accuracy and extrapolability, one needs to enlarge the subset of countries for empirical conclusions. This exercise is left for future research because analysing each country is very time demanding, as shown in the previous chapters. In addition, using a subset of countries from a different region can allow one to compare the reactions to a refugee crisis across regions and further improve the extrapolability of the results to countries other than the open developed democratic countries in Europe.

Finally, it can be valuable to test if there was a breakpoint in the relationships between the response and the shock variables somewhere between 1990-1993. Finding such a breakpoint is of individual scientific value. There

could have been a change in the perception of asylum-seekers by the European countries after the end of the Cold War. In the 1990s, Western Europe was no longer accessible for the refugees, not only from Eastern Europe but from everywhere. More and more European countries began giving temporary humanitarian protection or tolerance usage in Europe instead of the overwhelming integration (Loescher, 1996). It was also the time of the introduction of the Dublin regulations and general border enforcement (EU Council, 1997).

In addition to its independent research value, specifying and estimating the impulse responses correctly for separate time periods can give a more precise and more politics- and economics-relevant inference, therefore, potentially increasing precision and robustifying the conclusions drawn in this dissertation.

Chapter 6

Conclusion

This dissertation has identified a few critical gaps in the existing literature across several disciplines raising important research questions, which were rigorously and precisely answered, therefore contributing to economic, humanities, and socio-political literature related to refugee crises.

First, the identified ambiguity of understanding of the 'refugee crisis' term was addressed by proposing an objective description of it, using an approach based on the facts associated with refugee crises. The resulting definition, shown in Chapter 3, consists of one necessary criterion and several optional criteria, which can be directly applied to analyse a refugee event.

In addition to the above, the proposed definition can be easily quantified and used to measure the severity of any refugee influx. It allows one to identify if it is a crisis or not and compare it to other refugee events. Hence, it complements the existing literature as the absence of a quantifiable measure of refugee events resulted in the dominance of qualitative research whenever the involuntary migration was studied, irrespective of the discipline.

Therefore, the proposed measure can be beneficial to a variety of decision-makers. For example, suppose the EU government ever decides to adopt the proposal of Corsetti et al. (2016) to introduce 'Refugee Bonds', which would aim for a fair EU-wide distribution of costs and benefits of the Mediterranean asylum seekers' arrivals, and which are proposed to be triggered by a refugee crisis. Now there is a possibility to determine that triggering based on the objective realisation of a refugee crisis in a receiving country based on the criteria of its description proposed here, removing the ambiguity of the phenomenon by different countries and improving the impartiality of funds distribution

across the recipients.

The refugee events measure can also be used by various agents in the humanitarian sphere, from journalists to NGOs and academics. The employment of the new definition would allow one to report on, provide help to or study various asylum seeker and refugee events, distinguishing between a crisis and a non-crisis objectively.

Finally, because of the quantifiability of the description of refugee crises, it can be easily employed in any quantitative research, such as economics, to evaluate the impacts of the refugee events of various severity on a receiving country. To demonstrate the applicability of the proposed measure of refugee events severity, it was meticulously applied to five European countries to construct an index of the refugee events per country-year, from 1951 to 2019. As a result, a unique dataset was created, containing an evaluation of refugee events for each selected country for each year of the selected period.

Since the proposed measure was demonstrated to be at least weakly exogenous to economic and socio-political conditions in the receiving country, it was used in empirical estimations of the aftermath of a refugee crisis in Austria, Germany, Italy, Spain, and the UK.

The Local Projections method was chosen to execute that evaluation. By utilising the most recent findings in the econometric literature that analysed the method, two critical improvements in the approach to Local Projections estimation of impulse response functions were introduced. First, the specifications for the estimations are chosen based on Bayesian Information Criterion in a way that takes into account its values across all estimated horizons. Second, the choice of the type of standard errors is aimed at minimising the potential small sample bias that may appear in them.

The key estimations results seem to correspond to the general expectation one may obtain from the most recent findings in the relevant literature. A refugee crisis in an open democratic European country can be expected to have a short-term expansionary effect on real GDP per capita via an increase in government spending on the provision to refugees. The inflation can be expected to react positively after the increased unemployment effect tapers off. The time it takes for unemployment impulse responses to return to the statistically non-significant area approximately corresponds to the time it takes for

refugees to integrate into a receiving economy.

Refugee crises were found not to influence the size of the shadow economy, the average human capital or the overall crime levels in the receiving country in a statistically significant way. Nevertheless, a refugee crisis is estimated to cause a large positive and highly statistically significant response of the votes to a right-wing political party in the recipient country, corresponding to many election results in the years following the 2014-2015 events in Europe.

Notwithstanding the above, the research outlined in this dissertation has a few limitations. First of all, despite being facts-based, the measure of refugee events severity has three characteristics, which may occasionally require subjective judgement when being applied to evaluate an event. One of them is 'significant human rights violations or freedom restrictions of refugees in the host country'. There can be some policies or restrictions introduced by the recipient countries, which are not easily assumed to be significantly restricting refugees' rights and freedoms. Thus, it is difficult to conclude if the refugee event criterion is satisfied. To overcome that, other sources of evaluation of a policy or restriction were sought, and in rare cases where it was still troublesome to make a conclusion, the policy under analysis was omitted from the strict measure of refugee events severity, thence, not including it into the benchmark classification of refugee events but included in the relaxed version of the measure, i.e. in the alternative classification.

The same choice process is applied to the evaluation of whether or not a particular fact about a refugee event satisfies the following criteria: 'relief organisations' reports of underprovision for the refugees in the host country' or 'international agreements for financial and physical relief'. In the end, both the benchmark and the alternative classification are used in the empirical estimations. Their results are then compared with each other. The empirical conclusions are drawn from both classification generally do not contradict each other.

The empirical estimations presented in this dissertation also have a few limitations. It is the first application of the proposed measure, and because of that, the results should be treated as rather tentative. The employment of various control variables and alternative classification for robustness checks is of high importance. However, various other experiments can improve the trust-

worthiness of the results, for example, bootstrapping or employing a specification, which would allow one to compare the obtained IRF with the ones generated by a corresponding VAR model. Second, the estimated effects can be generally extrapolated only to the other countries of the EU. Hence, the analysis of other countries in the world can confirm the existing conclusions or help find the average responses to a refugee crisis specific to other regions.

The above-identified limitations constitute the core attention of the future research, which is planned to include more countries, the identified robustness checks and other indicators and variables, the responses of which to refugee crises can be of further interest. For example, among the variables of interest for future research are wages, government debt, specific types of crimes in the host country, or variables measuring other socio-political dimensions such as political polarisation. Finally, adding the environmental dimension to the description of refugee crises may be necessary if the climate changes start producing large persistent movements of populations as projected by some researchers.

Part III

Impact of Refugees and Refugee Crises on Terrorism

Chapter 7

Refugee Crises and Terrorism

Introduction

This thesis began with the reference to Hall (2016); Stewart and Mason (2016); Outhwaite and Menjívar (2019), who argued, to various degrees, that the refugees, portrayed as a threat to the hosting communities, were one of the justifications for several significant political decisions in Europe less than 10 years ago. For example, it was used as one of the main reasons for BREXIT campaign. It is worth noting that the threat, the refugees were supposedly bringing on the welcoming nation, was commonly presented as terrorism. Many established powerful politicians made such connection between the most vulnerable migration and the most violent fanatic groups of people. For example, Michael Howard in 2005, at the time leader of the UK Conservative party, claimed that there were a quarter of a million of failed asylum seekers and directly linked them to the terrorism that UK had to fight (BBC, 2005). A more recent example is the Hungarian Prime Minister Viktor Orbán, who referred to a 'Trojan Horse' theory on the refugees and terrorism nexus. Thus, it was another politician claiming refugees can be terrorists "undercover" (Brunsden, 2017).

Seeing migrants as a safety hazard is not new. d'Appollonia (2012) explains that it is rooted in 'a historical, social, and political construction' that is based on the words used and the beliefs and preconceptions host nations have been developing over centuries. Europe and the US have been significantly 'securitising' the issue as well as the asylum seeking dimension of migration since the September 9th 2001 as per general view in academic publications and me-

dia (Léonard and Kaunert, 2019).

Even when terrorism happens in other countries, the attitudes to migrants deteriorate (Böhmelt et al., 2020), let alone if it happens in the country hosting refugees, asylum seekers or at the one having large diasporas of foreigners at the time of an attack (Nussio et al., 2019).

In light of the above-described well-established and continuously propagated links between terrorism and refugees or asylum-seekers, it was decided to study this nexus in detail with the use of the developed measure of refugee events in host countries. Having established that there are just a few academic papers that tried to quantitatively evaluate the impact of refugees on terrorism this Chapter contributes to the existing literature on and deepens the understanding of the terrorism and forced displacement nexus by quantitatively evaluating the influence of a complex multidimensional refugee events - refugee crises on terrorism.

Therefore, the main research questions answered by this research are as follows.

RQ 1: What is the impact of refugees on terrorist events in European countries overall?

RQ 2: Is there any difference in refugees impact on domestic and transnational terrorist events in European countries?

RQ 3: What is the impact of refugee crises on terrorist events in European countries?

The research questions are answered using quantitative techniques following and extending the approaches found in highly cited publications in political science. For that, panel Count, Logistic and other appropriate methods approaches were used. As a result of the empirical investigations, it is argued that there is no positive impact on terrorism from the sheer refugee numbers hosted in a European country. Furthermore, the impact is estimated to be negative, when one uses the specifications and methods established in the literature before and parabolic (upward U-shape) with the improved specification. This findings contradict the major consensus found in the academic literature (for example, Choi and Salehyan (2013) or Milton et al. (2013)). However, the presence of a refugee crisis as measured by the new measure of the refugee events severity contributes to the terrorism in the host country.

This Chapter of the dissertation is divided in the following sections. First, the core definitions of interest are presented and discussed. The second section presents the literature review on the nexus of forced migrants and terrorism. The literature review also briefly discusses the general picture of the interrelation of migration and terrorism. The Chapter continues with the presentation of the data used in the empirical section. The fourth part is dedicated to the empirical methodology used. The next section presents the results. The sixth outlines the main limitations and discusses them, while the last one concludes.

Chapter 8

Essential Definitions

As a separate issue of scientific, political and public interest various authors tried to establish a clear understanding of the term 'terrorism'. One of the most recent studies investigating when a person can lose refugee status due to being accused of terrorism or recognised as a terrorist highlighted the fact that "there is no universally agreed definition of 'terrorism' (Singer, 2015) from an international law point of view. The author notes that the United Nations Security Council had been releasing statements requesting the member nations to use the Article 1F of the 1951 Geneva Convention more often despite the absence of the internationally accepted definition of terrorism.

The Article 1F (United Nations Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons, Geneva, 1951) works as an exclusion clause, allowing a hosting nation to relieve a person from their refugee status or even not to assign such status in the first place if that person was involved in war crimes and crimes against humanity (Article 1F(a)) or in terrorism (Article 1F(b)&(c)). The lack of the universal understanding of terrorism is therefore allowing hosting governments to mend their approaches and use it to deter undesirable involuntary immigration.

Despite the above disagreement in the international law, the academic literature has been studying terrorism and its various types relatively extensively. The most commonly used understanding of terrorism is based on the work by LaFree and Dugan (2007) who introduced arguably the most popular terrorist events database "Global Terrorism Database" (GTD). Their original data and their updated versions have been widely used by researchers from various disciplines. This dataset is also employed in this dissertation, therefore it is

necessary to clearly characterise the type of events counted as terrorist in it.

LaFree and Dugan (2007) have been sharpening the definition and the inclusion criteria throughout the years and the most recent definition used for their dataset is as follows.

*“A **terrorist attack** is the threatened or actual use of illegal force and violence by a non- state actor to attain a political, economic, religious, or social goal through fear, coercion, or intimidation”*

Additionally, certain criteria must be met for an event to be included in the dataset. The incident must have been intentional and involve violence, or at least an immediate threat of violence, committed by non-state actors. Furthermore, at least two of the following three criteria must apply in order for an incident to be classified as terrorism: the incident must pursue political, economic, religious, or social goals; it must aim to convey a message to a wider audience beyond the immediate victims; or it must violate the boundaries of acceptable warfare conduct.

In addition to the Global Terrorism Database’s (GTD) definition of terrorism, it is advantageous to consider the approach presented in Enders et al. (2011). The authors of this study were the first to introduce a distinctive methodology for distinguishing between domestic and transnational terrorism events within the GTD. Furthermore, the dataset generated by Enders et al. (2011) has been utilised in this research.

According to the authors, a terrorist event can be characterised as an incident that involves ‘the premeditated use or threat to use violence by individuals or subnational groups against non-combatants in order to achieve a political or social objective through the intimidation of a larger audience beyond the immediate victims’. This definition serves to distinguish acts of terrorism from other forms of violent political protests and disorders, as well as from non-political violent crimes or shootings. Additionally, it differentiates terrorism from instances of violence and force enacted by a government, which may be referred to as state terrorism.

In their work, Enders et al. (2011) introduced a unique method of differentiating domestic terrorism from international terrorism. They defined *domestic terrorist events* as those that are “homegrown”, meaning that the target, venue, and perpetrators all originate from the same country. Conversely,

transnational terrorist events involve perpetrators and targets from multiple countries. An example of a purely domestic terrorist attack in Europe is the 2011 Norway attacks, perpetrated by Anders Behring Breivik, a Norwegian citizen. Breivik detonated a car bomb outside of government buildings in Oslo, killing eight individuals and injuring dozens more. He then travelled to the island of Utøya, where he opened fire on a youth camp hosted by the Norwegian Labour Party, killing 69 people, mostly teenagers. Breivik's extremist right-wing beliefs and opposition to multiculturalism and Islam motivated the attack. A recent example of a purely transnational terrorist attack in Europe is the November 2015 Paris attacks, carried out by individuals affiliated with the Islamic State (ISIS). The coordinated shootings and suicide bombings, which occurred in multiple locations throughout Paris, including a concert hall, restaurants, and a sports stadium, resulted in the deaths of 130 people and injured hundreds more. The attackers, who were mostly French and Belgian citizens, had connections to ISIS and had travelled to Syria for training and support from the group.

Refugees and asylum-seekers are inherently foreigners, which makes the study of the relationship between the refugee crisis and terrorism especially relevant within the context of transnational terrorism. Transnational terrorism can be further categorised into acts committed by foreign individuals against locals, society or other foreigners within their host country, as well as acts committed by locals against foreigners, as outlined in Helbling and Meierrieks (2022).

Although transnational terrorism is particularly well-suited for this study, the present dissertation examines all three categories of terrorism events, including both domestic and transnational occurrences, as well as those in general. It is worth noting, however, that the sum of domestic and transnational events does not necessarily equate to the overall number of events, since Enders et al. (2011) may not have been able to investigate or categorise certain events thoroughly or accurately.

Chapter 9

Literature Review

This section is traditionally divided into two parts. The initial segment offers a concise survey of the literature concerning voluntary migration versus terrorism to be consistent across the whole dissertation as well as to provide a reference point for the second segment of the literature review. The second segment furnishes an overview of the most relevant publications concerning the nexus between involuntary migration and terrorism.

9.1 Voluntary Migration and Terrorism

Overall, a definitive stance on the relationship between voluntary migration and terrorism cannot be seen from the existing literature. While some studies indicate that greater migration volumes can amplify terrorist incidents in the host nation, conversely, other scholars posit contradictory views. A few examples of the both viewpoints are discussed below.

For example, Dreher et al. (2020) demonstrated that higher levels of migration to OECD countries corresponded with an upsurge in terrorist activity within those countries. The researchers employed empirical analysis using data on foreign nationals from 183 source countries who had migrated to OECD countries. While their findings indicated a positive association, the authors were unable to substantiate whether the increase in terrorist attacks in the host countries was due to the reduced costs incurred by terrorist organisations as a result of the establishment of local diasporas or attributable to the overall population growth in the host nation, leading to a greater sample of potential terrorist recruits and victims. As the effect of the increases in the

number of terrorist attacks by foreigners attributable to the growth of foreign population was found to be statistically equivalent to the impact of the native population growth on the domestic terrorism (acts of terror committed by the natives themselves) (Dreher et al., 2020). With this finding the authors echoed the ideas put forward in Jetter and Stadelmann (2019) and Krueger and Malečková (2002) who found a strong relationship between the size of a particular group of population (including the total population within one country) and the probability of violence appearing within it.

On the other hand, Bove and Böhmelt (2016) showed that there is a negative association between terrorism within the host country and the magnitude of migratory flows. on the premise that terrorist organisations can exploit the social and religious bonds forged amongst individuals within established networks in the host country. In their research, they construct a model of the plausible mechanism by which such networks can emerge through migration, thus extending the inquiry beyond the scope of Sageman (2004, 2011) works on the topic. Through the use of spatial estimation techniques on data sourced from 145 countries spanning the period of 1970 to 2000, the authors ascertained that the effect of migration volumes is statistically significant and negative. However, they did find that population growth can raise the number of terrorist incidents in the destination country, particularly if such increases in population stem from immigration from countries with a high susceptibility to terrorism. This finding lends support to the potential indirect impact of migration on terrorism posited by Dreher et al. (2020).

On the other side of the empirical conclusion “spectrum” sits the paper by Forrester et al. (2019). The authors engaged into a study of 170 countries for 1990-2015 period. They estimated no significant effect of migration on terrorism using both Ordinary Least Squares and well-thought-through Two-stage Least Squares (2SLS) approaches. Furthermore, there was no significant effect irrespective of the origin of migrants, challenging the conclusions from both articles presented above.

The rest of the existing literature on the nexus of terrorism and migration largely comprises qualitative studies that do not provide conclusive quantitative empirical evidence of the link between these two phenomena. For instance, Martin and Martin (2003) discusses the impact of the 9/11 attacks in

the US on migration policy changes and provides broad policy recommendations for Europe and the US. Similarly, Schmid (2016) provides qualitative discussion and at most, uses descriptive statistics and per country correlation analysis to support the authors' conclusions.

Other works focus on the perception of migration and changes in attitudes to migrants because of terrorism from from the perspective of the native population. Nussio et al. (2019), for example, found that proximity to terrorist attacks and homogeneity of a society with a low level of initial immigration can lead to a deterioration in attitudes towards immigration.

The findings of this dissertation's empirical analysis appear to align with the conclusions drawn by Bove and Böhmelt (2016) or Forrester et al. (2019) that there is an inverse relationship between the volume of immigrants (in the case of this study, the specific group of immigrants - refugees and asylum seekers) and terrorism in the host nations or even no relationship at all. Simultaneously, the more complex events associated with refugees and asylum seekers - refugee crises seem to contribute to occurrences of terrorism, providing another angle to the conclusions presented in the above-discussed literature and, thus, arguing that the potential positive effect captured in some of the existing literature may be due to correlation between number of refugees and the actual problematic situations with refugees and asylum seekers - refugee crises.

9.2 Involuntary migration and terrorism

Generally, a substantial amount of literature has aimed to qualitatively assess the relationship between refugees and various forms of violence, including terrorism. Certain studies have linked refugees to the escalation of civil war and conflict, while others have suggested that the co-occurrence of forced migration and terrorist incidents influences attitudes towards refugees. However, there are only a limited number of articles that have examined the quantitative impact of refugees on terrorism. A concise review of the scholarly works pertaining to the topics above is provided in this section.

9.3 Refugees and Spread of Violence

According to Lischer (2005), refugee crises in developing or poor nations have historically been characterised by militarisation driven by political factors surrounding the event. The Rwandan genocide serves as a pertinent example, wherein the perpetrators established military training bases in close proximity to refugee camps and regularly recruited from among the refugees. Lischer (2005) contends that refugees, in conjunction with the humanitarian aid furnished by international organisations, can unwittingly serve as a conduit for the transmission of violence propagated by militarised groups with which they become affiliated.

In light of the aforementioned, Lischer's study provides an additional rationale for the inclusion of criterion six ("International agreements for financial and physical relief") in the host country refugee event severity measure.

Developing Lischer (2005) arguments, Salehyan and Gleditsch (2006) demonstrated quantitatively that refugees can contribute to the dissemination of conflict across regions. They asserted that even though not all refugees participate in civil wars and conflicts after seeking refuge, they may still aid the spread of arms, combatants, and ideologies to conflict through newly established social networks. The potential negative (for the host country) outcome can take various forms according to the authors. Firstly, refugees can create political structures in exile that challenge the welcoming government. Secondly, refugees may facilitate the development of violence from existing rebel groups within the host country, providing them with "means, organisation, and inspiration

to launch an assault on their government". Lastly, refugees may provoke violence against themselves and the hosting government due to changes in ethnic balance within the country, leading to outbursts of attacks and "nativist sentiment."

The third mechanism suggested by the authors may hold significant importance when examining the effect of refugee crises on levels of terrorism in host nations. This mechanism proposes an explanation for the potential surge in terrorist attacks aimed at refugees, which may be attributed to the upsurge in right-wing sentiments within the welcoming community.

In his works, Salehyan (2007) and Salehyan (2008), the author expands on his previous research. In the former, he contends that refugees have the potential to introduce conflict in their country of origin, while in the latter, he employs a dyadic approach to illustrate how refugees can also lead to international conflicts between the origin and destination countries.

However, it should be noted that Salehyan and Gleditsch (2006) acknowledge that their findings are only applicable to a specific subset of refugees (similarly to Salehyan (2007) and Salehyan (2008)). The authors contend that the vast majority of refugees do not engage in violence or support it in any way, and that only a small proportion of the refugee population is involved in the proposed mechanism. This limitation is not explicitly mentioned in the abstract, which could be misleading to the general public. Nonetheless, the authors carefully selected their sample, exclusively examining refugees residing in neighbouring countries. This is particularly relevant when considering or discussing the impact of overall refugees, making generalisations or extrapolations.

According to UNHCR (2021), 72% of all refugees are hosted by neighbouring countries, with 83% of all refugees located in low- and middle-income countries. This geographic distribution has remained consistent over time, as evidenced by data from the United Nations High Commissioner for Refugees (UNHCR, 2022b). As a result, the generalisability of Salehyan and Gleditsch (2006) findings to developed European countries is significantly limited. Therefore, this dissertation research expands on the existing literature on the impact of refugees on violence propagation by focusing on developed European countries and primarily examining refugees not residing in neighbour-

ing countries. Additionally, the study analyses the impact of complex events, such as refugee crises, rather than solely focusing on refugee numbers.

9.4 Terrorism Impact on Attitudes to Refugees

Understanding the impact of terrorism on attitudes to refugees in host countries is of utmost importance, as illustrated by several scholarly articles. These studies have focused on exploring the relationship between the co-occurrence of refugees and asylum seekers arrival and terrorist events, and its impact on the attitudes of the native population towards these vulnerable groups.

For instance, Breton and Eady (2022) conducted a study in Canada and found that the 2015 Paris terrorist attacks increased native anxiety about refugees and led to negative perceptions of them as both security and cultural threats. Consequently, natives became more opposed to the resettlement policies and actions of the Canadian government and aid agencies.

In their study, Böhmelt et al. (2020) arrived at a similar conclusion for the entire European Union, demonstrating that natives' attitudes towards migration are dependent on the occurrence of terrorism in other countries. Employing spatial econometric techniques, the authors were able to demonstrate that the negative effect of terrorism on concerns about migration in a third country is more significant when the country where terrorism occurred is geographically closer. This effect is attributed to the perception of immigrants as an immediate threat and a feeling of "imminent danger".

In his work, Nail (2016) posits that the refugee crisis is often interpreted in the context of terrorism. Through an analysis of media and political responses to the 2015 Paris terrorist attacks, the author concludes that the refugee migration was viewed as a "form of barbarian warfare that threatens the European Union."

Another study that examined the nexus between refugees and terrorism from the perspective of native attitudes is De Coninck (2022) research in Belgium. Using a large sample of Belgians, the author demonstrated that positive attitudes towards refugees are correlated with the lower fear of terrorism. Additionally, the study found that poor economic conditions and exposure to news contribute to heightened fear of terrorist acts.

In a similar vein, research by Debrael et al. (2021) reveals that media consumption contributes to the heightened fear of terrorism and refugees or migrants in general among the host population. Through interviews with Belgian residents residing in an area known for its anti-immigrant sentiment, the authors discern that the association between news consumption and attitudes towards the nexus of interest varies with age, with the older generation displaying greater apprehension towards newcomers.

The study conducted by Chan et al. (2020) examined media resources to explore the correlation between the fear of terrorism and empathy towards refugees. By analyzing over 560,000 online news articles from Australia, Germany, Switzerland, Turkey, Lebanon, and the United States, the authors revealed an inverse association between attitudes towards terrorism and refugees in these destination countries. Specifically, they found that the more fear was portrayed in the news, the less sympathy was expressed towards refugees. To provide more precision, it appears that publications focused solely on refugees were generally positive, evoking more empathy and less fear. However, when the discourse was combined with terrorism or Muslim identity, the level of empathy markedly decreased, while fear significantly increased. Although this investigation offers a different perspective on the issue, its findings align with the existing literature.

A recent study arrived at a similar conclusion regarding the securitisation of refugee arrivals. In Galantino (2022), the author analysed how this vulnerable group of people is represented in the news by examining publications from two German and two Italian newspapers during 2015-2016. Consistent with the studies discussed earlier, the author found that the media exhibit the predominance of “a chain of causation linking terrorism to new migrants and refugees”.

A significant body of literature has been devoted to investigating the repercussions of the 9/11 events in New York on attitudes towards immigrants and refugees. In particular, various authors have documented similar impacts as discussed previously, but with a focus on the United States. For instance, studies by Huddy et al. (2002) and Huddy et al. (2005) have demonstrated an increase in negative perceptions of immigrants in the aftermath of 9/11 in the US. Similarly, research conducted by Åslund and Rooth (2005) revealed a shift

towards more negative views on immigrants in Sweden after the 9/11 attacks, while Noelle-Neumann (2002) observed similar trends in Germany. These findings further underscore the role of terrorism events in shaping attitudes towards migrants and refugees, deepening within and extending beyond the European context and emphasising the global nature of this phenomenon.

To sum up, in the majority of cases terrorism is viewed as a danger to both personal and national security, which leads to greater apprehension of people from different backgrounds, greater ethnocentrism, biases and aversions towards outsiders, and a stronger sense of attachment to one's own identity. These factors, in turn, contribute to more negative attitudes towards migrants. In addition to the research studies above the following articles by Hellwig and Sinno (2017), Hitlan et al. (2007), LeVine and Campbell (1972), and Schimel et al. (1999) also support this viewpoint.

The publications presented above further add value to the current research. As understanding the actual relationship between refugees and terrorism can contribute towards more solid evidence enabling one to either encourage or discourage the fear of refugees, which might exist in the receiving societies and described in the above group of publications. Therefore, this dissertation provides the quantitative basis to conclude that the fears of newcomers per se and their association with higher probability of terrorism are rather wrong. The rational fear can emerge only in cases a refugee event leads to refugee crisis in a particular host country.

9.5 Impact of Refugees and Terrorism on Political Outcomes in the Host Country

Several authors have suggested that refugees may pose a political liability and even a risk of violence to host countries, but through a specific mechanism. Weiner (1992) provided examples of situations where receiving nations supported refugees' acts against their origin country or government with military training and arms. According to the author, this led to the establishment of a situation where host governments became 'political hostages' of the armed refugee groups they supported, who did not allow the hosting nations to act in their best interest. Additionally, their actions on the international stage be-

came partially subject to the will of the armed groups within their country. For instance, Weiner (1992) discusses the situation with Arab countries and Palestinian refugees or Pakistan and Afghani refugees.

Despite the lack of statistical evidence to support the mechanism proposed by Weiner (1992), it sheds light on another potential way refugees might become militarised and susceptible to committing terrorism, even against the hosting country. While the countries examined in this section of the dissertation may be less likely to militarise refugees on their own soil, this potential avenue of terrorism must still be considered in any research on the relationship between refugees and terrorism.

The more recent literature has investigated the association between refugees and the threat to people in the EU, and has examined how politics are intertwined with the refugees-terrorism nexus. For instance, Léonard and Kaunert (2019) scrutinised the securitisation of forced immigration by associating it with terrorism in the European Union¹. The authors demonstrated how the term ‘refugees’ was securitised in the European Union based on the policies adopted against them. Similarly, Léonard and Kaunert (2022) suggested that this securitisation was achieved by associating refugees with terror in 2015-2016. In both articles, the authors cited public speeches and publications by political figures to illustrate the securitisation process.

In a similar vein, the work of Guild (2021) illustrates that political decisions regarding migration to the EU were influenced by the 2015 Paris terrorist attacks. The author contends that as a result, border controls were tightened and migration options to the EU were considerably curtailed. Furthermore, Guild (2021) implies that such measures were at least partially unwarranted, since all the attackers had arrived in Europe several years prior, thereby highlighting the influence of political bias towards refugees in the wake of co-occurring refugee and terrorist events in the host country.

Stricter immigration controls were introduced in 30 OECD countries after events of transnational terrorism (on average) according to Helbling and Meierrieks (2020b). These findings not only corroborate the significant influence of terrorism on political outcomes related to immigrants and refugees,

¹The theory of securitisation originates from Wæver (2004), who proposed that in modern societies, any concept can be ‘securitised’ and turned into a security issue by labelling it as such.

but also provide a robust quantitative basis for concluding the phenomenon of immigration securitisation in response to terrorism co-occurrence. This evidence underscores the tangible policy implications of terrorism events on immigration regulations and highlights the pervasive nature of the securitisation discourse in the context of migration.

Another quantitative support for the aforementioned claims is the work by Bove et al. (2021) on migration policy regimes, utilising data from 33 OECD countries. The findings suggest that when neighbouring countries are exposed to terrorism, the focal country is expected to implement stricter migration policy regimes on average. Such measures are often introduced due to the pressure on politicians from the public to impose immigration regulations and gain electoral support, or in anticipation of potential policies that may be imposed by neighbouring countries.

The study conducted by Avdan (2014a) utilised a larger sample size of 207 countries to evaluate the immigration policies adopted in the aftermath of transnational terrorism. The author arrived at conclusions that align closely with those presented in the aforementioned papers. However, the study also highlighted that the predicted introduction of stricter visa policies as a typical response to transnational terrorist events could be mitigated by countries' economic interdependence. Avdan (2014a) explained this phenomenon by pointing out that economic incentives may take precedence over security concerns, offering hope that rational decision-making in immigration policies may prevail.

Similarly, in another investigation conducted in the same year, Avdan (2014b) arrived at similar conclusions, but with a specific focus on the European Union (EU) and the Schengen area in relation to asylum policies. The study found that, on average, the response to a transnational terrorist incident is the tightening of asylum policies. However, the study also revealed that only events occurring in a focal country or directly affecting the native population in focus contribute to the strengthening of asylum procedures, while responses to global events are mitigated. This leads to the conclusion that humanitarian considerations may outweigh security concerns in shaping asylum policies.

The research presented in this dissertation provides a quantitative basis for evaluating whether refugees are a security issue from the perspective of

terrorism, thereby complementing the securitisation literature on the nexus.

9.6 Refugees Impact on Terrorism

As discussed earlier in the dissertation, violence and the threat of violence are among the primary reasons for individuals to become refugees and flee their country of origin. Terrorism, whether perpetrated by state or non-state actors, can be a major factor in forced displacement. For example, as discussed by Nwaoga et al. (2017), terrorism has displaced thousands of Nigerians, making them IDPs (internally displaced persons) and refugees in neighbouring countries. Another example is the study by Echevarria and Gardeazabal (2016), who showed that violence (including terrorism) causes forced migration using improved gravitational model estimation.

A comprehensive quantitative analysis by Dreher et al. (2011) of terrorism and labour migration data for 152 countries during the period 1976-2000 demonstrated that terrorism is one of the push factors for emigration. Similarly, Schmid (2016) arrived at a comparable conclusion in his qualitative study.

As such, it can be inferred that terrorism in the country of origin is one of the factors that drives individuals to become refugees. However, it is noteworthy that the arrival of refugees in a host country can also potentially trigger a surge in transnational or domestic terrorism. This underscores the significance of investigating the nexus between refugees and terrorism, particularly in the context of developed countries in Western Europe, where the implications of this relationship may be particularly relevant and complex from policy-making point of view.

From the qualitative research angle, the interrelation between refugees and terrorism in host countries has been investigated in two notable publications: Brady (2017) and de Azevedo (2018). The first publication focuses on the post-Syrian War period (2011-present) in Europe. The author conducts an analysis of instances of terrorism and their connections to refugees, as perpetrators, as facilitators, or as victims. Additionally, the author reviews descriptive statistics on global terrorism and refugee populations, leading to the conclusion that there is a rising trend in terrorist events worldwide, which coincides with

the increasing number of displaced persons. Furthermore, the author supports the notion proposed in Mullins (2015) that conflicts involving Muslims provide an opportunity for international terrorist organisations to recruit. The findings from Brady (2017) are taken into consideration in the present study, and the current analysis builds upon the descriptive data conclusions from that work.

The second qualitative paper, de Azevedo (2018), provides (a rather limited) review of literature on the nexus between refugees and terrorism. The author acknowledges the contradictory results found in some of the studies, particularly evident in the works mentioned below, such as Choi and Salehyan (2013) and Polo and Wucherpfennig (2022). As a result, the author concludes that there is insufficient evidence to establish a definitive relationship between involuntary migration and terrorist incidents.

In terms of quantitative research, a comprehensive review of the literature has identified five articles that have investigated the impact of refugees on terrorism in host countries. These articles, namely Choi and Salehyan (2013), Milton et al. (2013), Klein (2021), Polo and Wucherpfennig (2022), and Eybergen and Andresen (2022), are considered highly relevant to the present study and their approaches, methods, and results are taken into account in this chapter of the dissertation.

To begin with, Choi and Salehyan (2013) is considered a benchmark in the investigation of the potential impact of refugee crises on terrorism in host countries because of the following. The authors of this study examined the security consequences of hosting refugees, which are often viewed from a humanitarian perspective. They argued that the infusion of aid resources may provide terrorist groups with opportunities for looting and attacking various targets. The study utilised a cross-national, time-series data analysis of 154 countries for the period of 1970-2007 to explore the relationship between the influx of refugees and domestic as well as international terrorism. The empirical findings of Choi and Salehyan (2013) revealed that countries hosting a large number of refugees are more likely to experience both domestic and international terrorism. The statistical analysis demonstrated that the relationship between the influx of refugees and terrorism is positive and statistically significant, regardless of the method of estimation employed.

Furthermore, a closer examination of the findings indicates that the impact of refugee numbers on the occurrence of terrorist events and the number of casualties resulting from such events is statistically significant and positive, as evidenced by the Negative Binomial estimation (NB), Rare Events Logistic estimation (REL), and Generalised Equation Estimations (GEE) that account for first-order correlation in lieu of negative binomial regression. Moreover, the estimated coefficients, though varying in absolute value, exhibit consistent qualitative patterns in estimations that differentiate between Domestic and International Terrorism. It is noteworthy that this relationship persists even when the dataset is changed from the Global Terrorism Database (GTD) to the International Terrorism Attributes of Terrorist Events (ITERATE) Mickolus et al. (2016)². Additionally, the results of Choi and Salehyan (2013) are robust even when the sample is separated into different time periods and when the sample is divided into developed and developing countries, further reinforcing their findings.

Furthermore, it is noteworthy to mention that the research conducted by Choi and Salehyan (2013) utilised a panel dataset with a large number of countries (N) and a small number of time periods (T), making it a natural benchmark for investigating the robustness of the results in the context of a panel dataset with a small N and long T , as employed in this dissertation, along with the incorporation of a measure of refugee event severity.

In their concluding remarks, Choi and Salehyan (2013) further emphasised the issue of aid workers and the potential redirection of international refugee aid towards supporting terrorist groups through recruitment. This underscores the need for the international community to not only focus on reducing the number of refugees by preventing major conflict events but also for individual countries to strike a balance between humanitarianism towards refugees and ensuring safe and secure environments for both refugees and those providing assistance. The research presented in this chapter of the dissertation, therefore, serves as a valuable complement to the work of Choi and Salehyan (2013) and represents a natural extension of their study in the pursuit

²The International Terrorism: Attributes of Terrorist Events (ITERATE) project provides quantified data on the characteristics of transnational terrorist groups, their activities with international impact, and the environment in which they operate. The dataset is not publicly accessible and is only available through licensed access to the Duke community of Duke University.

of finding a balance between humanitarianism and security. This is achieved through the utilisation of the newly proposed measure of refugee event severity, which allows for the isolation of complex problematic events, such as a refugee crisis, from simple arrivals of refugees that may not be associated with other issues beyond the arrival itself.

Another academic study that provides a quantitative evaluation of the relationship between refugees and terrorism in the host country is the research conducted by Milton et al. (2013). The authors specifically focus on examining whether the arrival of refugees can increase the likelihood and counts of transnational terrorism in the recipient country. To conduct their analysis, they utilise the ITERATE dataset, which provides information on terrorism events for the period of 1969-2001. Milton et al. (2013) mention that they only consider politically relevant directed dyads globally. They define politically relevant dyads based on contiguity, meaning bordering states, and what they refer to as the "major power connection", which could potentially indicate colonial relationships in the past. As a result, this sample selection isolates, as noted by the authors, data with many dyads having zero values for terrorist events (approximately 99% of the whole sample), which leads them to employ the REL (Rare Events Logistic) estimation method with the lagged dependent variable as the benchmark. Despite this, Milton et al. (2013) still use the Negative Binomial (NB) estimation technique, and obtain statistically significant positive impact of refugees on the likelihood and counts of terrorist events for the selected sample.

Similar to the discussion of Choi and Salehyan (2013) mentioned earlier, it can be noted that Milton et al. (2013) did not extensively discuss the dynamic structure of their model specification. Moreover, their conclusions are based on a small proportion of "about 1%" of non-zero entries in the specifically selected sample. Additionally, when authors included only non-contiguous dyads, their Negative Binomial (NB) and Zero-Inflated Negative Binomial (ZINB) estimations lost significance completely. Lastly, they did not attempt to isolate the impact of refugees on developed countries and examine if the relationship differs. Milton et al. (2013) justify their sample choice in a similar vein as Salehyan (2008) by arguing that if refugees are able to find asylum in countries other than neighbouring states, they are more likely to be in stronger

developed countries, which they imply are less prone to terrorism.

In addition to the points discussed above, Milton et al. (2013) utilise UNHCR data that was available at the time of their publication. However, it is important to note that the data only provides information on the stock of refugees in a particular host country, and not the flows of refugees. Referring to the data provided by UNHCR as flows is inappropriate.

Another feature, distinguishing the academic work by Milton et al. (2013) is that the authors propose a mechanism that may explain the empirical findings regarding the relationship between refugees and transnational terrorism. They argue that refugees, who often find themselves in dire living conditions and face mistreatment from host states, may respond by resorting to transnational terrorism. Nevertheless, the authors do not empirically test this mechanism. However, the developed measure of refugee events presented in this dissertation includes dimensions that capture refugee camps and their conditions, which may provide a plausible explanation for why some refugees may turn to terrorism as a means of expressing their grievances. This further reinforces the validity of the developed measure, which is able to capture the complex dynamics of refugee events, such as refugee crises. Furthermore, it provides a solid basis for the measure of refugee events severity and the necessity of its application in empirical studies.

The authors of the study also highlight the importance of policymakers considering both the situation of refugees and the host state in their efforts to mitigate the possibility of transnational terrorism. They argue that addressing the root causes of refugee flows, such as improving living conditions and treatment of refugees, may be a more effective long-term strategy to prevent terrorism. This suggests that policymakers should not solely focus on the numbers of refugees in a host country, but also consider the underlying causes and conditions that may drive refugees towards terrorism.

By incorporating the refugee crises index in empirical studies, the present dissertation provides a statistical foundation to assess the significance of the causes and conditions of refugees in relation to transnational terrorism. Hence, complementing the work by Milton et al. (2013). This dissertation contributes to the academic discourse on the topic, shedding light on the potential policy implications. The findings of this research may prompt policymakers to

reevaluate their approach towards refugees and consider addressing the root causes of refugee flows as a more productive and sustainable strategy to prevent terrorism in the long run. This underscores the importance of not only examining the numbers of refugees a country hosts, but also delving into the underlying factors that may influence their involvement in terrorism. Hence, the refugee crises index usage in the present dissertation contributes to the academic literature on the topic providing a statistical basis for policymakers to assess the significance of the causes and conditions of refugees arrivals in relation to terrorism of various sorts, including the domestic and transnational.

A distinct perspective on the relationship between refugees and terrorism in recipient countries has been presented in a recent study by Klein (2021). In this study, Klein challenges the conclusions drawn by previous researchers, such as Choi and Salehyan (2013) and Milton et al. (2013), who argued that refugees contribute to domestic terrorism. Klein's main finding, based on an analysis of data from 152 countries spanning the period of 1995-2014, is that there is no statistically significant effect of refugee numbers on domestic terrorism in the host country.

One notable aspect of Klein's study is that he does not specify the criteria used to select country-years for analysis, similar to the approach employed in this dissertation, suggesting that all available data was utilised to arrive at the conclusion. Nevertheless, Klein (2021) employs Logit and Negative Binomial Models for his empirical estimations, consistent with the methods employed in the aforementioned papers.

In addition to examining the direct impact of refugee numbers on terrorism, Klein also investigates the role of native attitudes towards refugees in shaping this relationship. Drawing on data from the World Values Survey, he incorporates the social perception of foreigners by the native population in each country into his model, and examines the interaction between this variable and the number of refugees hosted. Klein (2021) finds that the social perception of immigrants, including refugees, significantly influences the probability of domestic terrorism events, although it does not impact the number of such events. Furthermore, this variable significantly conditions the effect of refugees on domestic terrorism in the Logit model. Klein argues that

a "preference *not* to have foreigners as neighbours helps define a combustible environment into which refugees enter." This suggests a mechanism by which domestic terrorism may arise, particularly in the form of right-wing terrorism, when there is a larger population of locals with negative views towards refugees, implying that refugees may become targets of such terrorism.

Klein also considers the potential influence of economic factors on the relationship between refugees and terrorism. He separately introduces the change in unemployment rate into his models to investigate whether negative changes in economic conditions concurrent with the arrival of refugees may trigger domestic terrorism. However, his analysis indicates that changes in unemployment rate, as well as competition between refugees and natives in the labour market, do not significantly impact the likelihood of domestic terrorism events.

In summary, the study by Klein (2021) provides an alternative perspective on the nexus between refugees and terrorism in host countries, contradicting the findings of Choi and Salehyan (2013) and Milton et al. (2013) by suggesting that there is no negative impact of refugee numbers on terrorism, particularly domestic terrorism. Furthermore, Klein's study represents the first attempt³ to empirically test the potential mechanisms underlying the positive impacts of refugee numbers on terrorism predicted in previous literature. In this regard, the present research extends and deepens Klein's attempt to capture the events surrounding refugees beyond simply considering refugee numbers by including the measure of refugee crises in the empirical analysis.

Another academic article that challenges the findings of Choi and Salehyan (2013) and Milton et al. (2013) is the study by Eybergen and Andresen (2022). The authors' results contradict the 'Trojan Horse' theory of (refugee) immigration, which states that "allowing greater number of refugees into the country will result in more incidences of violent terrorism". Eybergen and Andresen (2022) utilised GTD (LaFree and Dugan, 2007) and the data by UNHCR (UNHCR, 2022b) similarly to the articles discussed above, however, instead of refugees, they included "people of concern". That category encompasses all groups of people, for whom UNHCR has a responsibility to provide assistance: refugees, IDPs, asylum-seekers, stateless, and others. Notably, Ey-

³To the best of knowledge of the author of this dissertation

bergen and Andresen (2022) were the first in this branch of literature, who recognised the necessity to take into account various vulnerable groups of displaced people as their status is often changeable within a short period of time. For instance, internally displaced persons (IDP) become refugees right after they cross an international border. The measure of refugee event severity proposed in this dissertation takes into consideration the involvement or potential involvement of various groups of concern in a refugee event in a host country, thereby providing an index complimenting the existing literature.

In their study, Eybergen and Andresen (2022) included 70 countries for years 2008 and 2016. This restriction allowed them to utilise the available data on demographics of people of concern for recent years. Nevertheless, the authors used similar Negative Binomial model and Zero-Inflated Negative Binomial models as the articles discussed above. Additionally, Eybergen and Andresen (2022) employed the dynamic setting for their model specifications in the same way as the papers presented before. The findings of the study revealed no statistically significant effect of displaced populations on either the number of terrorist incidents or the casualties resulting from such incidents. Furthermore, the demographic characteristics of the displaced populations, such as the proportion of young males, did not have any statistically significant effect on terrorism.

Therefore, the research presented in this chapter of the dissertation complements and extends the study conducted by Eybergen and Andresen (2022) by considering a much longer time period in the sample and introducing a refugee crisis index that captures multiple dimensions of complex refugee events in host countries.

The concluding academic publication in this section, discussing the impact of refugees on terrorism in a hosting country, is the study by Polo and Wucherpfennig (2022). Similar to Eybergen and Andresen (2022), the authors of this study also reference the “Trojan Horse” theory in their publication title. However, they also acknowledge the existence of the “Copycat” and “Scapegoat” theories, which suggest that refugees may not only be perpetrators of terrorism (“Trojan Horse” theory), but also a source of inspiration (“Copycat Theory”) or victims (“Scapegoat” theory) of terrorism.

Polo and Wucherpfennig (2022) rightfully distinguish developed countries

from the rest of the world in their investigations and highlight that the UNHCR data on refugees reflects stocks rather than flows. In summary, the authors find that the presence of refugees from countries that are known homes for transnational terrorist organisations may increase the likelihood of transnational and domestic terrorism, but only in developing countries. According to Polo and Wucherpfennig (2022), this difference can be attributed to the tighter screening and vetting procedures in developed countries, which are not as readily available in less developed countries

The authors also contend that refugees from countries with international terrorist organisations can establish a direct physical connection that may grant access to weapons, individuals, training, and expertise to domestic terrorist groups in the host nation, thereby enhancing their capabilities. However, as noted by Polo and Wucherpfennig (2022), this phenomenon is observed primarily in developing countries and does not hold true for developed countries, where more robust screening and vetting mechanisms are already in place.

Nonetheless, the authors posit that the conventional anti-refugee domestic policies adopted by host countries, particularly noticeable in developed nations, may have counterproductive effects as they reinforce the outcomes of the 'Scapegoat' theory. According to this theory, the traditional reaction of the host government in developed countries is to restrict the influx of refugees and gain approval from the right-wing-oriented population by defaming refugees and associating their arrival with various threats. Such fear-mongering among the native population stirs nationalist sentiments and incites domestic terrorism against the refugees, casting them as victims rather than perpetrators of terrorism. As highlighted by Polo and Wucherpfennig (2022), refugees and immigrants from countries that are known to export terrorism "are disproportionately likely to become the targets of (right-wing) terrorists" in the countries that host them.

Polo and Wucherpfennig (2022) traditionally rely on the Global Terrorism Database (GTD) for the period of 1970-2016 (LaFree and Dugan, 2007), as well as data on UNHCR refugee stocks (UNHCR, 2022b). The authors explicitly acknowledge that the data provided by the UNHCR represents the stock of refugees in a host country. Furthermore, they have created their own novel

dataset called “GTD-homes”, which provides information on the home countries of all 741 terrorist organisations that have conducted at least one international attack. This allows Polo and Wucherpfennig (2022) to distinguish between the number of refugees from countries with transnational terrorism presence and those without, enabling them to draw more policy-relevant conclusions.

The estimation results presented in study (Polo and Wucherpfennig, 2022) were obtained using Ordinary Least Squares (OLS) and Two-Stage Least Squares (2SLS) with an instrumental variable (IV) approach based on the initial gravity modelling at the “stage zero”. This differs from the traditional negative-binomial and logit estimation methods commonly used in the literature.

As a complement to the above-discussed work, the research in this dissertation extends the investigation by incorporating a refugee crisis index into the estimations, which allows for the consideration of not only the number of refugees hosted, but also the severity of problems associated with such hosting. Lastly, this chapter of the dissertation expands the analysis by specifically examining the impact of refugees and refugee crises in European countries, as opposed to the entire OECD subset, providing a more focused and contextualised investigation.

Based on the literature reviewed earlier, this chapter of the dissertation seeks to expand the relatively limited quantitative literature on the nexus between involuntary and, to a lesser extent, voluntary migration and terrorism. Specifically, this research investigates the impact of refugees and crises on terrorism in the country of occurrence. Unlike previous studies that have focused on simple measures of refugee and asylum seeker (their simple stocks at the end of a year) in host countries, this research considers more complex events that capture the multidimensional and interdisciplinary situations surrounding refugees and asylum seekers. These events provide a better means of measuring the influence of such situations on terrorism, as they encompass various issues that have been identified as potential mechanisms of transmission for terrorist attacks. For instance, the measure of refugee event severity accounts for factors such as refugee camps, entry prevention, inflow of humanitarian assistance, lack of access to basic needs, and inefficient assimilation of refugees, which have been identified as relevant for the terrorism occurrences

by authors such as Choi and Salehyan (2013) or Dreher et al. (2020).

Chapter 10

Data and Research Design

The first part of this section centres on the presentation and examination of the core variables of interest, alongside the control variables that are employed in this study. The selection of the data sources is based on the primary publications that have been reviewed and discussed earlier in this research, namely Choi and Salehyan (2013); Milton et al. (2013); Klein (2021); Polo and Wucherpfennig (2022); Eybergen and Andresen (2022). The subsequent section discusses the primary model specifications that are utilised for the empirical estimations, including the selection of the estimation techniques, as well as the pertinent nuances that are involved.

10.1 Data

Based on the three research questions identified in the introduction, this study has chosen three main dependent variables of interest. These variables include the overall number of terrorist events in a host country, the number of transnational terrorist events, and the number of domestic terrorist events in the host countries, or their simple transformations such as indicator variables for specific estimations. The third dependent variable of interest is the number of casualties resulting from terrorist events.

The data for these variables of interest has been obtained from the Global Terrorism Database (GTD) (LaFree and Dugan, 2007). The relevant publications discussed in the literature review of this chapter were followed to obtain the data. The separation of terrorism events between transnational and domestic terrorism is based on the well-established and highly cited study by

Enders et al. (2011), as well as the variable included in the GTD, specifically the `int.any` variable, following the approach used in the publication by Klein (2021). It is worth noting that the key difference between the two approaches lies in the time coverage. The data by Enders et al. (2011) covers the period from 1970 up to 2007, while the variable provided in the GTD allows for a longer time period, spanning from 1970 to 2019. Nonetheless, the distinction provided in the GTD is much less thorough and a large proportion of events are qualified as unknown, rather than domestic or transnational.

In contrast to Choi and Salehyan (2013), who studied 154 countries, this study focuses on only five European Union (EU) countries for which data on refugee events measures were constructed. The countries studied are Austria, Germany, Italy, Spain, and the UK. The time dimension of this panel data is from 1951-2019; however, due to the availability of dependent variable (terrorism) data, it is reduced to 1970-2019 (available in GTD) or 1970-2011, which is determined by the separation into domestic and transnational events by Enders et al. (2011).

The main independent variables of interest for these countries are the stock of refugees and asylum-seekers registered in a host country, as well as the refugee crisis index (benchmark classification). The alternative classification was tested and not reported for compactness as it generated qualitatively similar results. The stock of asylum-seekers was included into the study because theoretically, if a terrorist who pretends to be a refugee arrives into the country of destination, he does not necessarily need to wait for their asylum application to be decided on, but can commit to terrorism much earlier. This is especially true for developed countries with a rigorous screening process in place, quickly identifying those with no real basis for claiming asylum, as it might be the case for a terrorist pretending to be a refugee (as per Trojan Horse theory).

The first subsection below examines the data on refugees and asylum seekers against terrorism data and draws preliminary conclusions. The second subsection presents a similar descriptive analysis but for the refugee event severity index and terrorism. Finally, the third subsection discusses the control variables also employed in the research setting discussed in the section after.

10.1.1 Refugees and Terrorism Events

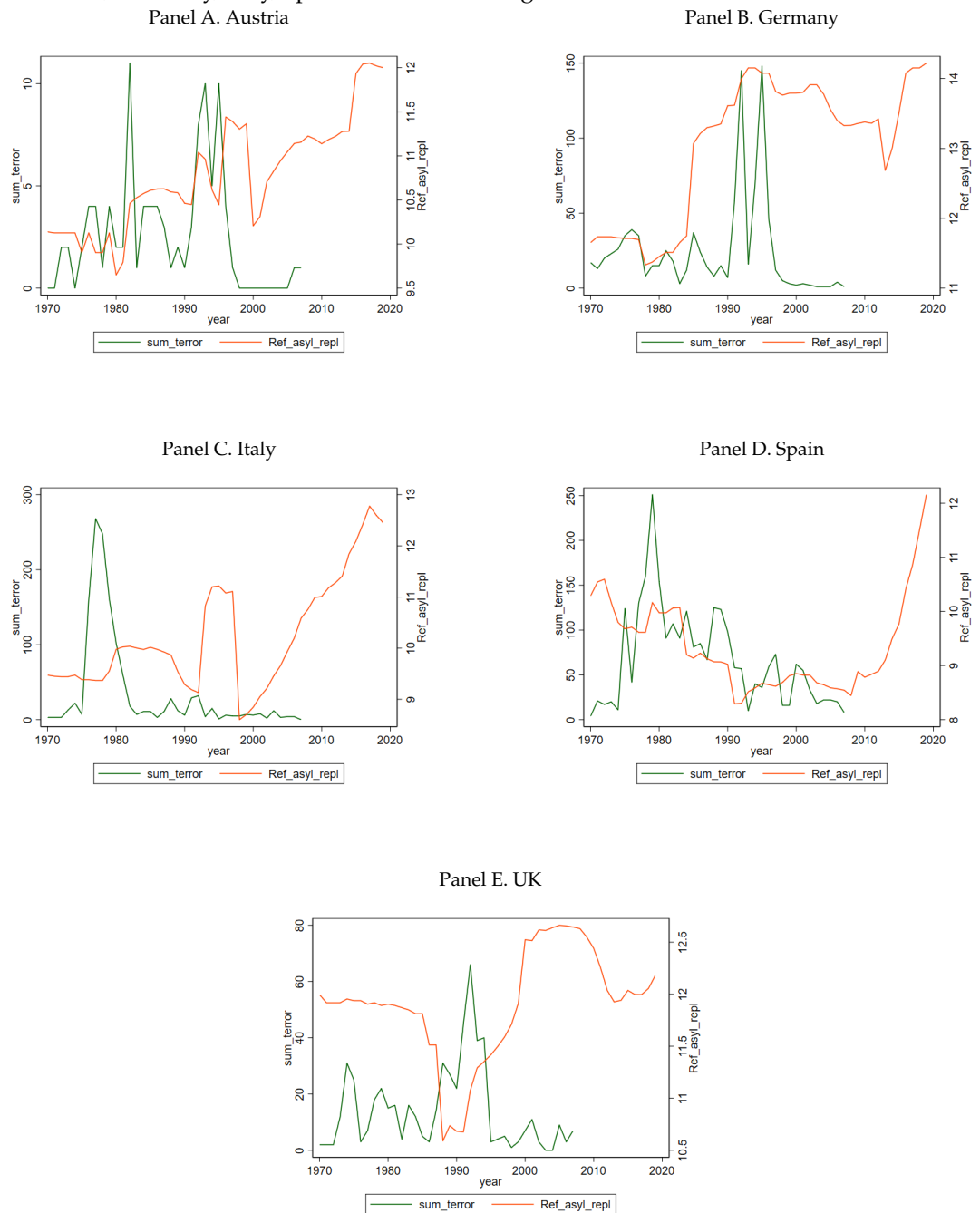
Following the approach adopted in relevant publications discussed in the literature review, the data on refugees and asylum-seekers is transformed by taking the natural logarithm of the variable after adding 1 to the base, before inclusion into the estimations. This is done to obtain the percentage-change interpretation, while avoiding the issue associated with taking the logarithm of zero.

Figure (10.1.1.1) plots the overall number of terrorist events in the countries selected for this research against the total stock of refugees and asylum-seekers hosted in those countries using the same data for terrorism as Choi and Salehyan (2013). The data reveals that the number of terrorist events, represented as the sum of domestic and transnational events presented in Enders et al. (2011) is decreasing towards the end of the sample, while the number of hosted people is increasing, suggesting a possible overall negative association. However, the relationship does not seem very strong, and some peaks of terrorism coincide with increases in refugees and asylum-seekers hosted, as happened in Germany in the 1990s but only for short intervals. In addition, the overall trend for terrorism events in Spain seem to coincide with the refugees data trend, however, one can notice that Enders et al. (2011) did not update their dataset from 2007, so the work by Choi and Salehyan (2013) did not (and could not) have access to latest data on both refugees and terrorism.

This dissertation used both the data by Enders et al. (2011) and the newly updated GTD by LaFree and Dugan (2007). Notwithstanding that, the outcome of the estimations show similar result both qualitatively and quantitatively. The domestic *vs* transnational events by Enders et al. (2011) are presented further, after that the updated GTD terrorism data is also illustrated and analysed in a similar way.

Upon examination of the domestic terrorism, the same visual pattern of the relationship between the number of terrorist events and the total stock of refugees and asylum seekers hosted in those countries was observed (see Figure 10.1.1.2 and 10.1.1.3). The spike in data for Germany in the 1990s, which was previously observed in the overall number of terrorist events and the coinciding trends for Spain are still present but appear to be less persistent. Furthermore, the remaining countries show a predominantly negative associ-

Figure 10.1.1.1: Number of Terrorism Events and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



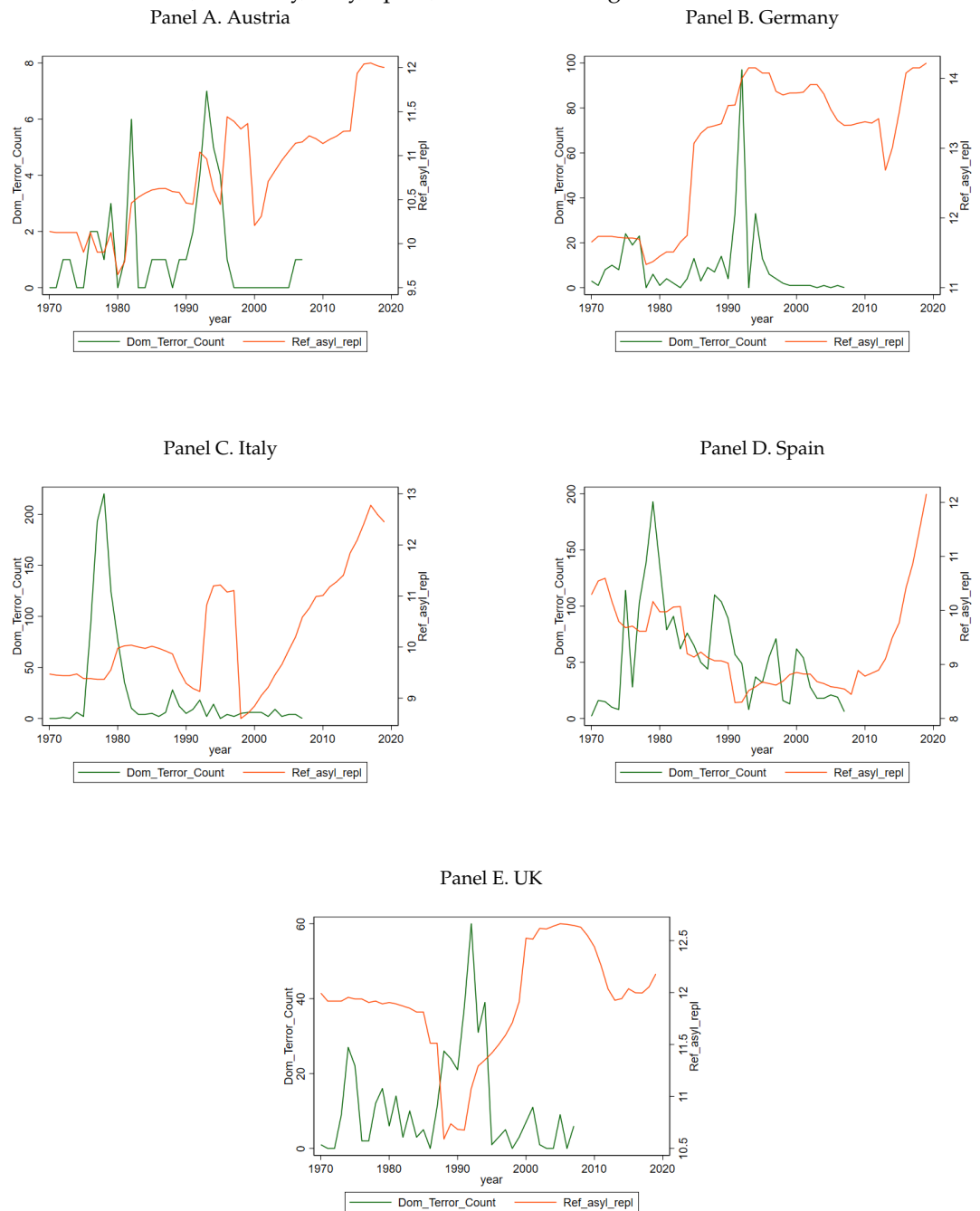
Number of Terrorism Events is obtained from GTD (Enders et al., 2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

ation.

However, upon analysing the changes in the transnational terrorism event count by Enders et al. (2011), it appears to be more positively associated with the number of refugees and asylum seekers in the country, making the negative correlation between the two variables less obvious and potentially less significant.

The following table displays the pairwise correlations of the variables plotted in Figures 10.1.1.1-10.1.1.3. The results indicate that the number of refugees

Figure 10.1.1.2: Number of Domestic Terrorism Events and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom

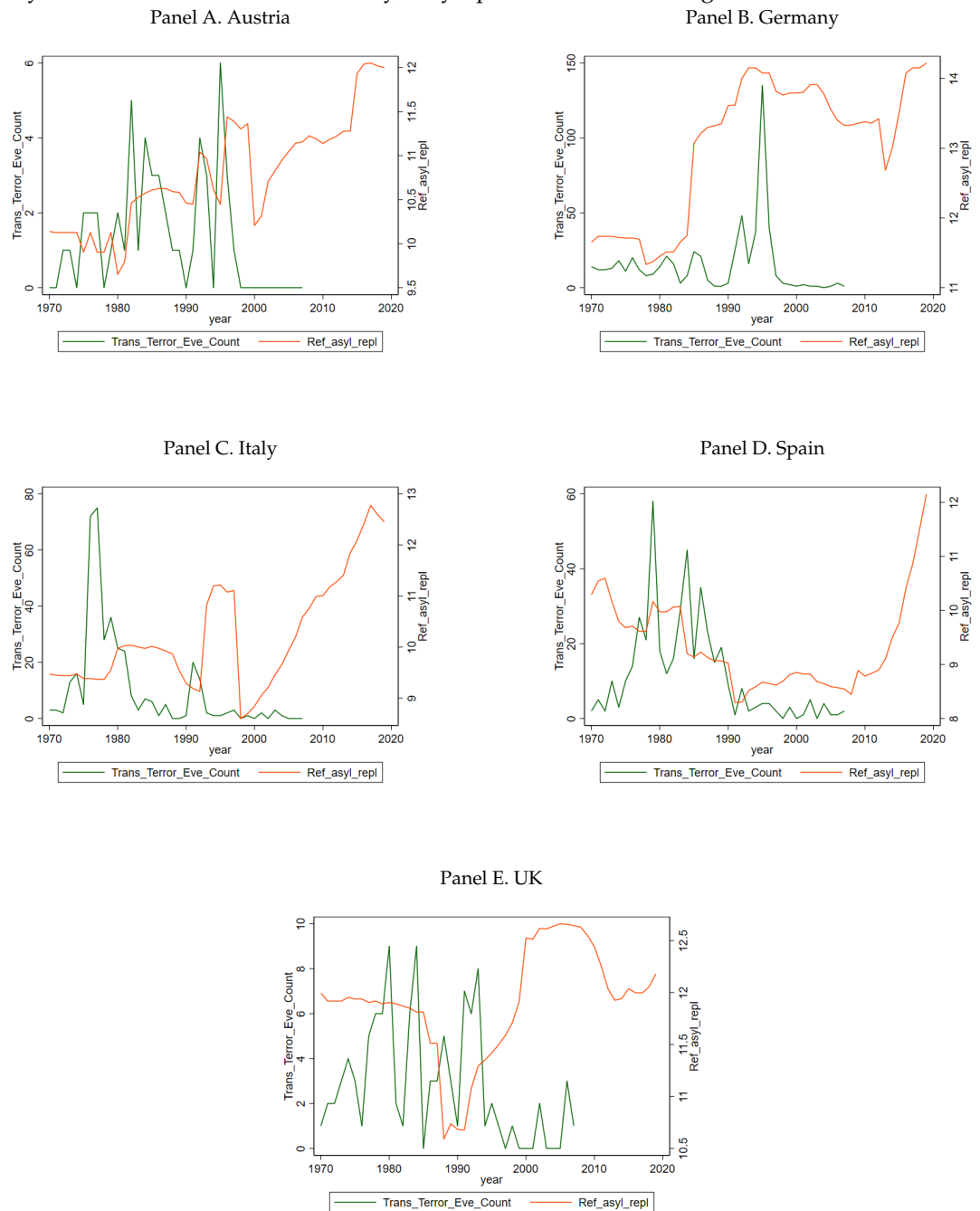


Number of Domestic Terrorism Events is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

and asylum seekers is statistically significantly and negatively correlated with all types of terrorism presented in Enders et al. (2011). the only exception is transnational terrorism, which shows very small but positive association. Nevertheless, it is not statistically significant.

This findings already provide basis to contradict the conclusions of Choi and Salehyan (2013), who found a statistically significant positive effect of refugees on any type of terrorism. It also partially contradicts the predictions of Polo and Wucherpennig (2022), who suggested that domestic terrorism

Figure 10.1.1.3: Number of Transnational Terrorism Events and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of Transnational Terrorism Events is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

targeting refugees increases in developed countries with their arrival, while having no significant impact on transnational terrorism. However, further investigation through the appropriate statistical regression analysis with control variables is necessary to draw any solid conclusions. The results of such analysis are presented and discussed in the next section.

Following the study by Klein (2021) the same visual analysis was done for the overall and the domestic-international characterisation of terrorist events provided in the Global Terrorism Database (LaFree and Dugan, 2007). The

Table 10.1.1.1: Pairwise Correlations of the numbers of stocks of Refugees and Asylum seekers hosted in the selected countries with the Number of Terrorism events in those countries.

	Refs+Asyl seek	Sum Terror Enders	Domest Terror N	Transnat Terror N
Refs+Asyl seek	1.0			
Sum Terror Enders	-.2206*	1.0		
Domest Terror N	-.3085*	.9607*	1.0	
Transnat Terror N	.0720	.7378*	.5213*	1.0

Number of Terrorism Events (all types and overall) is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b), *- denotes significance at 95% confidence level.

graphs are presented in Figures 10.1.1.4-10.1.1.6 below.

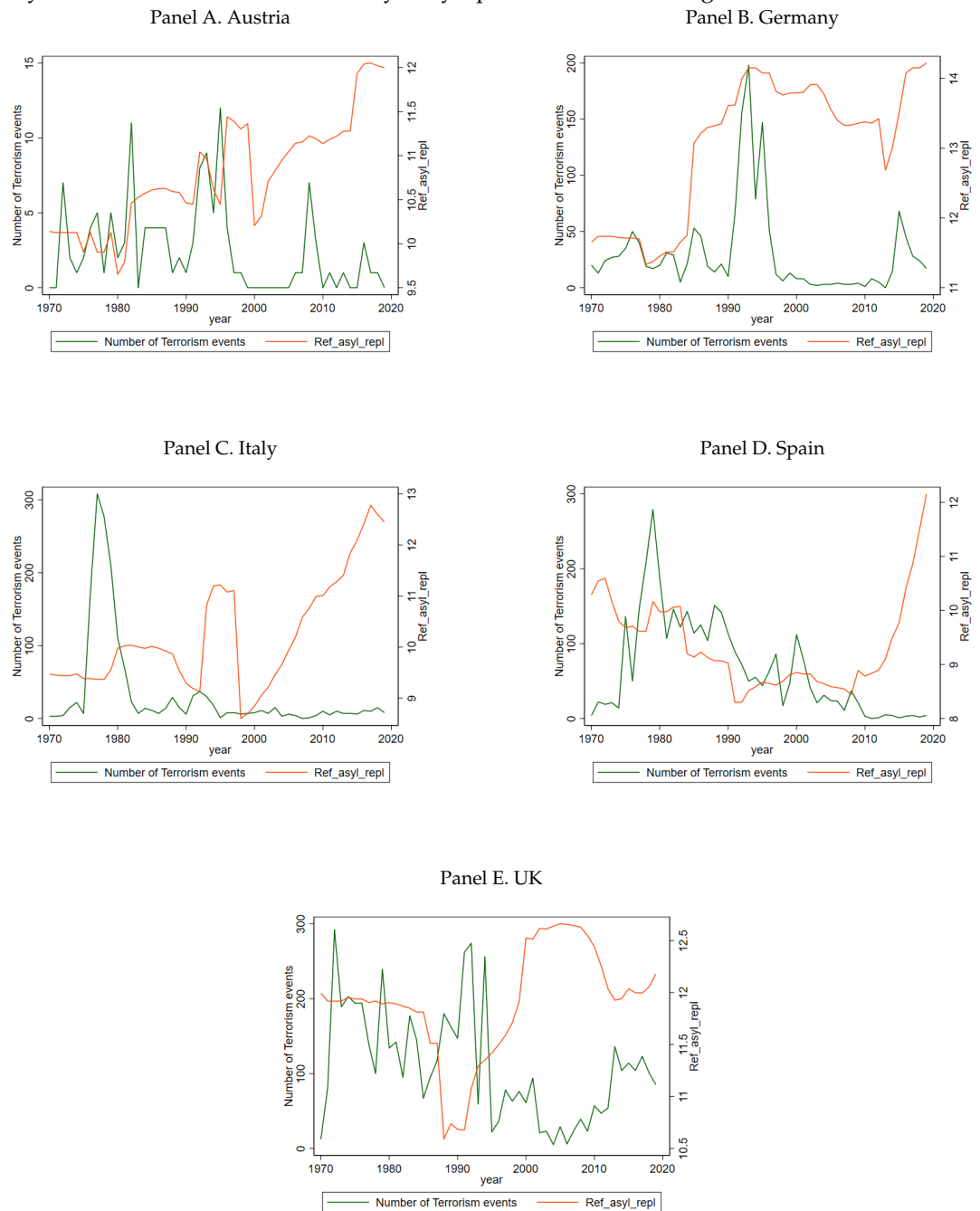
The data in GTD is updated yearly, hence providing observations up to 2019, which is the year for which the refugee crisis index was constructed. The negative correlation, developing towards the end of the sample becomes more evident from Figure 10.1.1.4. This finding further supports the potential negative association between the two variables.

One can also spot the discrepancy between the data by Enders et al. (2011) and the distinction provided in the GTD data itself. The UK and Austria (from 1980) had no purely domestic terrorism incidents at all according to LaFree and Dugan (2007), hence drawing a dramatic difference between the two datasets (see Figure 10.1.1.5).

The data on international terrorism by LaFree and Dugan (2007) is more extensive, as it is easier to confirm that an event is international in some way than to establish that it is strictly domestic (probably). This can be observed in Figure 10.1.1.5, where the plot shows that the international terrorism count in the GTD is higher than the count for domestic terrorism. One can also observe that the pattern of the relationship between refugees and asylum-seekers and the count of international terrorism events in the GTD is similar to that seen above for overall terrorism and the number of the chosen vulnerable categories of people. This further supports the prediction of a negative relationship between the two variables.

This paragraph discusses the correlation analysis presented in Table 10.1.1.2, which shows the pairwise correlations between international and domestic terrorism and refugees and asylum seekers in selected European countries. The paragraph points out that the table highlights the differences between the two datasets and suggests that the correlation between refugees and asylum seekers and domestic terrorism is statistically significant and negative, while the correlation with international terrorism is negative but not statistically sig-

Figure 10.1.1.4: Number of Overall Terrorism Events (GTD) and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom

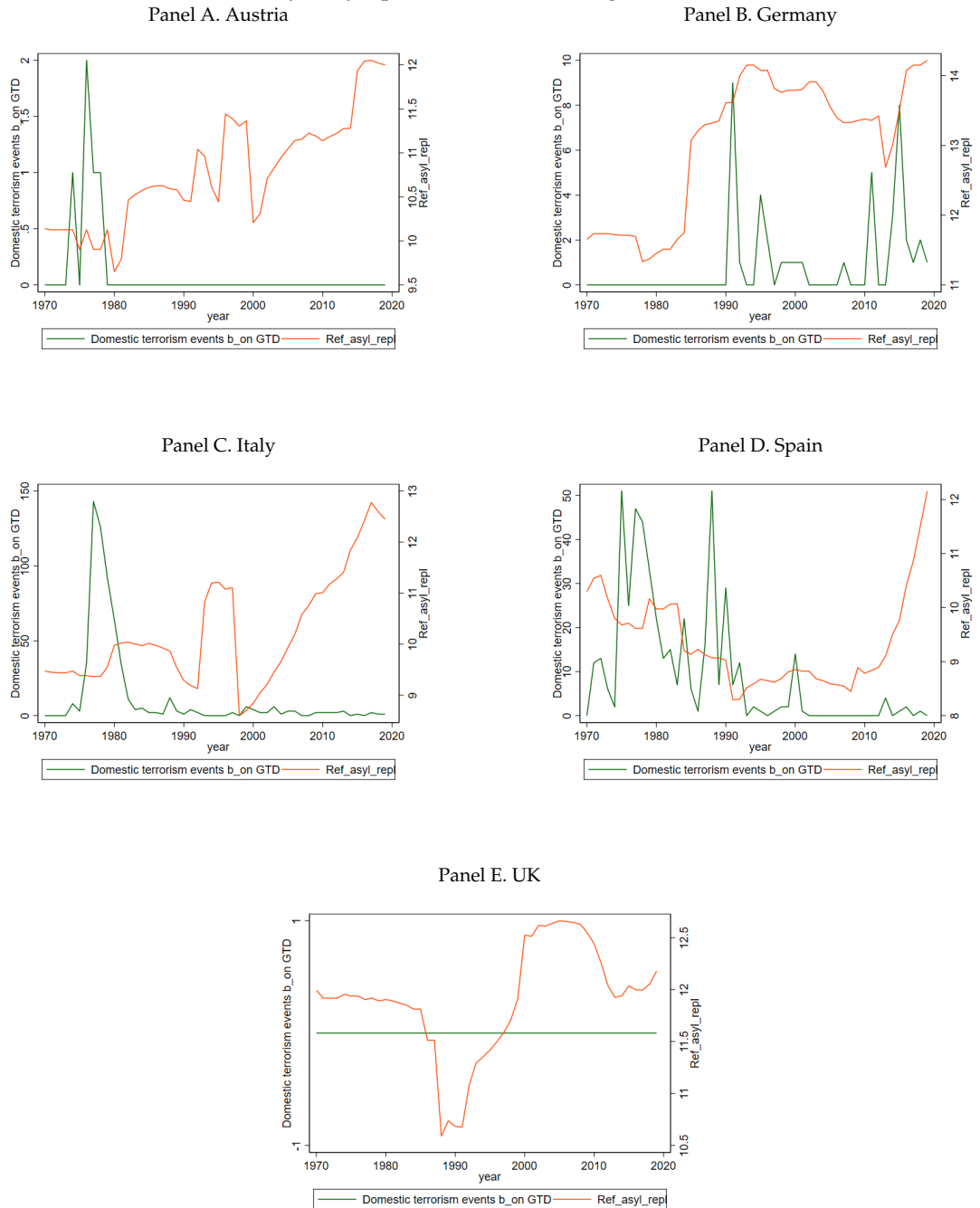


Number of Terrorism Events is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

nificant. The paragraph notes that the results obtained from the GTD dataset should be treated with care since the separation of domestic and international terrorism is not done as rigorously as in Enders et al. (2011).

To illustrate the argument of negative association further, the pairwise correlation is provided for the same variables as in Table 10.1.1.2 but excluding the UK (see Table 10.1.1.3). The exclusion of the country due to its potential problematic case with no observation of purely domestic terrorism reveals even higher and statistically significant correlation between the refugees and

Figure 10.1.1.5: Number of Domestic Terrorism Events and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of Domestic Terrorism Events is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

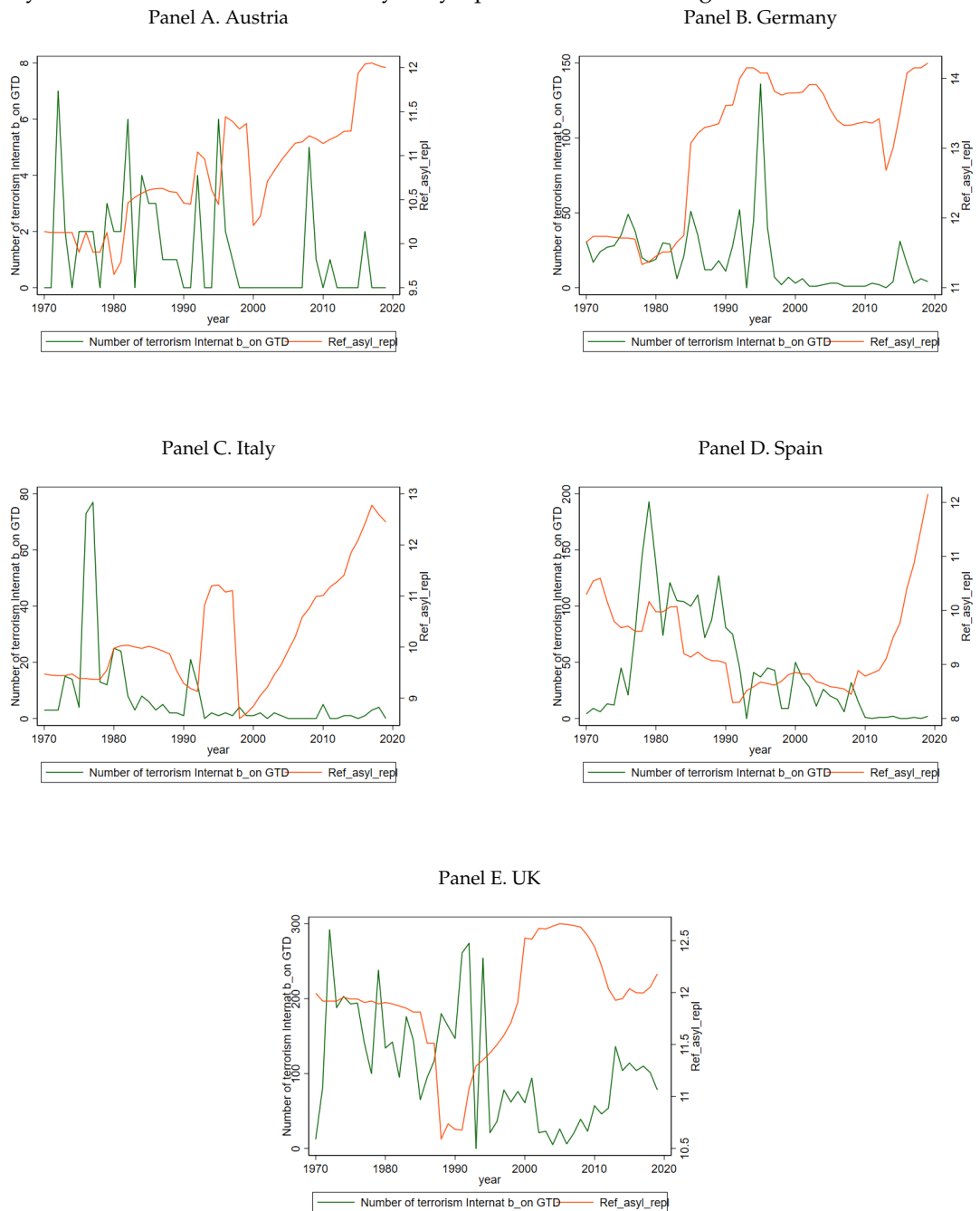
Table 10.1.1.2: Pairwise Correlations of the numbers of stocks of Refugees and Asylum seekers hosted in the selected countries with the Number of Terrorism events in those countries.

	Refs+Asyl seek	Terrorism all	Domest Terror N	Internat Terror N
Refs+Asyl seek	1.0			
Terrorism all	-.0392	1.0		
Domest Terror N	-.2472*	.4862*	1.0	
Internat Terror N	-.0387	.8762*	.0907	1.0

Number of Terrorism Events (all types) is obtained from Global Terrorism Database (LaFree and Dugan, 2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b), *- denotes significance at 95% confidence level.

asylum seekers and terrorism for the chosen European countries. Hence, the analysis provides further basis for contradicting the results by Choi and Sale-

Figure 10.1.1.6: Number of International Terrorism Events and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of International Terrorism Events is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

hyan (2013).

Table 10.1.1.3: Pairwise Correlations of the numbers of stocks of Refugees and Asylum seekers hosted in the selected countries with the Number of Terrorism events in those countries, excluding the UK.

	Refs+Asyl seek	Terrorism all	Domest Terror N	Internat Terror N
Refs+Asyl seek	1.0			
Terrorism all	-.1748*	1.0		
Domest Terror N	-.2216*	.7586*	1.0	
Internat Terror N	-.1791*	.7960*	.3664*	1.0

Number of Terrorism Events (all types) is obtained from Global Terrorism Database (LaFree and Dugan, 2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b), *- denotes significance at 95% confidence level.

Table 10.1.1.4 provides information on the average and maximum percentage of events classified as “unknown” in the Global Terrorism Database for each country and year. The table reveals that the level of imprecision in the domestic/transnational identification of terrorist events varies widely across countries and years, with some years and countries having a high percentage of events classified as “unknown”.

Table 10.1.1.4: The Average and Maximum Shares of Events Put into ‘Unknown’ Category by country GTD.

Country	Average ‘Unknown’ Share	Maximum ‘Unknown’ Share	Years with $\geq 25\%$ ‘Unknown’ Share
Austria	46.07	100	48.98
Germany	29.61	100	51.02
Italy	43.77	100	73.47
Spain	24.64	100	38.78
UK	4.17	100	2.04

All inputs in the table are in percentages. The unknown share is compared with the overall number of terrorism events. Obtained by the author’s calculations using Global Terrorism Database by LaFree and Dugan (2007).

This level of imprecision in the classification of events can lead to potential biases in econometric models that use the GTD data to estimate the effects of refugees and refugee crises on domestic or transnational terrorism. In particular, the imprecision may lead to an underestimation of the true effects as some events that should have been classified as domestic or transnational have been classified as “unknown”. Therefore, caution should be exercised when interpreting the results of econometric models that use GTD data classification of domestic and transnational events.

On the other hand, the data by Enders et al. (2011), which was employed by Choi and Salehyan (2013) and many others, also has a similar problem of observations classified as “Unknown”. Table 5 illustrates the problem in manner similar to Table 10.1.1.4. One can easily see that the data by Enders et al. (2011) is much more detailed and their classification is treated as the benchmark for empirical analysis, while the classification from GTD is treated with care.

Table 10.1.1.5: The Average and Maximum Shares of Events Put into ‘Unknown’ Category by country.

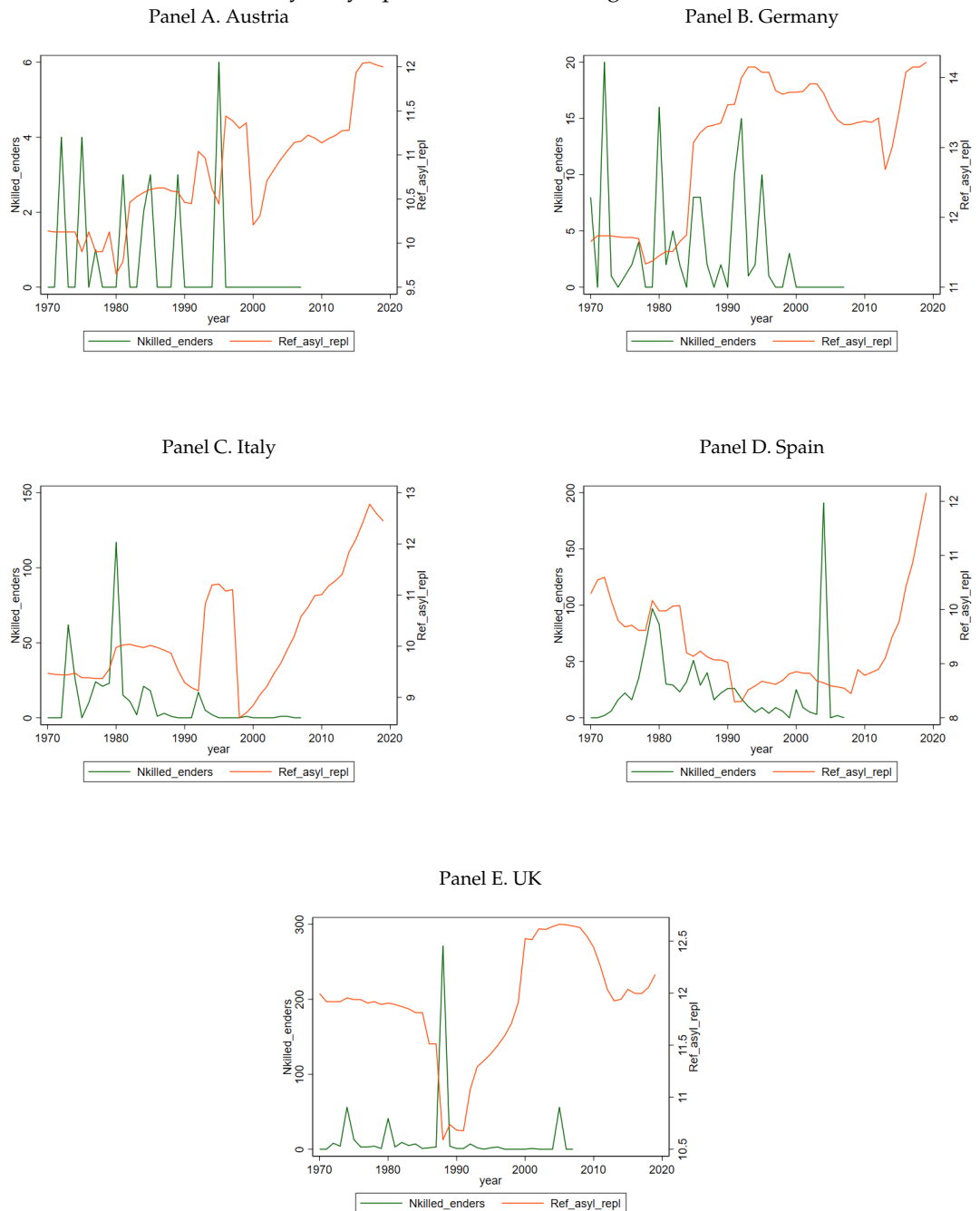
Country	Average ‘Unknown’ Share	Maximum ‘Unknown’ Share	Years with $\geq 25\%$ ‘Unknown’ Share
Austria	5.49	33.33	6.12
Germany	2.75	44.19	2.04
Italy	4.89	57.14	2.04
Spain	4.84	24.13	0
UK	9.05	42.85	12.25

All inputs in the table are in percentages. The unknown share is compared with the overall number of terrorism events. Obtained by the author’s calculations using Global Terrorism Database by Enders et al. (2011)

10.1.2 Refugees and Terrorism Casualties

The third dependent variable of interest is the total number of human casualties as a result of terrorist events in countries hosting refugees. Figure 10.1.2.1 shows the graphs of the casualties as identified by Enders et al. (2011) against total number of refugees and asylum seekers registered by country over the studied period of time (in a natural log format).

Figure 10.1.2.1: Number of Terrorism Casualties and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom

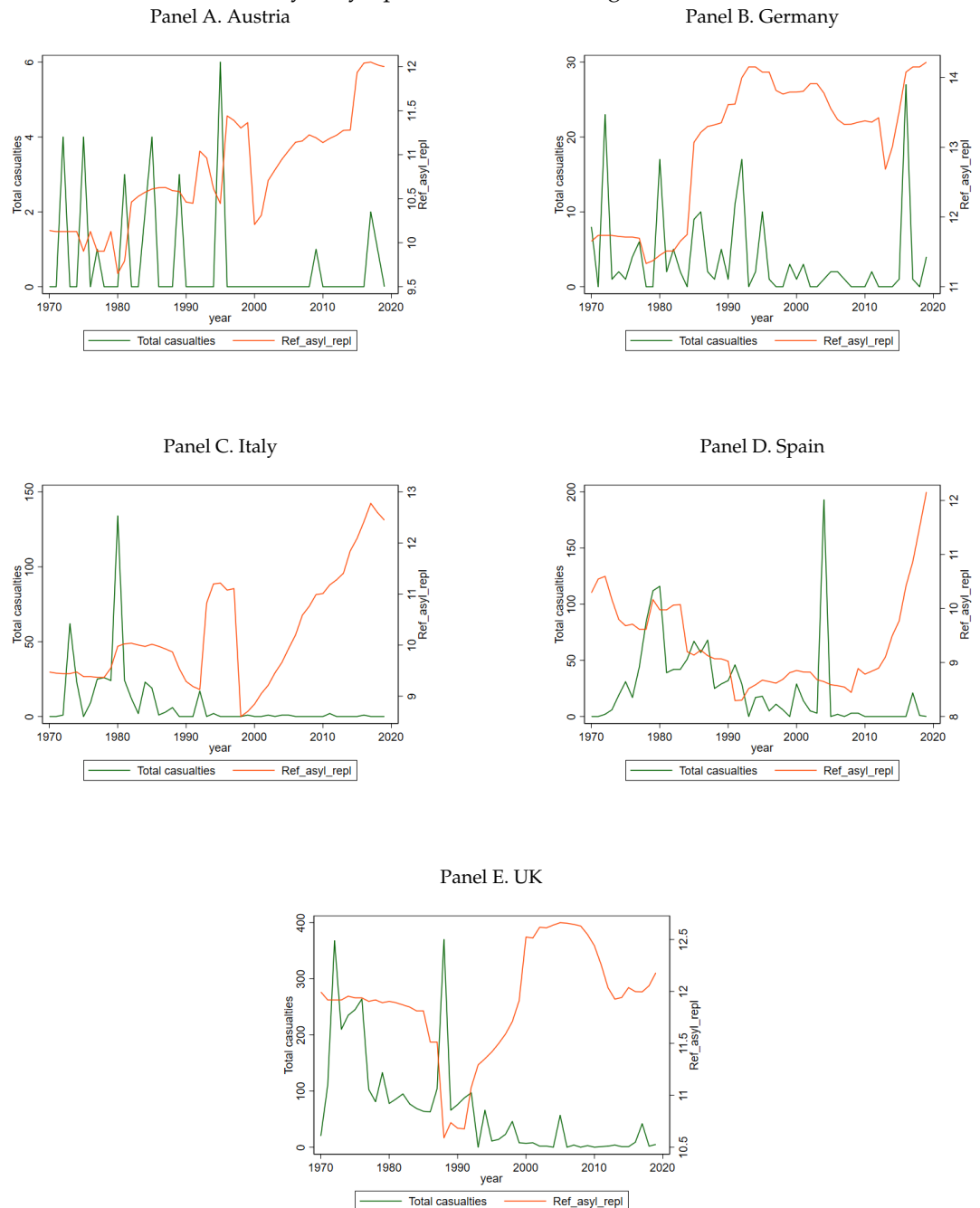


Number of Terrorism Casualties is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

There is no obvious relationship can be seen for all five countries of inter-

est, but a simple conjecture is that the relationship should be slightly negative as there is general rise in refugees and asylum seekers stocks in the hosting countries towards the end of the sample, while the number of casualties is generally decreasing towards the the end of the sample. Similar observations can be made with the use of the casualties data from Global Terrorism Database by LaFree and Dugan (2007) (see Figure 10.1.2.2).

Figure 10.1.2.2: Number of Terrorism Casualties and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of Terrorism Casualties is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

Similarly to the previous subsection the reader can find Table 10.1.2.1 showing the degree of correlation between refugees and asylum seekers and num-

ber of terrorism casualties. As predicted from the graphs, the relationship is negative but statistically insignificant. The finding provides further evidence to contradict the conclusions by Choi and Salehyan (2013), although such statement should be treated as a conjecture before discussing the results of estimations.

Table 10.1.2.1: Pairwise Correlations: Refugees+Asylum Seekers and Terrorism Casualties

	Refs+Asyl seek	Terror Casualties Enders	Terror Casualties GTD
Refs+Asyl seek	1.0		
Terror Casualties Enders	-.1809*	1.0	
Terror Casualties GTD	-.0222	.5966*	1.0

*- denotes significance at 95% confidence level.

It is also worth noting the behaviour of Domestic and Transnational Terrorism casualties in the selected host countries against the refugees and asylum seekers stocks in those countries. Figure 10.1.2.3 and 10.1.2.4 show such graphs for the data by Enders et al. (2011), while Figures 10.1.2.5 and 10.1.2.6 do the same for GTD (LaFree and Dugan, 2007).

The graphs exhibit rather negative (probably not strong) overall correlation between the variables, what is supported by the correlation table below (see Table 10.1.2.5).

Table 10.1.2.5: Pairwise Correlations: Refugees+Asylum Seekers and Terrorism Casualties

	Refs+Asyl seek	Domestic Terror Cass. Enders	Transnational Terror Cas. Enders
Refs+Asyl seek	1.0		
Domestic Terror Cas. Enders	-.2141*	1.0	
Transnational Terror Cas. Enders	-.0792*	-.0015	1.0

*- denotes significance at 95% confidence level.

Table 10.1.2.6: Pairwise Correlations: Refugees+Asylum Seekers and Terrorism Casualties GTD

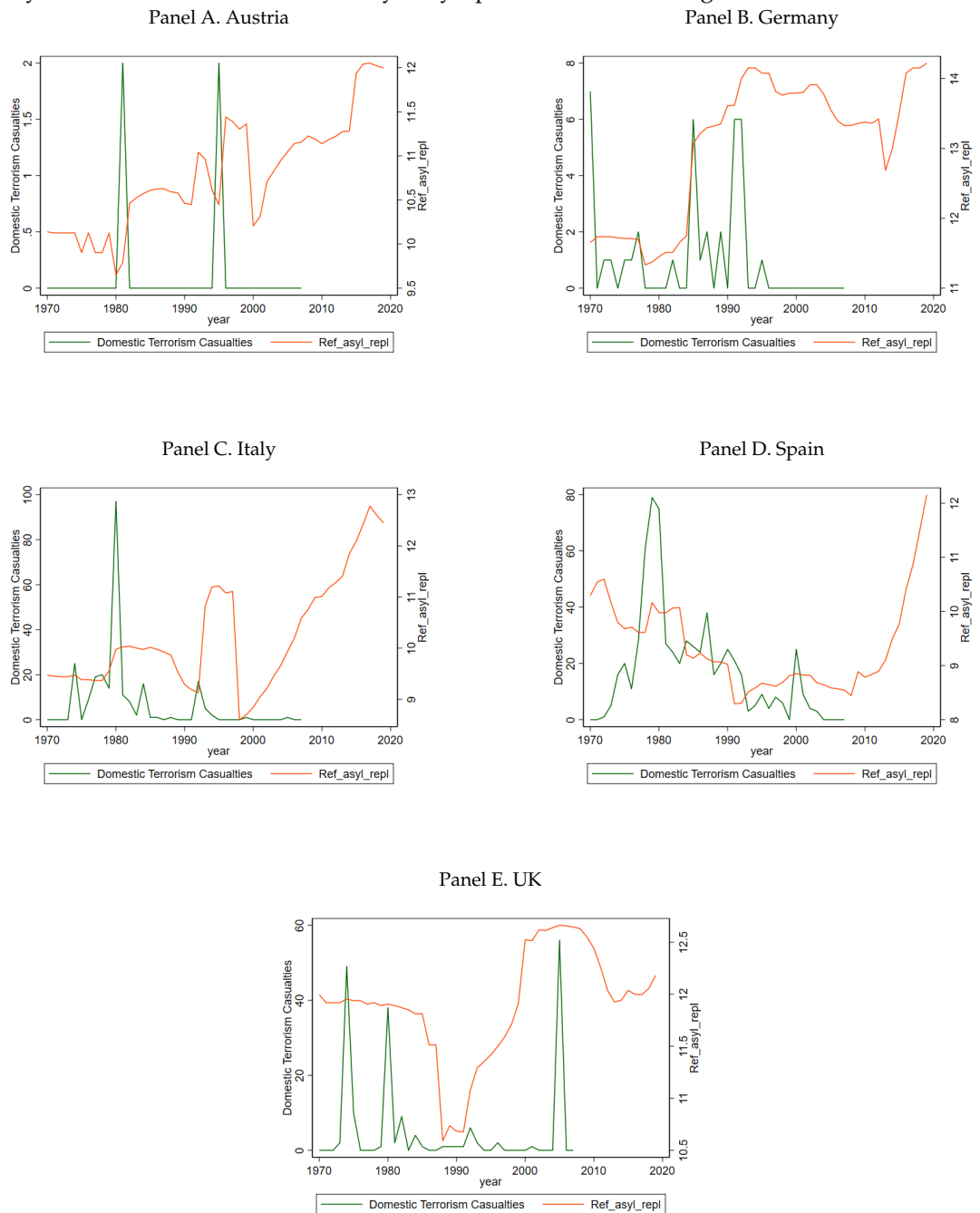
	Refs+Asyl seek	Domestic Terror Cass. GTD	Transnational Terror Cas. GTD
Refs+Asyl seek	1.0		
Domestic Terror Cas. GTD	-.1925*	1.0	
Transnational Terror Cas. GTD	-.0672*	.0350	1.0

*- denotes significance at 95% confidence level.

Finally, Table 10.1.2.7 below shows the descriptive statistics for the variables discussed above. The descriptive statistics further illustrate the dramatic differences between the Domestic-Transnational and Domestic-International classifications provided by the two datasets. The one by Enders et al. (2011) has fewer observations (only 190 for all 5 countries), while the one by LaFree and Dugan (2007) has 250 observations overall, hence dictating the size of the sample used for the estimations.

Provided with the differences in classification discussed above, one can

Figure 10.1.2.3: Number of Domestic Terrorism Casualties and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom

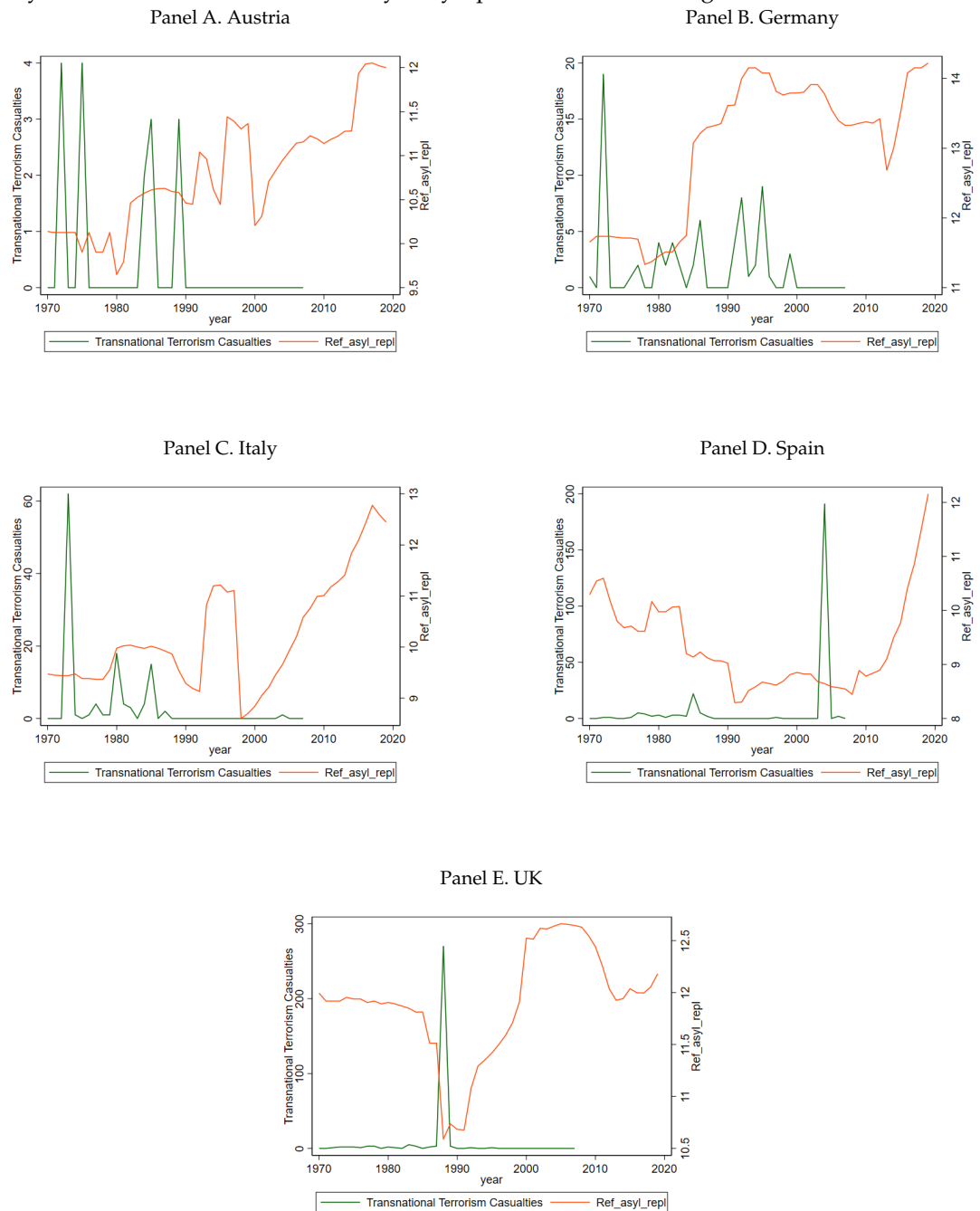


Number of Domestic Terrorism Casualties is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

note the dramatic differences in all the descriptive statistics of the two approaches, except for the minimum value.

Hence, the relationship between the terrorism events, terrorism casualties and the natural logarithm of the stock of refugees and asylum seekers in Austria, Germany, Italy, Spain and the UK seems qualitatively equivalent across the two datasets (by Enders et al. (2011) and by LaFree and Dugan (2007)). In the majority of cases the signs of relationships coincide. The study by Choi and Salehyan (2013) used the classification by Enders et al. (2011) as a bench-

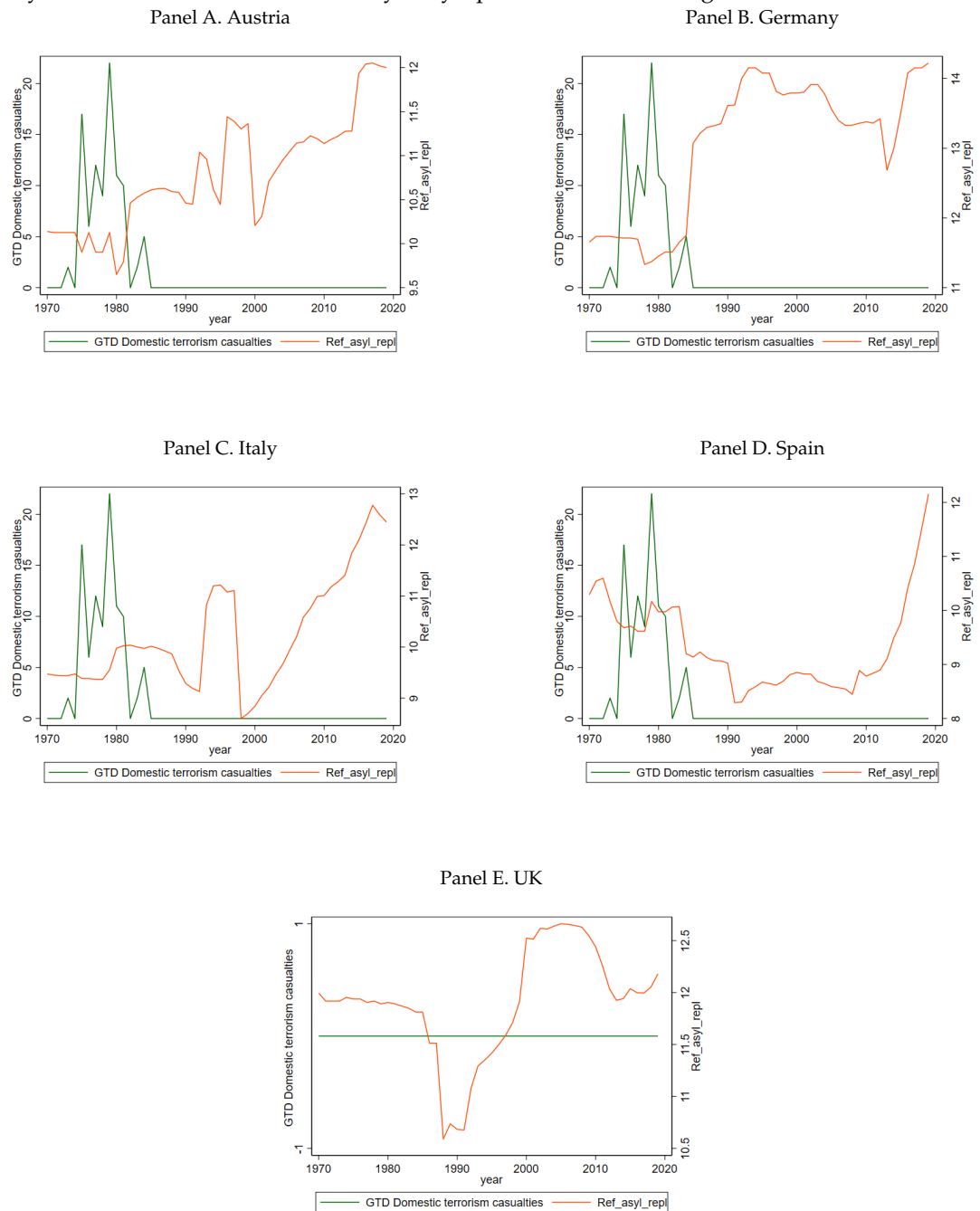
Figure 10.1.2.4: Number of Transnational Terrorism Casualties and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of Transnational Terrorism Casualties is obtained from Enders et al. (2011) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

mark, although studying the GTD specification as well. In their estimations, they found positive impact of refugee stocks on terrorism and casualties for all types of variables. This dissertation adopts the same approach to the usage of the datasets for the dependent variables.

Figure 10.1.2.5: Number of Domestic Terrorism Casualties GTD and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



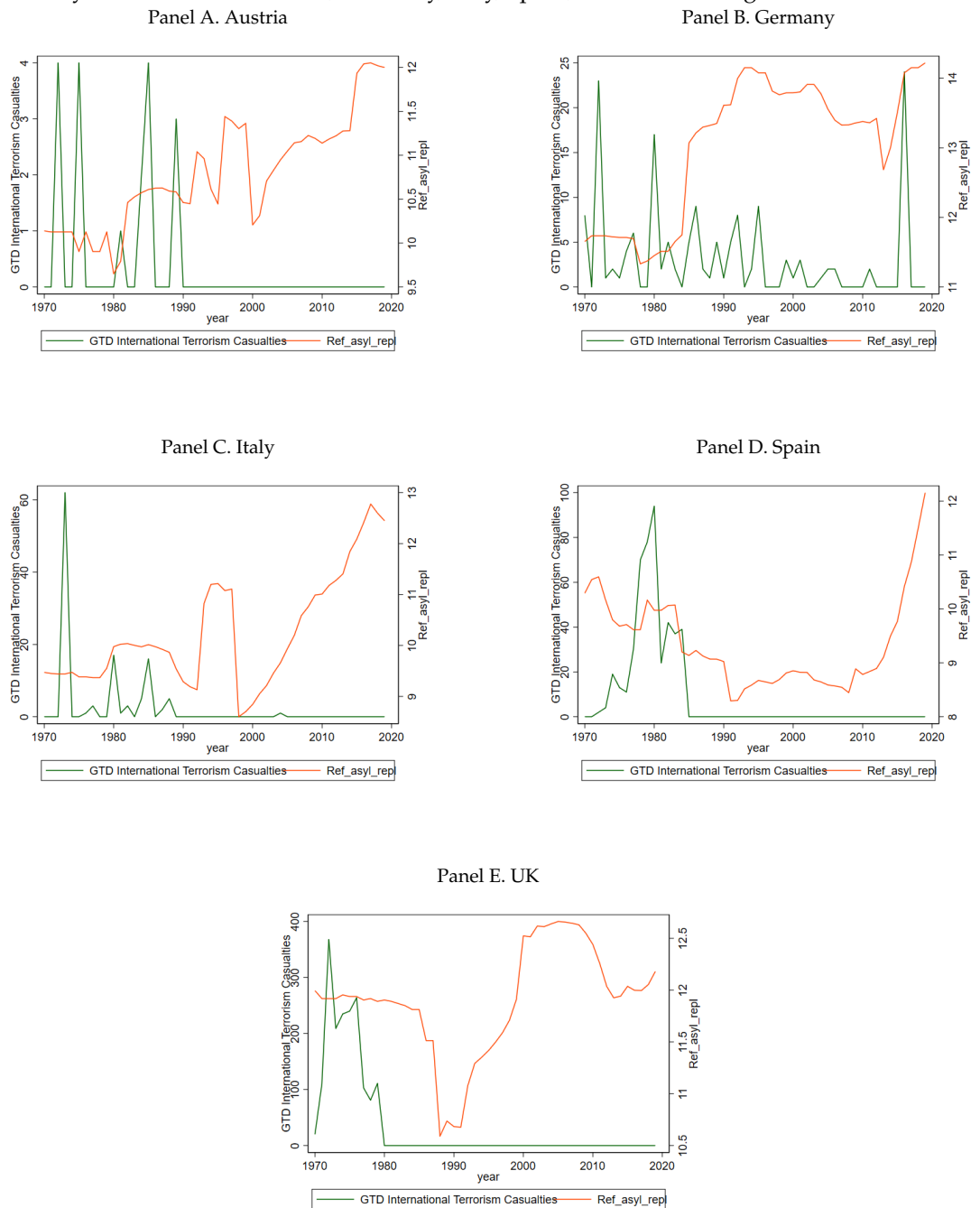
Number of Domestic Terrorism Casualties is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

10.1.3 Refugee Crises and Terrorism Events

This subsection provides the visual analysis of the relationship between terrorism events and the measure of refugee events severity proposed in this dissertation (further referred refugee crises index) before as well as the descriptive and correlation statistics for the chosen main variables of interest.

Following the approach from Romer and Romer (2017) the obtained index of refugee event severity is divided by 5 (the level of moderate crisis) to obtain

Figure 10.1.2.6: Number of International Terrorism Casualties GTD and Number of Refugees and Asylum-Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Number of International Terrorism Casualties is obtained from LaFree and Dugan (2007) and Number of Refugees and Asylum-Seekers is obtained from UNHCR (2022b)

refugee crisis index, which is used in the empirical estimations.

Figure 10.1.3.1 plots the refugee crisis index¹ and overall number of terrorist events per the unit of analysis in this dissertation - country-year.

The relationship is showing that the refugee crisis index is generally higher towards the end of the sample, similarly to the refugees and asylum seekers stock. That is not surprising as one of the dimensions of the index is

¹The strict classification, which used as a benchmark as in the previous chapters of this dissertation.

Table 10.1.2.7: Descriptive statistics of Refugees+Asylum Seekers, Terrorism (incl. 2 types and 2 datasets' approaches to separation) and Casualties

Variable name	Mean	Std. Dev.	Min	Max	N
In(Refugees+Asylum Seek.+1)	10.767	2.220	0	14.221	345
Terror N Enders	28.347	46.510	0	268	190
Terror N (GTD)	48.216	66.997	0	308	250
Domest Terror N	20.242	36.789	0	220	190
Transnat Terror N	8.105	15.138	0	135	190
Domest Terror N (GTD)	4.468	15.716	0	143	250
Internat Terror N (GTD)	35.8	57.122	0	292	250
N Killed Enders	10.542	28.605	0	271	190
N Killed (GTD)	21.392	51.362	0	370	250
Dom Killed Enders	5.979	14.136	0	97	190
Trans Killed Enders	3.99	24.363	0	270	190
Dom Killed (GTD)	1.536	4.280	0	22	250
Trans Killed (GTD)	9.976	40.666	0	368	250

count based on the number of refugees and asylum seekers, i.e. the dimension is considered satisfied if the number of the group of people brakes a certain threshold. Furthermore, the more refugees and asylum seekers present then one can expect that there is a higher potential for such event to become a refugee crisis.

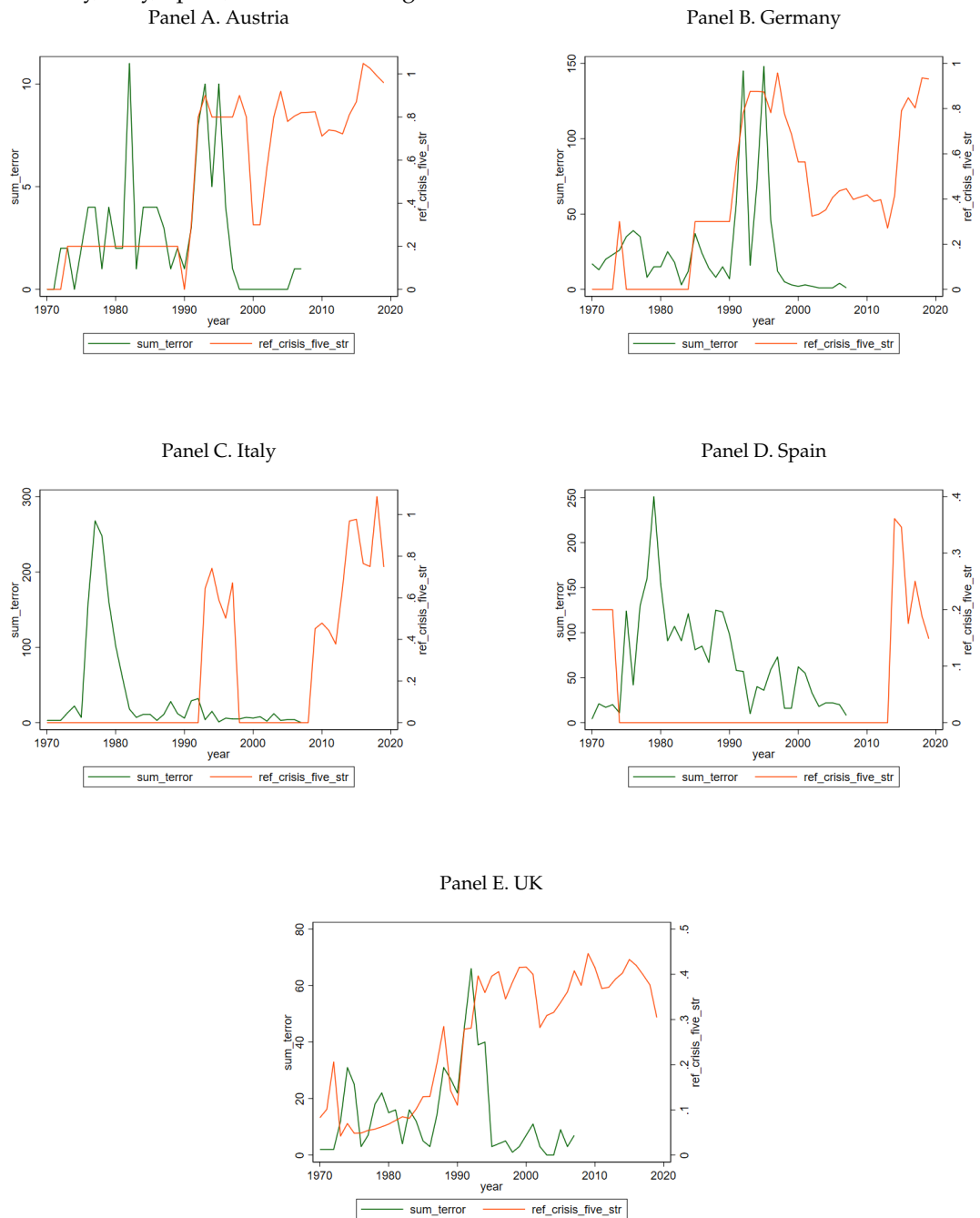
Nonetheless, the graphs of Austria, Germany, and the UK show positive correlation. Despite Italy and Spain probably exhibiting the opposite, the refugee crises index may have a positive impact on the terrorism event, especially after controlling for the size of the refugee and asylum seekers population hosted in a country.

Figure 10.1.3.2 presents the plots of the number of terrorism events as presented in the latest version of GTD (LaFree and Dugan, 2007) against the refugee crisis index. The relationship seems very similar to the one with using the data by Enders et al. (2011).

Based on the results presented in Table 10.1.3.1, one can conclude that the negative correlation, which can be conjectured from graphs of Italy and Spain, dominates the positive relationship observed for Austria and Germany. Nonetheless, the overall correlation coefficient does not guarantee the sign of the coefficient in a regression, especially after controlling for various important factors.

Figures 10.1.3.2-10.1.3.5 illustrate the graphs of the two classifications domestic vs transnational and domestic vs international by Enders et al. (2011) and by LaFree and Dugan (2007) respectively. Generally, the more positive

Figure 10.1.3.1: Number of Terrorism Events and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



Number of Terrorism Events is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

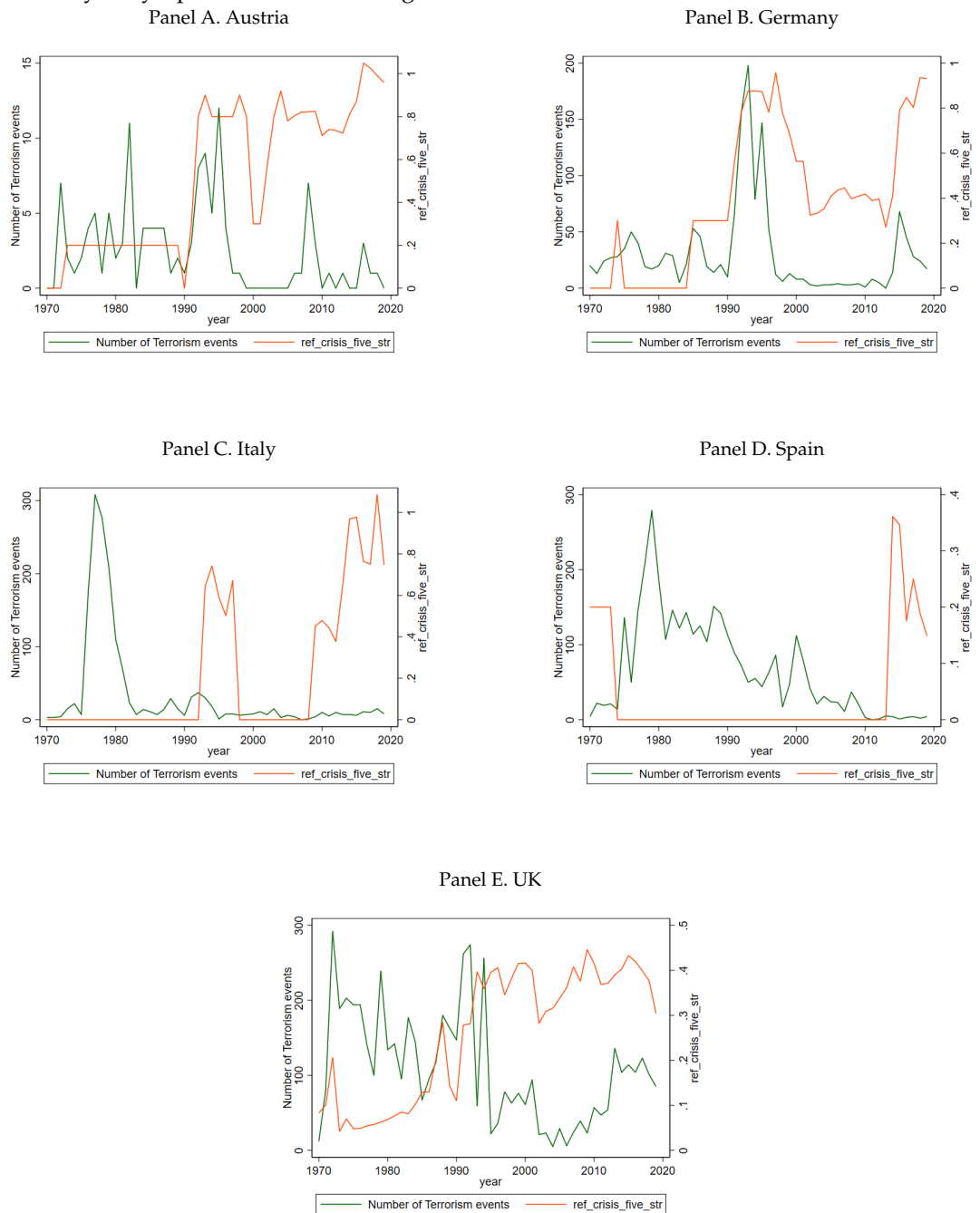
Table 10.1.3.1: Pairwise Correlations: Refugee Crisis Index and Terrorism Enders and GTD

	Ref Crisis Ind	Terrorism	Terrorism GTD
Ref Crisis Ind	1.0		
Terrorism	.6849*	1.0	
Terrorism GTD	-.2226*	-.2485*	1.0

*- denotes significance at 95% confidence level.

correlation that can be observed from Austria and Germany graphs and the rather negative for Italy and Spain, while UK - mixed, in Figures 10.1.3.2-10.1.3.5 seem to resemble the conjecture drawn from the figures for overall ter-

Figure 10.1.3.2: Number of Terrorism Events and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom

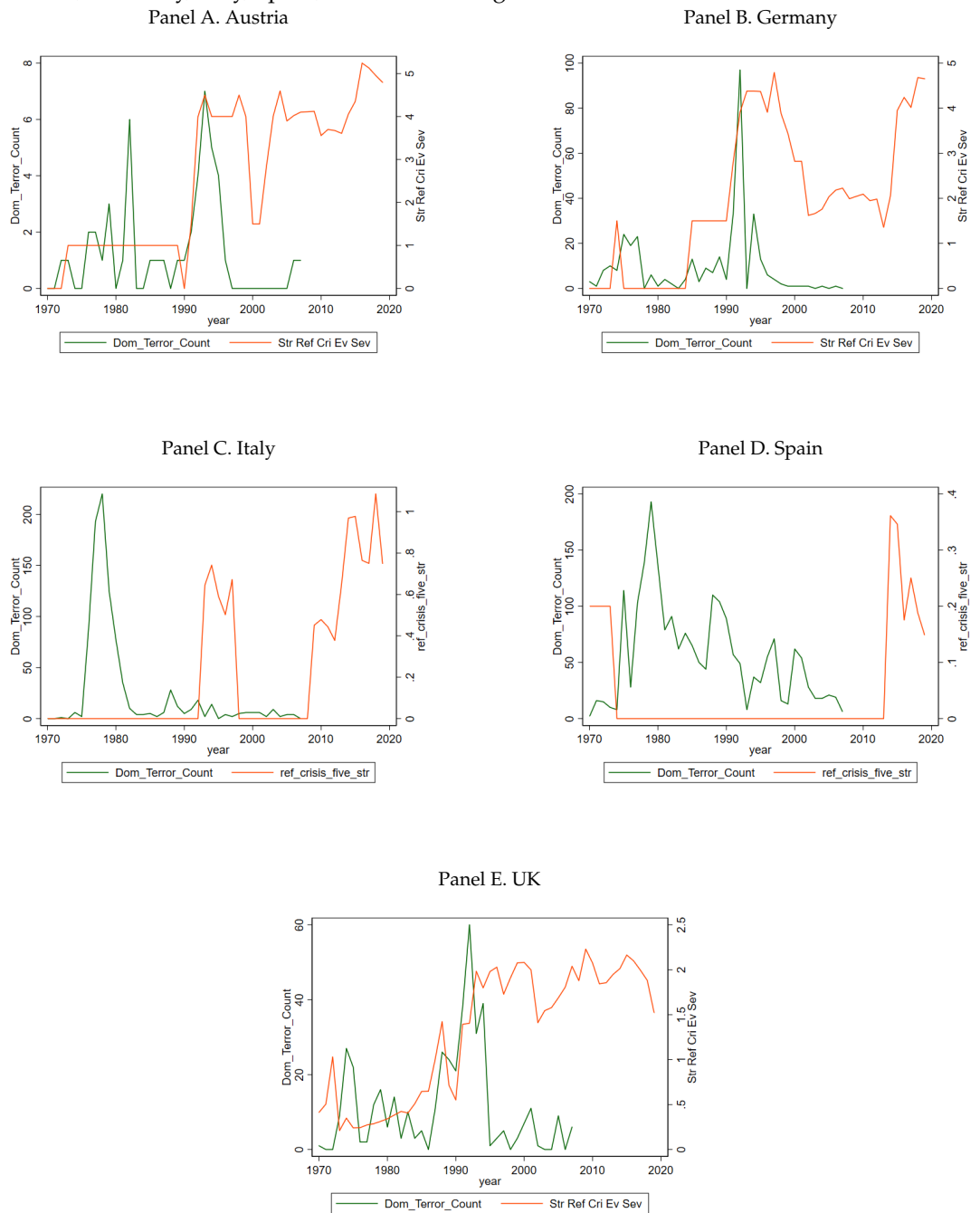


Number of Terrorism Events is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

rorism. Nevertheless, the GTD domestic classification as seen before against the number of refugees and asylum seekers, seem a bit more negative (Figure 10.1.3.4), except for the UK, which shows the correlation of zero, having no events that are purely domestic.

Table 10.1.3.2 shows the overall correlation coefficients for the graphs discussed above. The only rather unexpected results is the insignificant and very close to zero correlation coefficient between refugee crises index and transnational terrorism events by Enders et al. (2011).

Figure 10.1.3.2: Number of Domestic Terrorism Events and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



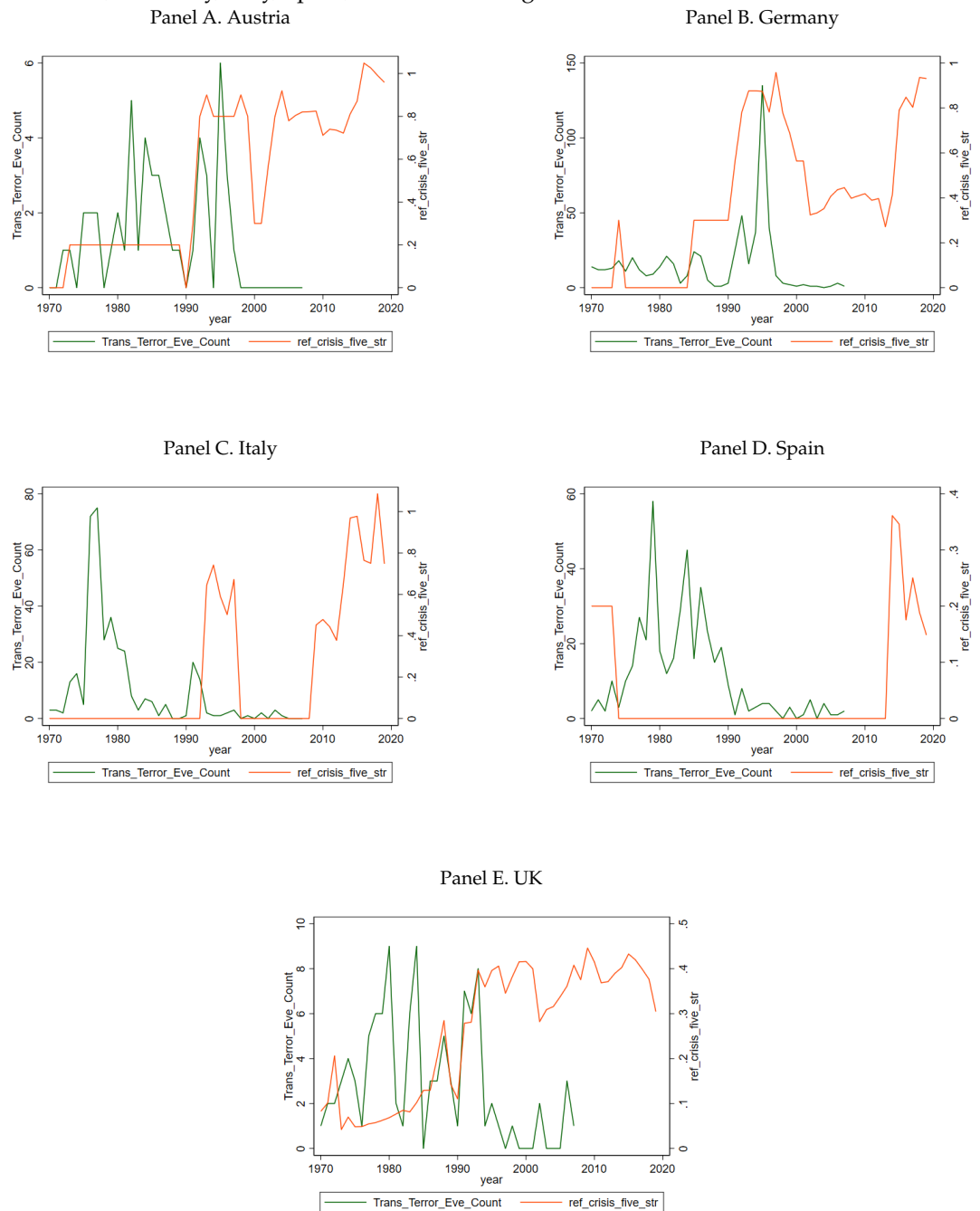
Number of Domestic Terrorism Events is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

Table 10.1.3.2: Pairwise Correlations: Refugee Crisis Index and Different Types of Terrorism (by Enders and by GTD)

	Ref Crisis Ind	Domestic Terror.	Transnat. Terror.	Domestic Terror. GTD	Internat. Terror. GTD
Ref Crisis Ind	1.0				
Domestic Terror.	-.2687*	1.0			
Transnat. Terror.	-.0061	.5213*	1.0		
Domestic Terror. GTD	.2228*	.8023*	.4707*	1.0	
Internat. Terror. GTD	-.2233*	.3475*	.2402*	.0907	1.0

*- denotes significance at 95% confidence level.

Figure 10.1.3.3: Number of Transnational Terrorism Events and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom

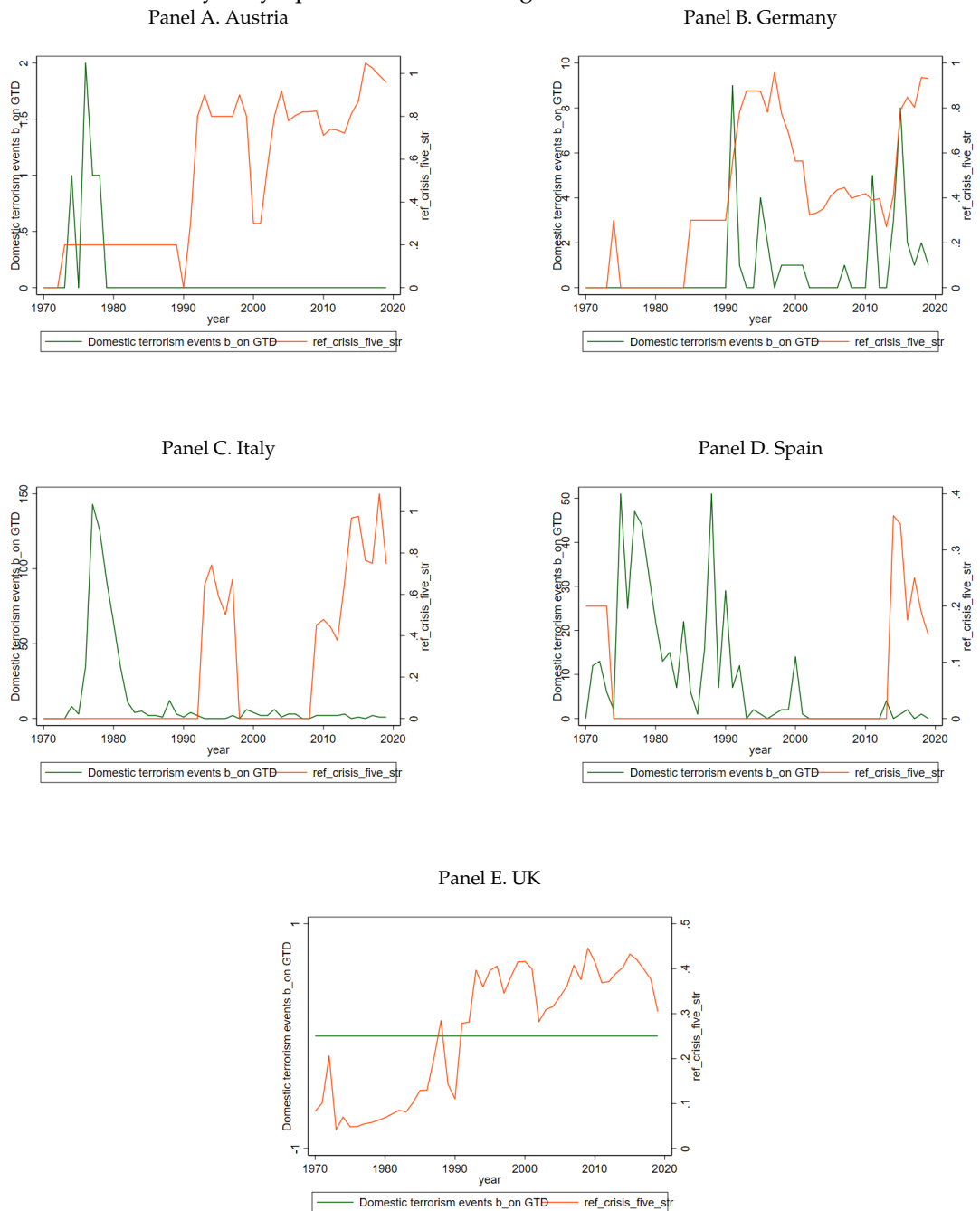


Number of Transnational Terrorism Events is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

10.1.4 Refugee Crises and Terrorism Casualties

The overall negative relationships between the number of terrorism casualties and refugee crises index across all countries for both datasets is supported by the correlation analysis in Tables 10.1.4.1 and 10.1.4.2. In a similar way, the negative relationship is also evident in the correlation analysis done by the classification of the terrorism events. Nonetheless, the relationship is statistically insignificant between refugee crisis and the number of casualties due to

Figure 10.1.3.4: Number of Domestic Terrorism Events GTD and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



Number of Domestic Terrorism Events GTD is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

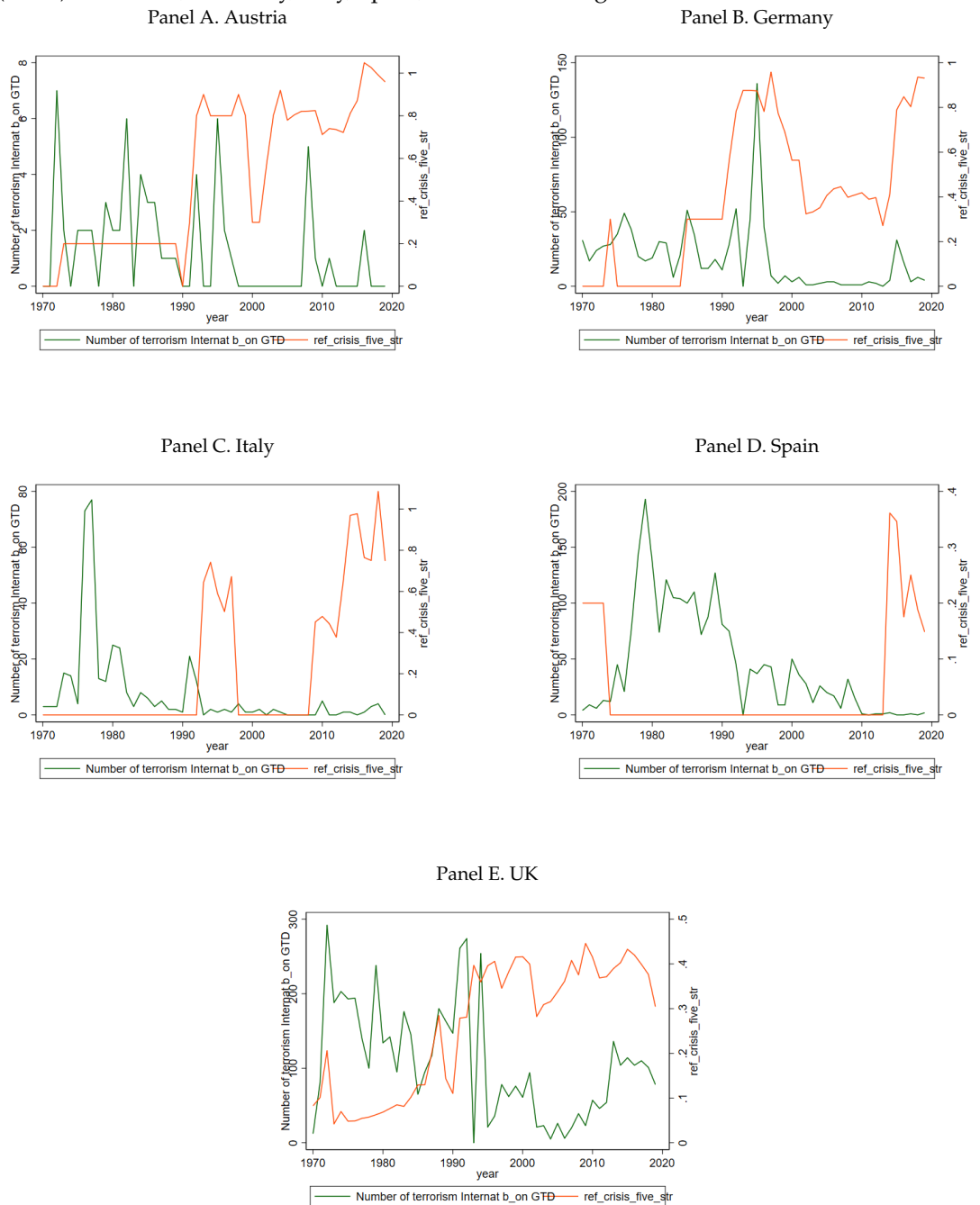
transnational terrorism events classified by Enders et al. (2011). In this manner, this result mirrors the one for the overall number of terrorism events.

Table 10.1.4.1: Pairwise Correlations: Refugee Crisis Index and Terrorism casualties (by Enders and by GTD)

	Ref Crisis Ind	Number Killed Enders	Number Killed GTD
Ref Crisis Ind	1.0		
Number Killed Enders	-.1756*	1.0	
Number Killed GTD	-.2289*	.5966*	1.0

*- denotes significance at 95% confidence level.

Figure 10.1.3.5: Number of International Terrorism Events GTD and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



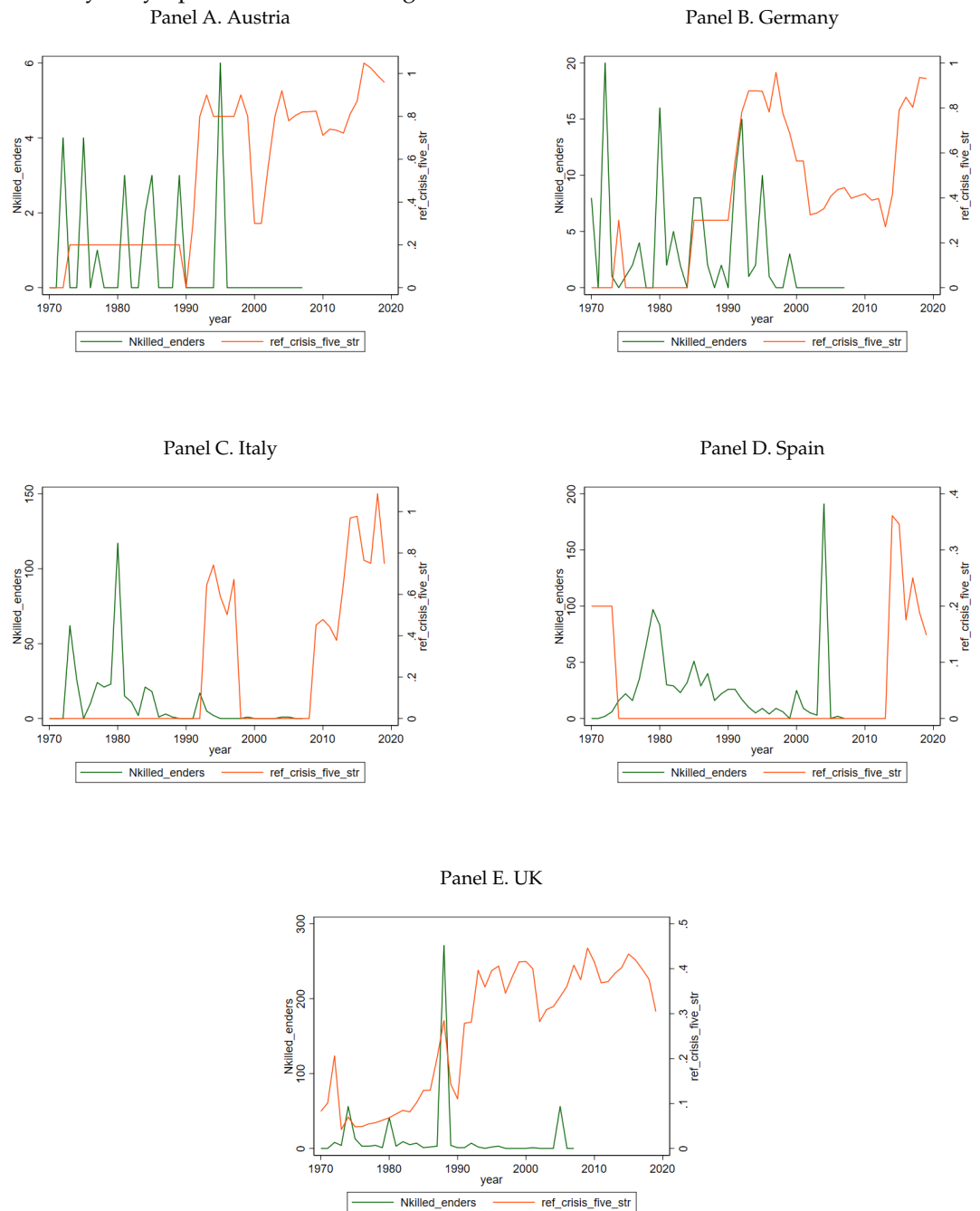
Number of International Terrorism Events GTD is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

Table 10.1.4.2: Pairwise Correlations: Refugee Crisis Index and Different Types of Terrorism Casualties (by Enders and by GTD)

	Ref Crisis Ind	Dom. Killed	Transnat. Killed	Dom. Killed GTD	Internat Killed GTD
Ref Crisis Ind	1.0				
Domestic Killed	-.2603*	1.0			
Transnat. Killed	-.0428	-.0015	1.0		
Domestic Killed GTD	.2719*	.3203*	-.0308	1.0	
Internat. Killed GTD	-.1587*	.1967*	-.0036	.0350	1.0

*- denotes significance at 95% confidence level.

Figure 10.1.4.1: Number of Terrorism Casualties and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



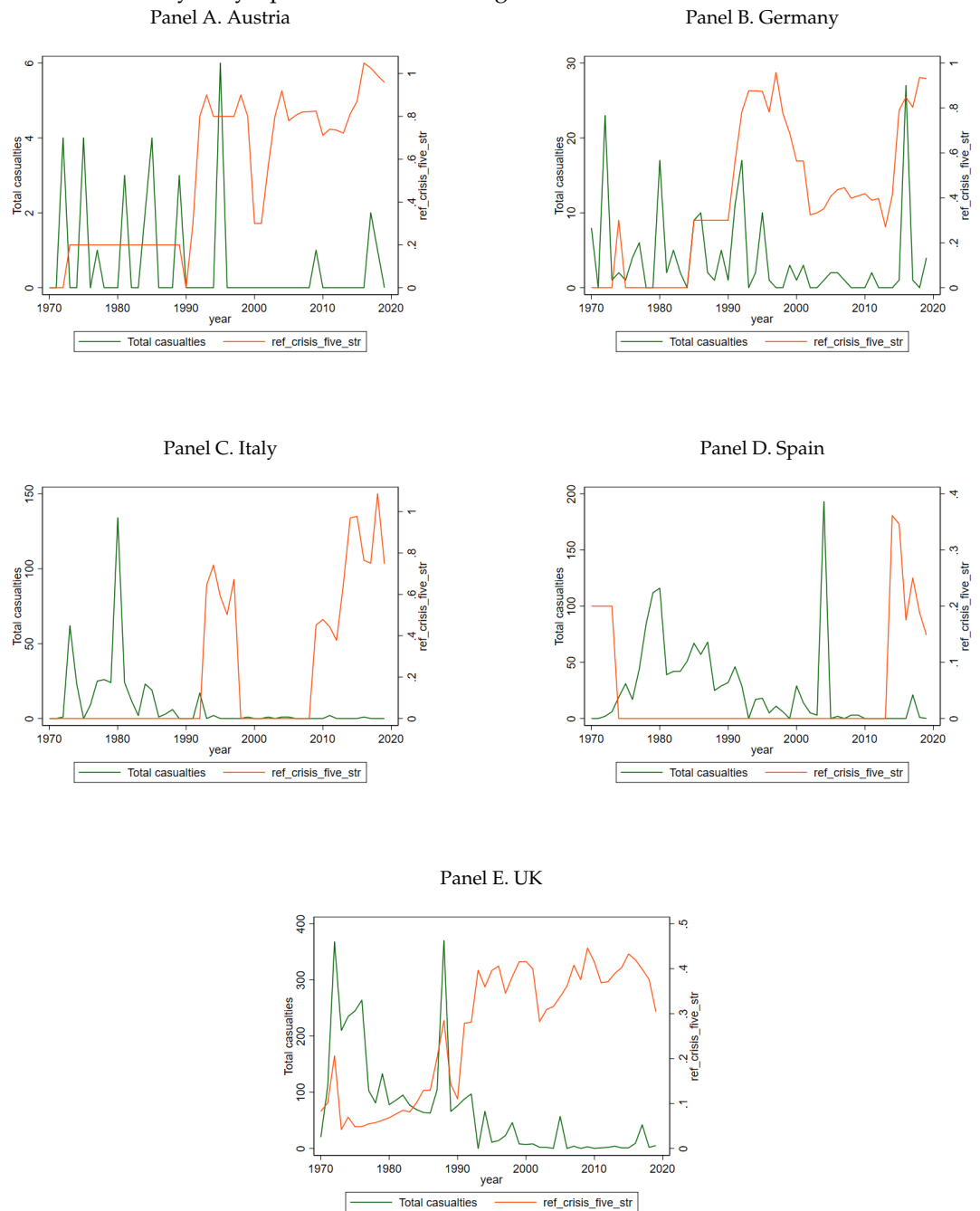
Number of Terrorism Casualties is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

10.1.5 Refugees and Refugee Crises Index

Finally, based on the overall similarity of the graphic analysis for both natural log of refugees' and asylum seekers' stock in a host country against terrorism and refugee crises index against the same dependent variables, it can be of use to examine the two independent variables against each other. The graphs of the variables per country of interest are shown in Figure 10.1.5.1.

It is clear that the overall trends of the natural log of refugees' and asylum

Figure 10.1.4.2: Number of Terrorism Casualties GTD and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom

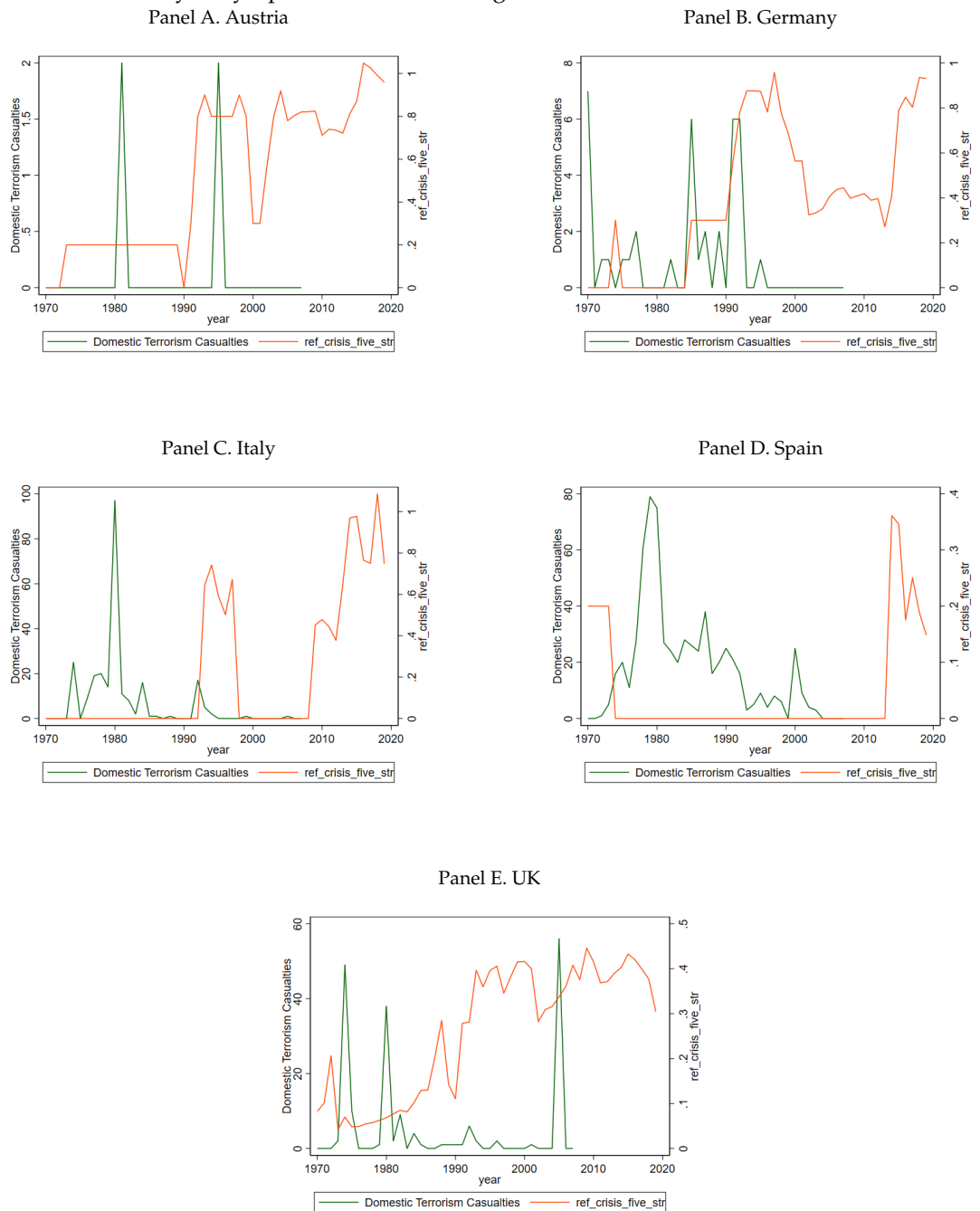


Number of Terrorism Casualties is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

seekers' stock and of the refugee crises index are very close to each other, however one can spot plenty of differences between them. It is notable, though, that some peaks of vulnerable groups numbers coincide with the peaks of the index, while other peaks coincide with the local minima for the index. That conclusion is supported by the correlation analysis of the two main independent variables of interest, which can be seen in Table 10.1.5.1.

To conclude this subsection, it is necessary to have a look at the main descriptive statistics of the refugee crises index. It can be seen in a short Table

Figure 10.1.4.3: Number of Domestic Terrorism Casualties and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



Number of Domestic Terrorism Casualties is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

Table 10.1.5.1: Pairwise Correlations: Refugee Crisis Index and Natural Log of Refugees and Asylum Seekers' Stocks

	Ref Crisis Ind	Refs + Asyl Seek
Ref Crisis Ind	1.0	
Refs + Asyl Seek	.4551*	1.0

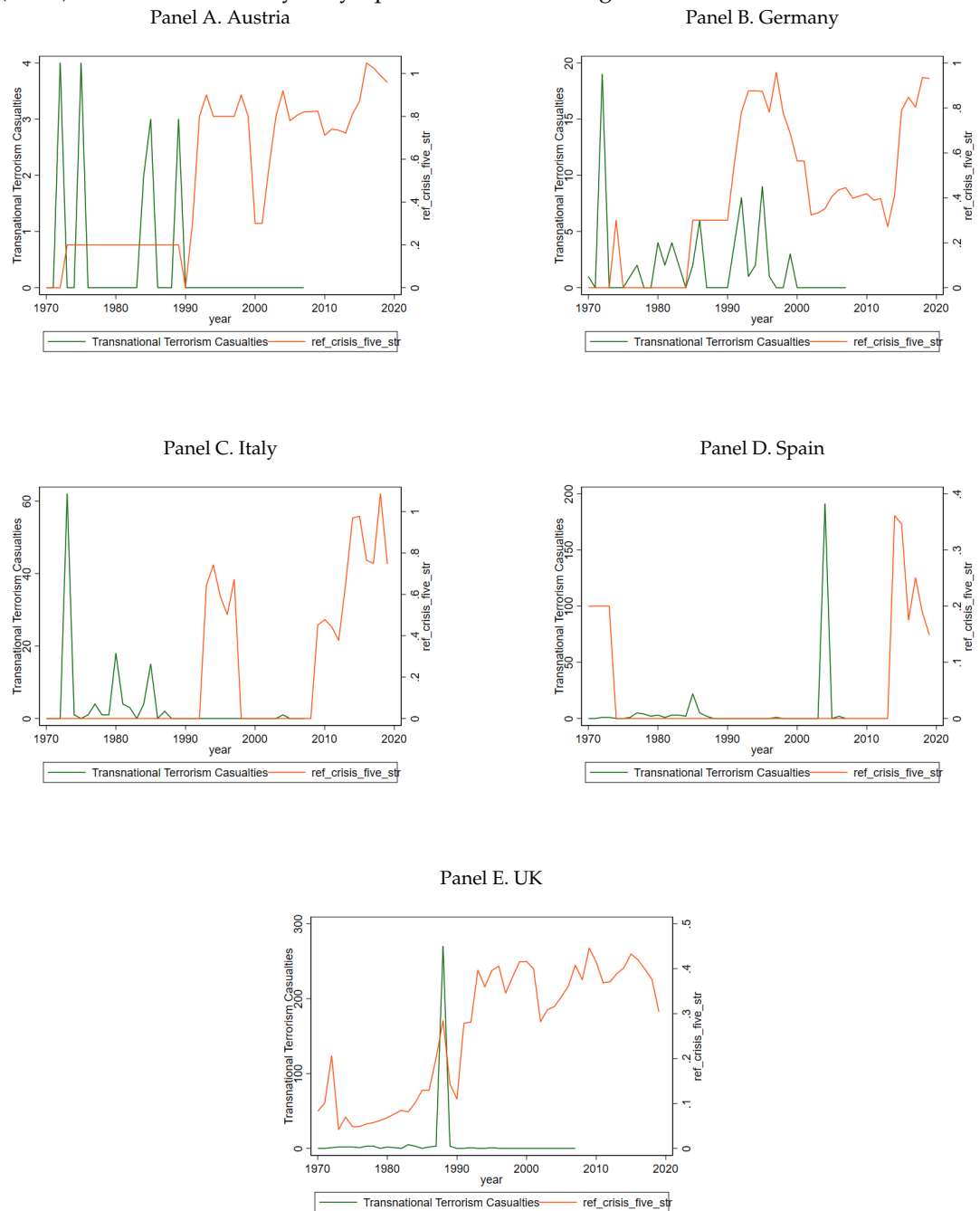
*- denotes significance at 95% confidence level.

10.1.5.2.

Table 10.1.5.2: Descriptive statistics of Refugee Crises Index

Variable name	Mean	Std. Dev.	Min	Max	N
Ref Crises Ind	.262	.338	0	1.6	345

Figure 10.1.4.4: Number of Transnational Terrorism Casualties and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom

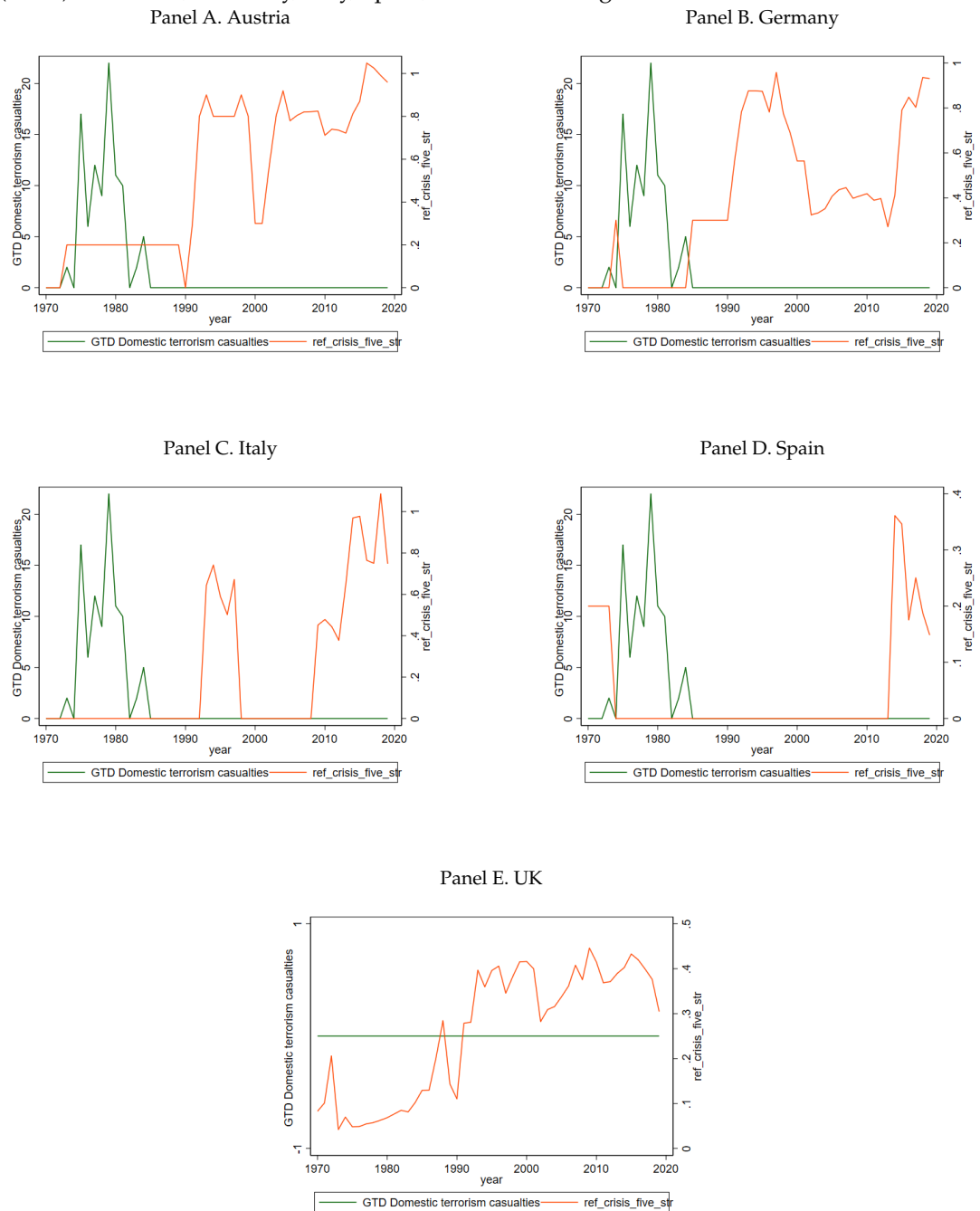


Number of Transnational Terrorism Casualties is obtained from Enders et al. (2011) and Refugee Crises Index constructed by the author

10.1.6 Control Variables

The benchmark specification, following the approach of Choi and Salehyan (2013), includes several control variables to mitigate the omitted variable bias. Firstly, the level of democracy of the country, which is taken from the Polity Dataset by Marshall and Gurr (2018), is included. This variable takes values ranging from -10 (pure autocracy) to +10 (pure democracy), with 21 possible points, including zero. The impact of democracy on terrorism remains a topic

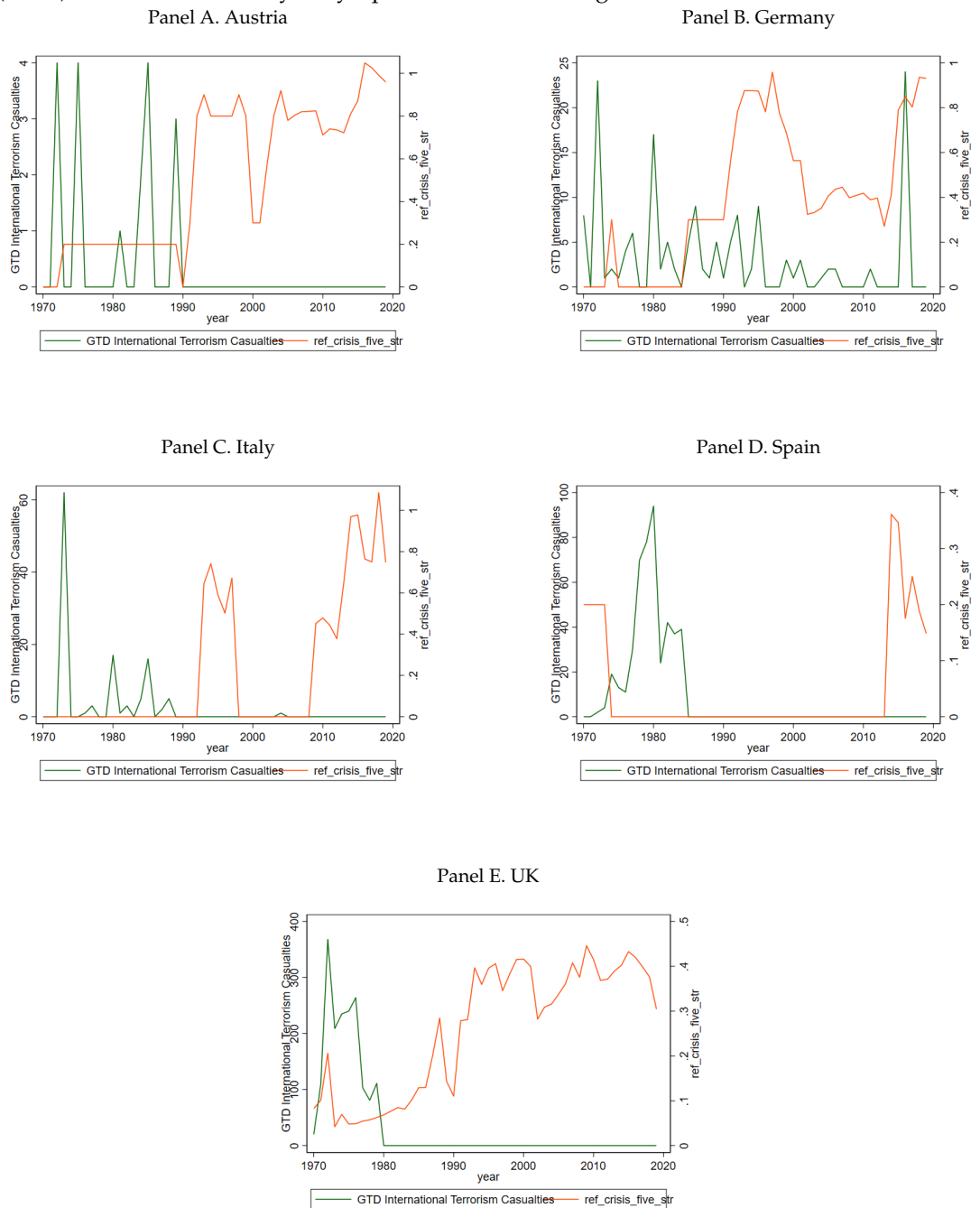
Figure 10.1.4.5: Number of Domestic Terrorism Casualties GTD and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



Number of Domestic Terrorism Casualties GTD is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

of debate in the literature, and Choi and Salehyan (2013) remain agnostic on this issue. Some authors argue that developed democracies can reduce terrorism threats and occurrences on their territory, such as Schmid (1992); Eyerman (1998); Li (2005); Choi (2010), while others, such as Eubank and Weinberg (1994, 2001), hold the opposite view arguing that the individual freedoms (in abundance in modern democracies) facilitate terrorism. The polity variable has also been used as a control in previous studies on refugees, including those by Salehyan (2007), Polo and Wucherpfennig (2022), and Eybergen and

Figure 10.1.4.6: Number of International Terrorism Casualties GTD and Refugee Crisis Index (Strict) in Austria, Germany, Italy, Spain, and United Kingdom



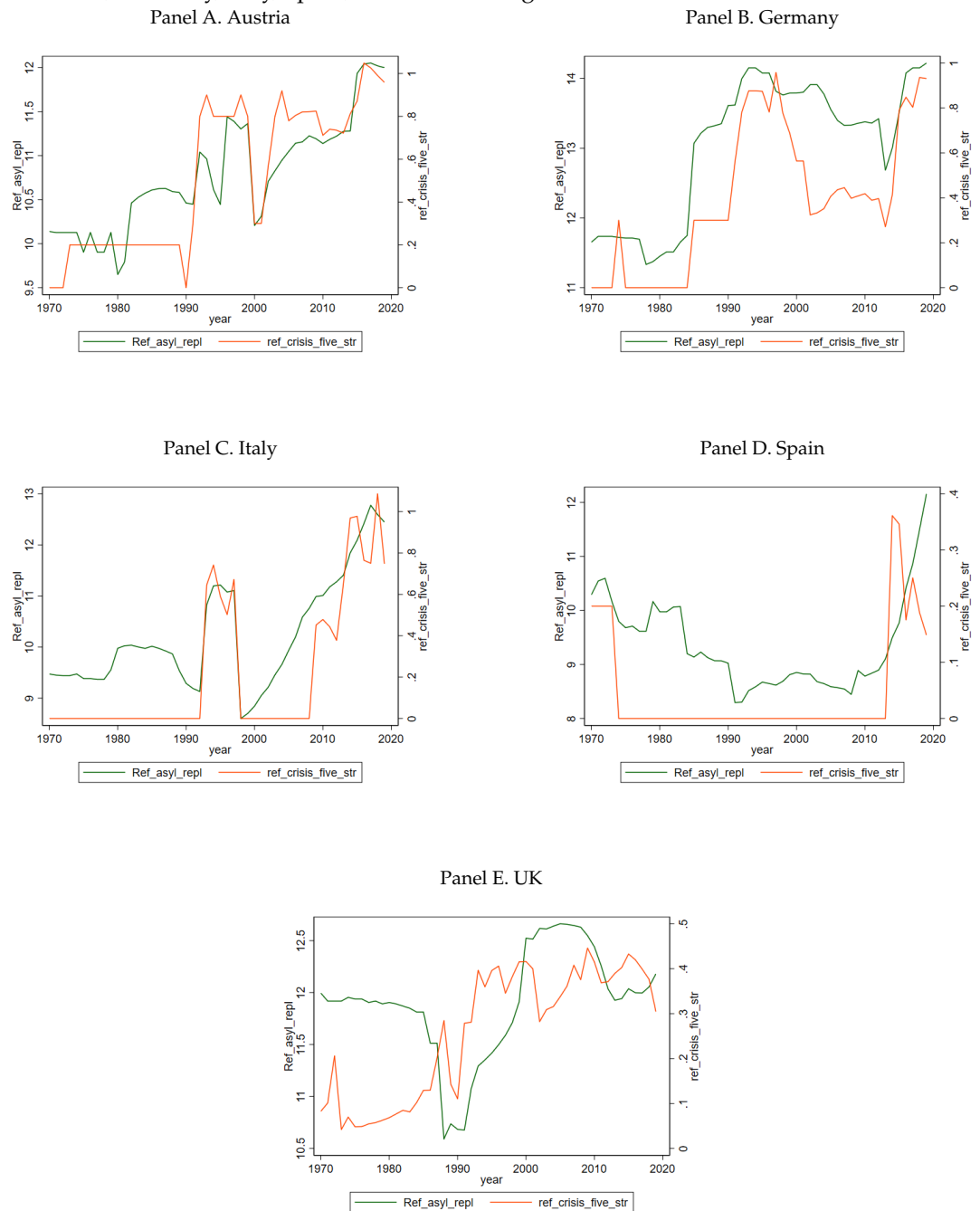
Number of International Terrorism Casualties GTD is obtained from LaFree and Dugan (2007) and Refugee Crises Index constructed by the author

Andresen (2022).

In addition to the level of democracy, Choi and Salehyan (2013) used a variable to capture whether a state had failed at some point in time. This study does not include it as it remained constant for all country-years used in this dissertation.

The third control variable included in the benchmark specification is the natural logarithm of the real GDP per capita, obtained from the Penn World Table Feenstra et al. (2015). The table contains real GDP on the expenditure

Figure 10.1.5.1: Refugee Crisis Index (Strict) and the Number of Refugees and Asylum Seekers in Austria, Germany, Italy, Spain, and United Kingdom



Refugee Crises: Index constructed by the author, the natural log of the Number of Refugees and Asylum Seekers plus one is based on UNHCR (2022b)

side, allowing for comparisons of relative living standards across countries and time. The variable is calculated at chained Purchasing Power Parity (PPP) in millions of United States Dollars, using 2017 as the base. Therefore, this control variable is exactly comparable to that used by Choi and Salehyan (2013).

The fourth control variable included in the analysis is the population size of each country. Previous studies, such as Krieger and Meierrieks (2011) and Gassebner and Luechinger (2011), have suggested that larger population sizes can lower the costs of terrorism, as there are more potential targets and fa-

cilitators available, creating a scale effect. However, highly populated countries may also struggle with providing sufficient security, as noted in Eyerman (1998). Consistent with the methodology of Choi and Salehyan (2013), the population size data is logged and obtained from the Penn World Table (Feenstra et al., 2015).

Incorporated within Choi and Salehyan (2013)'s analysis is an indicator variable for the post-Soviet period, which accounts for the overall decline in terrorist events resulting from the discontinuation of financial backing from the USSR towards extremist left-wing groups (Enders and Sandler, 2011; Choi, 2010, 2011; Young and Findley, 2011). Consequently, the dummy variable holds a value of 1 for years following 1991 and 0 for the preceding years.

The empirical estimation models used in this study's specifications acknowledge the potential dynamic nature of terrorism occurrences in a host country by incorporating a lag of the dependent variable of terrorism instances. This final control variable, included in the benchmark specification, aligns with the approach taken by Choi and Salehyan (2013) and is consistent with the methodology used by other scholars in the field, including Young and Findley (2011), Milton et al. (2013), Klein (2021), and Eybergen and Andresen (2022).

10.2 Research Design

10.3 Specifications with pooled data

Based on the data discussed above and the publications assessed in the literature review the following basic pooled-data specification, matching the one in Choi and Salehyan (2013), is chosen for the empirical estimations in this chapter of the dissertation:

$$y_{c,t} = \beta_0 + \beta_1 Refs_asyl_seek_{c,t-1} + \beta_2 y_{c,t-1} + \Gamma \mathbf{X}_{c,t-1} + \epsilon_{c,t} \quad (10.1)$$

where $y_{c,t}$ denotes the dependent variable of interest: number of terrorism instances overall and by classifications discussed above, number of terrorism

casualties overall and by classification per country c and year t . β_0 is the constant, β_1 is main coefficient of interest, while Γ is the vector of coefficients for the vector of control variables \mathbf{X} for country-year combination c, t . There are five countries, i.e. $c = 1, 2, \dots, 5$ and the time dimension $t = 1, 2, \dots, T$ varies depending on the dependent variable availability as can be seen from Table 7. $\epsilon_{c,t}$ traditionally stands for the error term for the corresponding country-year.

As evident from the data discussion presented earlier, the dependent variable pertains to count data. Consequently, this necessitates the selection of a suitable estimation method, which has been predominantly adopted by academic publications exploring the impact of refugees on terrorism in host countries, such as Choi and Salehyan (2013). In this regard, the Negative Binomial (NB) maximum-likelihood estimation has been widely employed. To accommodate the panel nature of the data employed in this study, the robust Huber-White standard errors (White, 1980) are clustered by country.

The NG type of estimation is preferred to a traditional Poisson estimation method because the variance of the dependent variables of choice is much larger than their means as evident from Table 10.1.2.7. In negative binomial regression, an additional parameter is included to account for the potential unobserved differences among observations, which permits the variance to be greater than the mean. This addresses the issue of over-dispersion that is typically encountered in Poisson regression models applied to the data with similar properties to the data used in this dissertation. The problem comes from the original assumption of a Poisson regression estimations method that the mean is equal to the variance of a count variable used for it².

For all estimation methods the independent variables are lagged one period (year) to mimic the usual approaches of the most relevant publications, such as Choi and Salehyan (2013); Eybergen and Andresen (2022) and others. This lag is applied to account for the theoretically unlikely possibility of reverse causality, wherein instances of terrorism lead to an influx of refugees in the host country.

Table 14 presented below displays the proportion of zero entries for each of the examined dependent variables and identifies if using the Zero-Inflated Negative Binomial (ZINB) estimation is more suitable for the given dependent

²For details the reader is referred to (Baltagi, 2015) and (Hausman et al., 1984)

variables. The table reveals that not all dependent variables require the correction. For instance, unlike Choi and Salehyan (2013), who had 56% of zero entries for all their dependent variables, the correction was needed for none of the examined variables. Interestingly, Choi and Salehyan (2013) applied the correction for only their logit estimations, while they did not use it for their pooled NB estimations. On the other hand, Milton et al. (2013) employed the correction for both types of estimations, despite their sample having over 99% of zero entries.

Table 14: Percentage of Zero Entries per Dependent Variable

Variable name	Number of Zeros	Perc of Zeros	Zero-Inflated Approach
Terror N Enders	14	7.37	NO
Terror N (GTD)	18	7.20	NO
Domest Terror N	35	18.42	NO
Transnat Terror N	36	18.95	NO
Domest Terror N (GTD)	160	64	No
Internat Terror N (GTD)	46	18.4	NO
N Killed Enders	81	42.63	NO
N Killed (GTD)	100	40	NO
Dom Killed Enders	107	56.32	NO
Trans Killed Enders	121	63.68	NO
Dom Killed (GTD)	210	84	Potentially
Trans Killed (GTD)	181	72.4	Potentially

Table 14 reveals that no situations similar to the one presented in Milton et al. (2013) exist, and only two positions in the sample potentially require correction as they exhibit more than 70% of zeros. The potential correction being zero-inflated models, which offer one to model two different processes generating zeros in the data, i.e. separate the data into two different classes of zeros. Such models may provide a more efficient alternative for traditional models under the assumption that the second process generating zeros is known and can be identified and modelled (Baltagi (2015)). As discussed above, the GTD data categorisation into domestic/international events, in contrast to Enders et al. (2011), suffers from imprecise analysis and lack of rigorous investigations into each individual case of terrorism. Hence the excess zeros can be present not because there is another underlying process generating zeros. Taking that into account as well as what is discussed regarding the GTD data, this research is leaving the investigation of using Zero-Inflated models for the terrorism-refugees-refugee-crises nexus for the future research. Such analysis can be a valuable piece of research on its own.

In addition to Negative-Binomial estimation method, this dissertation employs Logit (Baltagi, 2015) models for robustness checks following most rele-

vant works in the field, discussed in the literature review, and, in particular, Choi and Salehyan (2013).

For Logit estimation method the count data (for any dependent variable employed is transformed in following three ways. First, a transformed dependent variable takes value of 1 when the count of events for a particular country-year is more than zero and zero otherwise (in the same way as Choi and Salehyan (2013)). The second approach is based on the transformed dependent variables taking value 1 if the count of events for a particular country-year becomes larger than the median value across all t for each country individually and zero otherwise. The third approach is based on the binary dependent variable being 1 if the count of events for a particular country-year becomes larger than the median value across all t and all c . The latter two approaches are taking after Winkelmann and Winkelmann (1998), capturing the rise of the number of terrorism rising above the central value in the distribution over time for each country as a systemic event.

10.4 Fixed Effects Specification

The specification discussed before are estimated using only pooled data across all countries and all years for both NG and Logit estimations. As presented in Baltagi (2015), in the cases for panel data structure, if the true model contains unobserved characteristic influencing the relationship between independent variables and the dependent variable, then pooled models can be biased and inconsistent. For example, if there are some country-specific characteristic influencing the relationship between terrorism and refugees, then pooled specification will suffer from an omitted variable bias.

To overcome this problem, this dissertation adopts the following country Fixed Effects specification:

$$y_{c,t} = \alpha_c + \beta_0 + \beta_1 Refs_asyl_seek_{c,t-1} + \beta_2 y_{c,t-1} + \Gamma \mathbf{X}_{c,t-1} + \epsilon_{c,t}, \quad (10.2)$$

where α_c stands for the unobserved constant country fixed effects and the rest of the model is the same. However, in this case, the estimated coefficients

should be unbiased and consistent for both NG, ZING, LOGIT and RELOGIT. This approach can be seen in the studies by Choi and Salehyan (2013); Eybergen and Andresen (2022) and other authors, whose works are discussed in the literature review. The approach is a standard for the applied macroeconomic research³.

10.5 Discussion of the specifications

The primary focus of this dissertation chapter is the estimation of dynamic panel data, which is susceptible to the potential Nickell bias (Nickell, 1981) of order $1/T$. This bias occurs when the lagged dependent variable is correlated with unobserved panel characteristics, such as country fixed effects in this dissertation. The problem is well-explained and discussed in Baltagi (2015). In brief, this problem is more severe in traditional macroeconomic datasets with large N (or as $N \rightarrow \infty$) and small T (or T fixed). As a result, academic studies that use large N and small T , such as those conducted by Choi and Salehyan (2013); Milton et al. (2013); Klein (2021); Polo and Wucherpfennig (2022); Eybergen and Andresen (2022), may have biases in some or all of their estimations. Furthermore, according to Baltagi (2015), these estimations can be inconsistent.

However, the sample setup used in this dissertation has the opposite structure with small N and large T (or fixed N and $T \rightarrow \infty$), which mitigates the Nickell bias problem. For example, the dataset used has $N = 5$, $T = 37$ for the data from Enders et al. (2011) and $T = 49$ for the updated GTD. In these cases, Baltagi (2015) argues that the "Within" estimator or the FE is appropriate, potentially with a correction of the bias as proposed by Kiviet (1995) or Hahn and Kuersteiner (2002).

Therefore, for this chapter of the dissertation, the approach by Hahn and Kuersteiner (2002) to correct the potential bias is selected. The estimations may have a bias of order 0.027 in the first case and 0.02 in the second. The bias correction by Hahn and Kuersteiner (2002) can be expressed as follows:

$$\gamma_1 = (T + 1) * \gamma_0 + 1/T,$$

³For more details, the reader is referred to Baltagi (2015)

where γ_0 is estimated through traditional methods. Hence, after conducting the estimations using the methods described above, the bias-corrected version is also presented.

In addition to that, as a robustness check exercise, the more complex Arellano-Bond (A-B) (Arellano and Bond, 1991; Arellano and Bover, 1995) and Arellano-Bover/Blundell-Bond (B-B) (Blundell and Bond, 1998) estimators suitable for large N and small T dynamic panel data were also obtained. The first method (Arellano-Bond) provides one with a consistent generalised method of moments (GMM) estimator for such models. The estimator is designed by first-differencing to eliminate the panel-level effects and using instruments to generate moment conditions. Instead of relying on the lagged dependent variable, a set of instruments are utilised to remove the correlation between the panel effects and the lag of the dependent variable. The second approach (Arellano-Bover/Blundell-Bond) expanded on the research of Arellano and Bond (1991) and demonstrated that the lagged-level instruments in the Arellano-Bond estimator become weak if the autoregressive process is too persistent or if the ratio of the fixed effects to the idiosyncratic error variance is too large. They suggested their own estimator, which uses moment conditions where lagged differences serve as instruments for the level equation, in addition to the moment conditions of lagged levels used as instruments for the difference equation. Consequently, the Blundell-Bond estimator is a significantly more efficient estimator than the standard Arellano-Bond estimator.

Both approaches not only demonstrated results that were qualitatively equivalent to the traditional methods described earlier, but some outcomes were also very close in quantitative terms. Additionally, the post-estimation analysis for both A-B and B-B methods indicated that these two approaches were not appropriate for the data in use. For example, the Arellano-Bond test evaluated the crucial assumption that the idiosyncratic errors were independently and identically distributed (i.i.d.), by testing that the first-differenced (FD) errors were at most first-order serially correlated. If the first-differenced (FD) errors showed higher-order serial correlation, then the estimation was unreliable and needed reassessment. However, if there was no first-order serial correlation, then there was no correlation of the unobserved fixed effects with the lagged dependent variable. In this Chapter of the Dissertation, the second

Table 15: Independent Variables Correlation Matrix

	lag_Ref_asyl	lag_Ref_Cri	lag_polity2	lag_log_GDP_per_cap	lag_log_pop	lag_Post_cold_w
lag_Ref_asyl	1.0000					
lag_Ref_Cri	0.4495*	1.0000				
lag_polity2	0.5661*	0.1957*	1.0000			
lag_log_GDP_per_cap	0.2051*	0.2715*	0.1766*	1.0000		
lag_log_pop	0.1071*	-0.2549*	-0.1303*	0.0844	1.0000	
lag_Post_cold_w	0.2124*	0.4353*	0.2321*	0.7875*	0.0753	1.0000
lag_Sum_terror	-0.2206*	-0.2106*	-0.0480	-0.1896*	0.2416*	-0.2082*
lag_Terror_n.GTD	-0.0315	-0.2319*	0.0045	-0.2802*	0.3105*	-0.3027*
lag_Dom_terror	-0.3085*	-0.2687*	-0.0639	-0.1670*	0.2095*	-0.1942*
lag_Transn_terror	0.0720	0.0061	0.0078	-0.1767*	0.2331*	-0.1676*
lag_Domest_terror_GTD	-0.2455*	-0.2229*	-0.1223	-0.2824*	0.0577	-0.2552*
lag_Intern_terr_GTD	0.0476	-0.2165*	0.0363	-0.2165*	0.2982*	-0.2892*
lag_N_killed	-0.1809*	-0.1756*	-0.0041	-0.0923	0.1440*	-0.1541*
lag_Nkilled.GTD	-0.0148	-0.2261*	0.0292	-0.2940*	0.1755*	-0.3273*
lag_Dom_Killed	-0.2141*	-0.2603*	-0.0533	-0.1859*	0.1619*	-0.2150*
lag_Dom_killed.GTD	-0.1879*	-0.2707*	-0.0832	-0.3728*	-0.0660	-0.4029*
lag_Trans_killed.GTD	-0.0792	-0.0428	0.0283	0.0120	0.0673	-0.0431
lag_Intern_killed.GTD	0.0733	-0.1571*	0.0051	-0.2983*	0.1038	-0.2636*

*- denotes significance at 95% confidence level.

case was observed, providing support for standard approaches rather than A-B or B-B methods.

On the other hand, following Choi and Salehyan (2013), to account for the temporal dependence in the data, the cubic polynomial of time is included into every estimation. The approach is taken after Carter and Signorino (2010), who studied the methodologies of capturing the time dependence in binary data and argued that the Monte Carlo experiments support the simple cubic time polynomial approach as one of the most appropriate. Nonetheless, the cubic polynomial of time did not change the results significantly.

Finally, before turning to the presentation and discussion of the results, it is necessary to ensure that the problem of multicollinearity is not present within the set of the independent variables. To demonstrate it, the following Table 15 shows the correlation matrix of the lags of the independent variables, including the lags of dependent variables that are used as controls but omitting dependent variables cross-correlation presented before. It is worth noticing that there are no pairs of independent variables, which are highly correlated. The high correlation between dependent variables is expected but irrelevant for the analysis since the lag of only one dependent variable is employed.

The Variance Inflation Factor Analysis (VIF) further showed that there were no variable combinations, which could bring multicollinearity problems into a specification. The VIF varied between 1 and 4.7, hence being below 5 and 10 which are the traditional 'rules of thumb' for considering variables as causing multicollinearity. Therefore, there are no variables that could be considered a linear combination of the other variables.

Chapter 11

Empirical Results and Discussion

In this section, the objective is twofold: firstly, to present an initial examination of the connection between refugee crises and terrorism, and secondly, to revisit the intersection of refugees, asylum seekers, and terrorism. Although previous studies have explored the latter aspect to some extent, certain limitations and constraints identified in the preceding literature review necessitate a fresh evaluation of this relationship, with an effort to alleviate these limitations as much as possible. The former objective, on the other hand, represents the first comprehensive and distinctive investigation into the influence of refugee crises on terrorism in host countries.

11.1 Key Results

11.1.1 Refugees and Asylum Seekers vs Terrorism

The initial set of estimations presented in Table 11.1.1 aims to replicate the approach employed by Choi and Salehyan (2013), adopting their specifications and estimation methods. The foremost observation drawn from these estimations, using the same specifications, methods, and dataset as Enders et al. (2011) and Choi and Salehyan (2013), is that the impact of refugees and asylum seekers on terrorism in open European countries is consistently negative and statistically significant across almost all estimation techniques. This finding contradicts the results of Choi and Salehyan (2013), who reported a positive and significant effect. Furthermore, the estimated negative effect is larger in magnitude than the positive effect identified by Choi and Salehyan (2013).

Hence, based on the estimations conducted in this dissertation using the dataset from Enders et al. (2011) (Models 1-8), it can be concluded that the presence of refugees and asylum seekers actually leads to a decrease in the frequency and probability of terrorist events (Models 1-4, 6-8). Additionally, the influx of refugees and asylum seekers is associated with a significant reduction in the fatality rate of terrorist incidents (Model 5).

The control variables' coefficients in these estimations generally align with the theoretical expectations discussed earlier. The democracy index, represented by Polity2, displays a positive association with terrorism, as does the level of economic development, represented by real GDP per capita. Furthermore, larger population sizes have a positive influence on the occurrence and intensity of terrorist events. The post-Cold War period is linked to a lower incidence of terrorist events, while lagged instances of terrorism predict higher levels of terrorism in the subsequent period.

Model 1 suggests that the count of terrorism events decreases with an increase in the stock of refugees and asylum seekers, all else being equal. This finding contradicts the studies by Choi and Salehyan (2013) and Milton et al. (2013) but aligns with the results presented by Eybergen and Andresen (2022). However, Eybergen's results were statistically insignificant, whereas our estimations yield significant findings. Additionally, unlike Choi and Salehyan (2013), this dissertation employs a two-sided significance test rather than a one-sided test.

Model 2 further resembles the estimations by Eybergen and Andresen (2022). The Logit estimation, where the terrorism variable is transformed into an indicator variable representing the presence or absence of at least one terrorism event in a given country-year, indicates a negative impact of the population of refugees and asylum seekers on the probability of terrorism. However, due to imprecise estimation, the coefficient is not statistically significant. Nevertheless, the issue is resolved in Models 3 and 4, where the terrorism count is transformed into an indicator variable based on whether it exceeds the individual country median (Model 3) or the overall median across all countries (Model 4). The individual medians for Austria, Germany, Italy, Spain, UK are 2, 15, 7.5, 57.5, 8 terrorist events respectively, while the overall median is 11 events per country. In these cases, the coefficients indicate that an increase in

Table 11.1.1.1: Estimation Results I. Overall Terrorism Incidents, Probabilities and Casualties

Variable	NB		Data		1970-2007		NB w/		NB w/		Country FE		GEEs	
	Incidents Model 1	Logit1 Binary Model 2	Logit2 Binary Model 3	Logit3 Binary Model 4	NB Casualties Model 5	Country FE Incidents Model 6	Country FE Incidents Model 7	Country FE Incidents Model 8	Country FE Incidents Model 7	Country FE Incidents Model 8	Country FE Incidents Model 7	Country FE Incidents Model 8	Country FE Incidents Model 7	Country FE Incidents Model 8
Ref_asyl_t-1	-.264*** (.0724)	-.198 (.285)	-0.192** (.079)	-.881*** (.167)	-.423*** (.098)	-.174*** (.063)	-.174* (.090)	-.337* (.192)						
Polity2_t-1	-.032 (.021)	(omitted)	.069*** (.024)	.042* (.023)	.047 (.041)	-.005 (.019)	-.005 (.008)	-.010 (.030)						
GDP_per_cap_t-1	.996* (.627)	-2.756 (3.532)	1.188** (.480)	4.333*** (1.228)	1.423 (1.625)	1.845*** (.642)	1.845*** (.498)	.595 (.524)						
Log_pop_t-1	1.056*** (.114)	1.483*** (.402)	.327*** (.125)	3.498*** (.714)	1.351*** (.267)	.017 (.206)	.017 (.317)	1.079*** (.315)						
Post_cold_w_t-1	.161 (.301)	.639 (1.446)	-.040 (.655)	-.970 (1.089)	-1.241 (.960)	-.326 (.273)	-.326 (.211)	-.983* (.543)						
Terrorism_t-1	.011*** (.003)	1.597*** (.313)	.907* (.506)	.952*** (.301)	.004 (.003)	.007*** (.001)	.007*** (.001)	.002 (.003)						
t	.356 (.622)	6.884* (3.575)	1.035 (.999)	.754 (1.024)	1.135 (1.206)	.087 (.323)	.087 (.415)	.599 (.924)						
f ²	-.007 (.017)	-.171* (.097)	-.022 (.026)	.022 (.027)	-.032 (.035)	-.001 (.009)	-.001 (.011)	-.014 (.026)						
f ³	.0000 (.0001)	.001 (.000)	.000 (.000)	-.0003 (.0002)	.0003 (.0003)	-.0000 (.0000)	-.0000 (.0002)	.0001 (.0001)						
Constant	-12.982 (11.860)	-57.471 (47.260)	-25.541 (16.680)	-37.389** (17.065)	-25.034 (28.806)	-17.063** (6.655)	-17.063** (8.618)	-10.686 (12.955)						
Wald Chi ²	1404.42	22.46	76.45	567.49	165.5	207.08	3943.45	541.93						
Prob > Chi ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000						
Log Likelihood	-676.341	-19.282	-96.44	-61.510	-488.33959	-647.216	-647.216	0.000						
Observations	185	173	185	185	185	185	185	185						

*-denotes significance at 90% confidence level, **- at 95% confidence level, ***-at 99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression, Logit1 - Logit with binary variable=1 if terrorism>0, Logit2 - Logit with binary variable=1 if terrorism > indiv. country median, Logit3 - Logit with binary variable=1 if terrorism > overall median, GEE-Generalised Estimating Equations. Bootstrapped Standard Errors are obtained using 50 replications.

the stock of refugees and asylum seekers significantly decreases the probability of terrorist events from their typical (central in distribution) values.

Furthermore, Model 4 demonstrates that the presence of refugees and asylum seekers in a host country also significantly reduces the fatality of terrorist events, holding other factors constant. This finding also contradicts the main findings of Choi and Salehyan (2013) and Milton et al. (2013).

Model 5 incorporates country fixed effects in the primary estimation to mitigate potential bias that may arise in pooled estimations. As evident from Table 16, this estimation approach further supports the negative influence of the stock of refugees and asylum seekers on the occurrence of terrorist events in European host countries. Additionally, Model 6 strengthens the robustness of the findings by re-estimating the standard errors (SE) of Model 5. The bootstrapped SE values are larger, but the significance of the estimated coefficient remains unchanged.

Finally, in line with the approach taken by Choi and Salehyan (2013), this dissertation employs Generalised Estimating Equation (GEE) estimation, which also reveals a negative impact of the independent variable of interest on the number of terrorism incidents, holding other factors constant.

The underlying mechanism behind the estimation results likely stems from the argument put forth by Eybergen and Andresen (2022) that developed nations already have robust and stringent screening and vetting processes for refugees. Additionally, the presence of refugees and asylum seekers attracts greater public and government attention, particularly through the existence of relatively free media in developed countries. Consequently, governments are compelled to enhance security measures for both the native population interacting with these vulnerable groups and the refugees and asylum seekers themselves. In some cases, countries even isolate asylum seekers for extended periods until a decision is reached regarding their asylum applications, as observed in the UK (Right To Remain, 2023).

The Polity2 variable, which measures the level of democracy, is automatically excluded from Logit1 model due to its constant value of 10 for each country, except for Spain between 1951 and 1982 and the UK between 2016 and 2019, wherein the variable exhibits periods of constant values. Therefore, there is insufficient variability in the Polity2 variable for Logit estimations.

11.1.2 Refugees, Asylum Seekers, and Refugee Crises vs Terrorism

Table 11.1.2 presents the same models as in Table 11.1.1, but with the addition of the newly developed variable for refugee crises in this dissertation. The variable is constructed following the approach outlined by Romer and Romer (2017), whereby an increase of 1 represents the occurrence of a minor refugee crisis in a specific country-year. The control variables in Table 11.1.2 were estimated in a similar manner to those in Table 11.1.1, and their signs align with the theoretical expectations, further reinforcing the robustness of the results.

It is important to highlight that, even after accounting for the occurrence of refugee crises, the impact of refugees and asylum seekers on instances of terrorism and casualties remains unchanged in terms of direction and becomes even more precisely estimated. Moreover, the magnitude of the estimated coefficients does not undergo substantial changes, thereby providing further support for the negative impact observed in Table 11.1.1.

Simultaneously, across all eight estimations (Models 21-28), refugee crises are predicted to have a positive impact, all else being equal. Therefore, as events of a complex nature, refugee crises can be associated with a potential increase in the number of terrorist events (Models 21, 26-28). The coefficients demonstrate considerable economic significance, and the effects are highly statistically significant. The Logit estimations also indicate that refugee crises significantly elevate the probability of terrorist events. Additionally, according to Model 25, the number of terrorism casualties rises following a refugee crisis, while holding other factors constant.

Additionally, the combined effect of refugees and asylum seekers and refugee crises is overall positive (summing the two coefficients).

Given that the severity of a refugee event, which is utilised to construct the refugee crisis index, encompasses eight dimensions that encompass various challenges associated with such an event, the potential mechanism linking refugee crises to terrorism could be attributed to one, several, or all of these dimensions, leading to security, political, and economic conditions conducive to terrorist activities. For example, in the case of refugee crises involving the arrival of refugees and asylum seekers surpassing a certain threshold, the cost

Table 11.1.2: Estimation Results II: Overall Terrorism, Probabilities and Casualties Refugee Crises

Variable	Enders et al. (2011)		Data		1970-2007		NB w/		NB w/		Country FE		NB w/		Country FE		GEEs				
	NB Incidents Model 21	Logit1 Binary Model 22	Logit2 Binary Model 23	Logit3 Binary Model 24	NB Casualties Model 25	Country FE Incidents Model 26	Country FE Incidents Model 27	Country FE Incidents Model 28	NB w/ Country FE Incidents Model 25	Country FE Incidents Model 26	Country FE Incidents Model 27	Country FE Incidents Model 28	NB w/ Country FE Incidents Model 25	Country FE Incidents Model 26	Country FE Incidents Model 27	Country FE Incidents Model 28	NB w/ Country FE Incidents Model 25	Country FE Incidents Model 26	Country FE Incidents Model 27	Country FE Incidents Model 28	
Ref.asyl_t-1	-0.602*** (0.092)	-1.173 (1.176)	-0.575*** (0.136)	-1.971*** (0.261)	-0.617*** (0.135)	-0.348*** (0.089)	-0.348*** (0.096)	-0.568*** (0.123)													
Ref Crises_t-1	2.567*** (0.760)	9.766 (12.942)	2.934*** (0.403)	7.265*** (1.561)	1.632** (0.715)	1.409*** (0.506)	1.409*** (0.213)	2.283*** (0.722)													
Polity2_t-1	-0.001 (0.018)	(omitted)	0.116*** (0.023)	0.151*** (0.031)	0.068* (0.032)	0.013 (0.020)	0.013 (0.013)	0.033 (0.024)													
GDP_per_cap_t-1	1.145 (0.698)	-9.746 (10.057)	1.425** (0.541)	5.752*** (1.001)	1.350 (1.693)	1.815** (0.635)	1.815** (0.654)	0.437 (0.496)													
Log_pop_t-1	1.467*** (0.100)	3.828 (3.435)	0.765*** (0.120)	5.088*** (0.763)	1.592*** (0.169)	0.226 (0.231)	0.226 (0.339)	1.319*** (0.211)													
Post_cold_w_t-1	-0.602 (0.491)	-6.382 (10.387)	-1.004* (0.535)	-2.913*** (0.764)	-1.658* (0.959)	-0.560* (0.281)	-0.560** (0.214)	-0.902 (0.664)													
Terrorism_t-1	0.009*** (0.002)	1.635** (0.681)	0.779* (0.472)	0.493 (0.317)	0.003 (0.003)	0.007*** (0.001)	0.007*** (0.001)	0.003 (0.002)													
t	0.653 (0.536)	4.400 (5.728)	1.359 (0.957)	0.347 (1.524)	1.456 (1.199)	0.386 (0.338)	0.386 (0.366)	0.976 (0.688)													
f ²	-0.016 (0.015)	-0.102 (0.158)	-0.032 (0.026)	-0.010 (0.041)	-0.042 (0.034)	-0.010 (0.009)	-0.010 (0.010)	-0.025 (0.020)													
f ³	0.0001 (0.0001)	0.001 (0.001)	0.0002 (0.0002)	0.0000 (0.0004)	0.0004 (0.0004)	0.0000 (0.0000)	0.0000 (0.0000)	0.0002 (0.0002)													
Constant	-15.596 (11.303)	41.611 (155.806)	-29.050 (16.314)	-58.222*** (21.352)	-26.688 (29.316)	-19.066*** (6.577)	-19.066*** (9.114)	-12.067 (10.822)													
Wald Chi ²	48.08	34.13	130.96	121.08	11.29	222.27	7130.78	25.25													
Prob > Chi ²	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000													
Log Likelihood	-667.210	-17.415	-94.829	-57.660	-487.693	-643.536	-643.536														
Observations	185	173	185	185	185	185	185	185													

*-denotes significance at 90% confidence level, **- 95% confidence level, ***-99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression, Logit1 - Logit with binary variable=1 if terrorism>0, Logit2 - Logit with binary variable=1 if terrorism> indiv. country median, Logit3 - Logit with binary variable=1 if terrorism>overall median, GEE-Generalised Estimating Equations. Bootstrapped Standard Errors are obtained using 50 replications.

of perpetrating a terrorist attack against them could be perceived as lower from a right-wing extremist standpoint, primarily due to the sheer number of individuals involved. Conversely, factors such as inadequate housing, food scarcity, limited access to medical services, mobility restrictions, or the threat of deportation could reduce the cost of engaging in terrorist acts for refugees. Furthermore, the refugee crisis index also captures the presence of asylum seekers smuggling, thereby potentially diminishing the obstacles faced by terrorist groups attempting to smuggle their members into the country. Since there is a lack of prior research that defines refugee crises and evaluates their impact on various variables, including terrorism, further verification is required to substantiate the underlying mechanism, which remains a subject for future research.

Despite the aforementioned observations, it is crucial to underscore that even when accounting for the refugee index variable in the model specification, the numbers of refugees and asylum seekers are still estimated to have a statistically negative impact. This leads to a twofold conclusion. Firstly, not only do the sheer numbers of the vulnerable migrant group fail to contribute to terrorism in the host country, but they are actually associated with a decrease in terrorist incidents. Secondly, previous publications have not incorporated controls for refugee crises in their specifications, potentially allowing for the possibility that the strong significant positive effects they estimated could be influenced by an upward bias stemming from the relatively strong correlation between the refugee crises index and the number of refugees and asylum seekers (the correlation coefficient between these two variables is 0.4551).

11.1.3 Impact on Domestic and Transnational Terrorism

Table 11.1.3 presents the results of estimations examining the effects of refugees and asylum seekers, as well as refugee crises, on domestic and transnational terrorist incidents and casualties. One notable observation is that the majority of estimated models consistently demonstrate a negative predicted impact of refugees and asylum seekers on terrorism, holding other factors constant. These effects are mostly statistically significant, with the exceptions being Model 38 and Model 310. In contrast, the refugee crises variable is estimated to have a positive and statistically significant effect in most models, except for

Table 11.1.3: Estimation Results III: Domestic and Transnational Terrorism Incidents, Probabilities and Casualties.

Variable	Enders et al. (2011)													
	Data 1970-2007							Data 1970-2007						
	Dom NB Incidents Model 31	Dom NB Binary Model 32	Dom NB Casualties Model 33	Trans NB Incidents Model 34	Trans NB Binary Model 35	Trans NB Casualties Model 36	Dom NB w/ Country FE Incidents Model 37	Dom NB w/ Country FE Incidents Model 38	Dom NB w/ Country FE Casualties Model 39	Trans NB w/ Country FE Incidents Model 39	Trans NB w/ Country FE Casualties Model 39	Trans NB w/ Country FE Incidents Model 310	Trans NB w/ Country FE Casualties Model 310	
Ref.asyl_t-1	-0.699*** (0.104)	-1.084*** (0.146)	-0.340* (0.194)	-0.380** (0.168)	-0.656*** (0.154)	-1.270* (0.658)	-0.458*** (0.103)	-0.179 (0.113)	-0.595*** (0.198)				0.042 (0.202)	
Ref Crises_t-1	2.308*** (0.714)	2.625* (1.364)	-0.636 (1.619)	3.706*** (0.875)	5.865*** (1.405)	6.082 (5.173)	1.385** (0.611)	1.501* (0.627)	0.980 (1.272)				1.695 (1.428)	
Polity2_t-1	-0.026** (0.011)	(omitted)	(omitted)	0.057* (0.028)	0.090** (0.038)	0.267*** (0.052)	-0.011 (0.022)	0.027 (0.024)	-0.033 (0.033)				0.035 (0.043)	
GDP_per_cap_t-1	1.309 (0.715)	3.446*** (0.762)	-0.656 (1.189)	-0.019 (0.648)	1.470 (0.981)	3.016 (1.783)	2.090*** (0.768)	1.887** (0.776)	1.365 (1.129)				-0.785 (1.163)	
Log_pop_t-1	1.566*** (0.085)	1.707*** (0.199)	1.593*** (0.471)	1.275*** (0.181)	1.173*** (0.223)	2.185*** (0.490)	0.108 (0.286)	-0.112 (0.394)	1.635** (0.616)				0.566 (0.413)	
Post_cold_w_t-1	-0.712 (0.698)	-2.305 (1.932)	-0.429 (0.752)	-0.852** (0.362)	-2.228*** (0.534)	-5.202*** (1.645)	-0.686* (0.321)	-0.175 (0.370)	-0.080 (0.456)				-0.567 (0.808)	
Terrorism_t-1	0.00918*** (0.001)	1.479 (0.828)	0.010*** (0.002)	0.007** (0.003)	1.165* (0.563)	-0.004 (0.006)	0.007*** (0.001)	0.004** (0.001)	0.007*** (0.002)				0.003 (0.002)	
t	0.687 (0.747)	0.544 (2.636)	2.011** (0.850)	1.011* (0.479)	4.112*** (1.269)	-0.533 (2.562)	0.445 (0.406)	0.849* (0.412)	1.370 (0.749)				1.529* (0.828)	
f ²	-0.0166 (0.021)	-0.0108 (0.070)	-0.0563** (0.024)	-0.027 (0.014)	-0.115*** (0.033)	0.009 (0.074)	-0.011 (0.011)	-0.023* (0.011)	-0.034 (0.020)				-0.040* (0.022)	
f ³	0.0001 (0.000174)	0.00006 (0.0006)	0.0005* (0.0002)	0.0002* (0.0001)	0.001*** (0.0003)	-0.00004 (0.0001)	0.00008 (0.00009)	0.0002 (0.0001)	0.000 (0.000)				0.0003* (0.0002)	
Constant	-17.512 (15.068)	-35.527 (35.621)	-17.597 (19.309)	-11.112* (6.460)	-58.426** (20.024)	-16.749 (34.838)	-21.421** (8.028)	-25.426*** (7.801)	-31.162** (12.574)				-15.052 (12.853)	
Wald Chi ²	47.72	37.12	39.28	22.15	56.93	13.50	184.87	123.20	105.89				34.75	
Prob > Chi ²	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000				0.000	
Log Likelihood	-597.946	-60.595	-368.75	-479.785	-84.742	-565.820	-288.236	-452.758	-305.865				-251.665	
Observations	185	173	185	185	190	185	185	185	185				185	

*-denotes significance at 90% confidence level, **- at 95% confidence level, ***- at 99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression.

^aBased on individual medians (1,4,5,49,6 for Domestic and 1,10,3,5,2 For Transnational).

Model 33, 36, 39, and 310, where it is not significant.

Consequently, the presence of refugees and asylum seekers in a host country is estimated to decrease the occurrence and likelihood of domestic terrorism incidents and casualties. However, when examining panel data with fixed effects estimations, there is no statistically significant impact of refugees and asylum seekers on transnational terrorism casualties. The impact on transnational incidents is estimated to be negative and statistically significant in pooled estimates Models 33 and 34. However, the fixed effects estimate is negative but less precisely estimated, preventing a definitive conclusion of statistical significance. Moreover, the impact of the number of refugees and asylum seekers on transnational terrorism casualties (Model 36) is negative but only marginally significant, while the fixed effects estimate (Model 310) is very small and statistically insignificant. Therefore, one can infer that domestic terrorism and casualties are likely to decrease with an increase in the stock of refugees and asylum seekers, but the effect appears to be statistically insignificant for transnational events. This conclusion aligns with Eybergen and Andresen (2022) and some of the findings by Polo and Wucherpfennig (2022), while contradicting the mainstream literature.

The statistically significant negative impact of refugee and asylum seeker stocks, particularly on domestic terrorism, can be attributed to the heightened security measures implemented by the governments of developed European countries. These governments are cognisant of the potential actions of native (probably) extreme-right groups and take measures to enhance the security of both vulnerable groups and their own citizens.

Moreover, refugee crises are estimated to have a positive impact on both domestic and transnational terrorism incidents, even when considering the positive but less precisely estimated fixed effect Model 39. However, the impact appears to be statistically insignificant for transnational terrorism casualties (Model 36 and 310). The reasons behind these findings can be attributed to one or several dimensions included in the measure of refugee event severity. It is generally understood that allowing a refugee event to escalate to crisis levels can contribute to a domestic terrorism threat and, to a potentially lesser extent, transnational terrorism. This conclusion further supports the argument that previous publications, which found a statistically positive im-

impact of refugees on both types of terrorism, may have captured the effect from refugee crises. This is especially evident considering the very careful selection of country-years in their samples by Choi and Salehyan (2013) or Milton et al. (2013).

Additionally, the combined effect of refugees and asylum seekers is still overall positive.

Finally, the estimates of the control variables in both Table 11.1.3 and 11.1.2 exhibit similar behaviour to those in Table 16, further strengthening the robustness of the estimated results. Additionally, after each model estimation, the joint significance of the coefficients was routinely tested. Based on the reported probabilities for these tests, the null hypothesis of joint insignificance of all variables is rejected in every case for the estimations using the data from Enders et al. (2011).

Summarising the key baseline results, based on the established dataset on Terrorism by Enders et al. (2011) and utilising a widely used specification in the field of study, it is important to note the following five key outcomes for the chosen European countries:

1. *The number of refugees and asylum seekers in a host country does not cause terrorism. On the contrary, a higher number of refugees is associated with a decrease in the number of terrorism events. Therefore, there is no evidence to suggest that the presence of refugees and asylum seekers leads to an increase in terrorism.*
2. *Refugee crises, even minor ones, have a significant impact on increasing the number of terrorism events. The occurrence of a refugee crisis is associated with a notable rise in the number of terrorist incidents in the host country.*
3. *Domestic terrorist events are estimated to decrease as the number of refugees and asylum seekers in the host country increases, all other factors held constant. However, the number of refugees does not significantly influence transnational terrorist events. This suggests that the relationship between refugees and terrorism differs between domestic and transnational contexts.*
4. *The presence of refugees and asylum seekers is expected to decrease domestic terrorism casualties in the host country. As the stock of refugees and asylum seekers rises, the number of casualties in domestic terrorism events tends to decrease.*

However, there is no significant impact on casualties in transnational terrorism events, indicating that the number of refugees does not affect the severity of transnational incidents.

5. *Refugee crises do not have a statistically significant effect on terrorism casualties, whether domestic or transnational. This implies that while refugee crises may increase the number of terrorism events, they do not have a significant impact on the resulting casualties.*

These findings highlight the importance of considering both the stock of refugees and asylum seekers and the occurrence of refugee crises when analysing the relationship between involuntary migration and terrorism. These findings are valid for the chosen five countries, but can potentially be extrapolated to other European countries, suggesting that the relationship between refugees, terrorism, and its consequences follows a similar pattern across different European contexts.

11.2 Robustness Checks

Based on the considerations outlined in the Data section, special attention is given to the treatment of the updated GTD (Global Terrorism Database) data by LaFree and Dugan (2007), particularly in relation to the classification of events as domestic or international within the GTD itself. Nevertheless, the estimations utilising the GTD data for overall terrorism incidents and casualties are employed as a robustness check, while also exploring the GTD's classification into purely domestic events and those with some level of international involvement. These additional classifications are included for the purpose of comprehensiveness and experimental analysis. The outcomes of these estimations are presented in Tables 19-21.

First and foremost, it is important to highlight that the specifications used in these robustness checks remain unchanged from the key results. However, it should be noted that the time dimension, denoted by T , is extended in the GTD data, covering the years 1970 to 2019. The signs and significance of the control variables align with the previous estimations, thereby reinforcing the reliability of the estimated effects of refugees and asylum seekers, as well as refugee crises, on terrorism in host countries.

Table 11.2.1: Estimation Results IV: Overall Terrorism Incidents, Probabilities, Casualties, Global Terrorism Database

Variable	Updated GTD		Data		1970-2019		NB w/		NB w/		NB w/		GEEs		
	NB Model 41	Incidents Model 41	Logit1 Model 42	Binary Model 42	Logit2 Model 43	Binary Model 43	Logit3 Model 44	Binary Model 44	Casualties Model 45	Incidents Model 46	Country FE Model 46	Incidents Model 47	Country FE Model 47	Incidents Model 48	
Ref_asy1_t-1	-031 (.091)		.206 (.213)		-133*** (.041)		-251 (.204)		-211 (.174)		-043 (.056)		-043 (.092)		-144** (.061)
Polity2_t-1	-020 (.021)		(omitted) (omitted)		.066*** (.008)		-006 (.034)		.063 (.051)		.003 (.019)		.003 (.087)		.033 (.038)
GDP_per_cap_t-1	-525 (1.483)		-2.293 (3.101)		-108 (1.242)		2.531 (1.849)		1.301 (2.488)		.451 (.494)		.451 (.944)		.678 (.996)
Log_pop_t-1	1.053*** (.177)		1.470*** (.348)		.113** (.055)		2.154*** (.674)		1.363*** (.519)		.011 (.166)		.011 (.372)		1.088** (.504)
Post_cold_w_t-1	.318** (.159)		-.321 (1.081)		-.256 (.717)		-.032 (.570)		-.342 (.463)		-.177 (.245)		-.177 (.383)		-.201 (.612)
Terrorism_t-1	.012*** (.002)		.856** (.347)		1.087** (.504)		2.900*** (.541)		.011* (.007)		.006*** (.0006)		.006*** (.001)		-.002 (.003)
t	.370* (.208)		1.774** (.807)		1.645*** (.483)		.881 (.828)		-.147 (.525)		.455*** (.164)		.455* (.250)		.799*** (.297)
f ²	-.009 (.006)		-.040** (.019)		-.041*** (.012)		-.025 (.020)		.0010 (.015)		-.011*** (.004)		-.011* (.006)		-.019** (.008)
f ³	.0001 (.0001)		.0003** (.0001)		.0003*** (.0001)		.0002 (.0002)		-2.87e-06 (.0001)		.0001*** (.0000)		.0001* (.0000)		.0001** (.0001)
Constant	.098 (15.249)		-4.722 (27.046)		-18.620 (16.872)		-39.803* (23.324)		-10.224 (30.685)		-9.145* (5.216)		-9.145 (10.061)		-15.296 (11.639)
Wald <i>Chi</i> ²	276.39		713.36		682.11		12.70		62.99		259.73		641.03		65.40
Prob > <i>Chi</i> ²	0.000		0.000		0.000		0.013		0.000		0.000		0.000		0.000
Log Likelihood	-1022.965		-35.466		-121.569		-73.027		-711.874		-969.446		-969.446		
Observations	245		230		245		245		245		245		245		245

*-denotes significance at 90% confidence level, **- at 95% confidence level, ***-at 99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression, Logit1 - Logit with binary variable=1 if terrorism>0, Logit2 - Logit with binary variable=1 if terrorism > indiv. country median (1, 19, 9, 45, 97) Logit3 - Logit with binary variable=1 if terrorism > overall median (16), GEE-Generalised Estimating Equations. Bootstrapped Standard Errors are obtained using 50 replications.

Table 11.2.1 presents the first set of estimations, mirroring the core analyses conducted by Choi and Salehyan (2013). The estimated impact of the stock of refugees and asylum seekers on overall terrorist events and their casualties is negative. However, it is worth noting that the coefficients lack precision, with only Models 43 and 48 yielding statistically significant results. This outcome could potentially be attributed to the inclusion of all types of terrorism events in the GTD data used here, encompassing domestic, transnational, and unknown incidents. Consequently, the impact on one type of terrorism may be negative while being positive for another. Additionally, it is important to consider that the GTD data contains a considerable percentage of unknown events, which limits the precision of the estimates compared to the data provided by Enders et al. (2011) in terms of obtaining more accurate results.

Furthermore, the findings presented in Table 11.2.1 replicate the specification approach used by Choi and Salehyan (2013) and align with the core methodology employed in the existing literature on the relationship between refugees and terrorism. However, as observed in Tables 11.1.1 and 11.1.2, the estimations in Table 11.2.1 may suffer from omitted variable bias, as they do not account for the influence of refugee crises. Therefore, it is crucial to examine the results presented in Table 11.2.2, which provide a set of more robust estimations.

In this section of the analysis, the estimations also include the Wald test as well as the previous sets in Tables 11.1.1-11.2.2, which assesses the joint significance of the variables included in each model. The results of the Wald test can be observed alongside each reported estimation, allowing for a comprehensive evaluation of the overall model significance.

After introducing the refugee crises variable into the estimations, the estimates align more closely with those obtained using the data from Enders et al. (2011), increasing the overall consistency of the results. Specifically, Models 56-58, which account for the panel nature of the dataset and provide more reliable estimates, reveal the following key findings. Firstly, the stock of refugees and asylum seekers continues to have a statistically significant negative influence on terrorism. The standard errors remain relatively stable even after bootstrapping, further confirming the robustness and significance of the estimated coefficients. Secondly, as discussed earlier, refugee crises have a pos-

Table 11.2.2: Estimation Results V

Variable	Updated GTD		Data		1970-2019		NB w/		NB w/		NB w/		GEEs	
	NB Incidents Model 51	Logit1 Binary Model 52	Logit2 Binary Model 53	Logit3 Binary Model 54	NB Casualties Model 55	Country FE Incidents Model 56	Country FE Incidents Model 57	Country FE Incidents Model 58	Country FE Incidents Model 56	Country FE Incidents Model 57	Country FE Incidents Model 58	Country FE Incidents Model 56	Country FE Incidents Model 57	Country FE Incidents Model 58
Ref_asyl_t-1	-0.049 (0.145)	-0.426 (0.264)	-0.352*** (0.050)	-0.154 (0.312)	-0.135 (1.093)	-0.153** (0.070)	-0.153* (0.093)	-0.239*** (0.092)						
Ref Crises_t-1	0.147 (0.461)	5.169*** (1.262)	1.573** (0.674)	-0.804 (1.035)	0.057 (0.046)	0.904*** (0.339)	0.904** (0.401)	0.917 (0.402)						
Polity2_t-1	-0.018 (0.018)	(omitted)	0.092*** (0.010)	-0.015 (0.026)	0.057 (0.046)	0.018 (0.019)	0.018 (0.112)	0.049 (0.043)						
GDP_per_cap_t-1	-0.527 (1.507)	-2.787 (4.245)	0.064 (1.493)	2.451 (1.813)	1.384 (2.441)	0.604 (0.494)	0.604 (1.173)	0.996 (1.077)						
Log_pop_t-1	1.079*** (0.131)	2.824*** (0.262)	0.395*** (0.067)	2.042*** (0.681)	1.240** (0.459)	0.196 (0.183)	0.196 (3.176)	1.256** (0.499)						
Post_cold_w_t-1	0.273 (0.266)	-3.371*** (0.728)	-0.849 (0.626)	0.292 (0.300)	-0.121 (0.345)	-0.349 (0.240)	-0.349 (0.250)	-0.224 (0.466)						
Terrorism_t-1	0.012*** (0.002)	0.452 (0.440)	1.022** (0.466)	2.907*** (0.536)	0.0115* (0.007)	0.005*** (0.001)	0.005*** (0.002)	0.00233 (0.003)						
t	0.351* (0.164)	1.166 (0.605)	1.482*** (0.495)	1.012 (0.693)	-0.054 (0.507)	0.416** (0.162)	0.416** (0.185)	0.853*** (0.272)						
f ²	-0.009 (0.005)	-0.025 (0.014)	-0.037*** (0.012)	-0.028 (0.017)	-0.00133 (0.014)	-0.0106** (0.004)	-0.0106** (0.005)	-0.0201*** (0.007)						
f ³	0.00006 (0.00004)	0.0002 (0.0001)	0.0003*** (0.00009)	0.0002* (0.0001)	0.00002 (0.0001)	0.00008** (0.00003)	0.00008** (0.000032)	0.0001*** (0.00005)						
Constant	0.438 (15.333)	10.717 (39.134)	-17.104 (19.449)	-41.157* (21.934)	-12.457 (30.825)	-9.629 (5.156)	-9.629 (17.769)	-19.049 (12.715)						
Wald Chi ²	223.23	2316.71	45.60	90.38	5.25	265.97	1971.78	24.24						
Prob > Chi ²	0.000	0.000	0.000	0.000	0.2623	0.000	0.000	0.000						
Log Likelihood	-1022.919	33.809	-120.657	-72.911	-711.620	-966.05	-966.05							
Observations	245	230	245	245	245	245	245	245						

*-denotes significance at 90% confidence level, **- at 95% confidence level, ***- at 99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression, Logit1 - Logit with binary variable=1 if terrorism>0, Logit2 - Logit with binary variable=1 if terrorism>indiv. country median(1, 19, 9, 45, 97) Logit3 - Logit with binary variable=1 if terrorism>overall median (16) GEE-Generalised Estimating Equations. Bootstrapped Standard Errors are obtained using 50 replications.

itive impact on the number of terrorist incidents. Therefore, the estimations for overall terrorism are robust and consistent across different datasets.

However, when examining the impact on terrorism casualties, neither of the key independent variables (refugees and asylum seekers, and refugee crises) appear to be statistically significant. The imprecise estimation, likely due to the absence of fixed effects, contributes to the lack of significance. To address this issue, Table 21 (and subsequent Table 22) provide further insights and help resolve this ambiguity.

Table 11.2.3, as mentioned earlier, presents estimations for domestic versus international terrorism using the classification provided in the Global Terrorism Database (GTD) itself LaFree and Dugan (2007). It is important to exercise caution when interpreting these estimations, as the classification in GTD may not be as rigorous as in the study by Enders et al. (2011). However, the results do not generally support the conclusions reached by Choi and Salehyan (2013) or Milton et al. (2013).

For the majority of models, the effect of the stock of refugees and asylum seekers is statistically insignificant. This holds true for the refugee crises variable as well. The classification of terrorism events as domestic or international in the GTD data does not provide sufficient evidence to determine if there is a statistically significant effect on domestic terrorism. Even though the pooled logit estimation suggests a negative and statistically significant effect, the more appropriate fixed effects estimation for panel data does not yield statistically significant estimates for the independent variables of interest.

On the other hand, Models 66 and 610 reveal that, based on the GTD data, the number of fatalities in international (or transnational) terrorism incidents is positively influenced by the previous year's stock of refugees and asylum seekers. This finding aligns with the existing literature in the field.

Overall, while the estimations based on the GTD data for terrorism in general provide some insights and verify robustness for overall terrorism, it is important to exercise caution and consider the limitations of the classification domestic vs international terrorism in GTD when drawing conclusions from these results.

Hence, the main estimations using overall terrorism incidents remain robust regardless of the dataset chosen. However, the discrepancies observed

Table 11.2.3: Estimation Results VI: Domestic and International Terrorism Incidents, Probabilities, Casualties, Global Terrorism Database

Variable	Updated GTD		Data		1970-2019		Trans NB w/ Country FE		Dom NB w/ Country FE		Trans NB w/ Country FE		Dom NB w/ Country FE	
	Incidents Model 61	Dom NB Logit1 Model 62	Dom NB Logit1 Model 63	Trans NB Incidents Model 64	Trans NB Logit1 Model 65	Trans NB Casualties Model 66	Trans NB Incidents Model 67	Trans NB Country FE Model 68	Dom NB Country FE Model 69	Dom NB Country FE Model 68	Trans NB Country FE Model 69	Trans NB Country FE Model 69	Dom NB Country FE Model 69	Dom NB Country FE Model 69
Ref_asy1.t-1	-0.620 (0.441)	-0.858* (0.399)	-0.909 (0.775)	0.169 (0.169)	-0.072 (0.253)	0.763*** (0.180)	0.042 (0.162)	-0.124 (0.073)	-0.013 (0.356)	-0.124 (0.073)	0.042 (0.162)	-0.013 (0.356)	-0.013 (0.356)	1.016*** (0.240)
Ref Crises.t-1	1.484 (2.269)	3.747 (3.374)	0.277 (21.569)	-1.285*** (0.407)	2.539* (1.292)	-0.015 (1.713)	-0.330 (0.745)	0.954* (0.407)	2.430 (2.152)	0.954* (0.407)	-0.330 (0.745)	2.430 (2.152)	2.430 (2.152)	-1.183 (1.227)
Polity2.t-1	-0.103 (0.071)	-0.334 (0.203)	0.044 (0.169)	0.002 (0.024)	(omitted)	-0.016 (0.071)	0.029 (0.029)	0.069** (0.021)	0.022 (0.045)	0.069** (0.021)	0.029 (0.029)	0.022 (0.045)	0.022 (0.045)	-0.024 (0.038)
GDP_per_cap.t-1	-3.325*** (0.843)	-3.888*** (1.102)	2.506 (1.819)	0.485 (2.466)	2.548 (1.311)	-1.789 (1.771)	0.799 (1.490)	1.204* (0.582)	0.157 (2.032)	1.204* (0.582)	0.799 (1.490)	0.157 (2.032)	0.157 (2.032)	-3.961*** (1.299)
Log_pop.t-1	1.519** (0.613)	1.550* (0.674)	0.452 (2.569)	0.968*** (0.256)	-4.394*** (0.930)	0.804* (0.391)	-2.296 (1.192)	0.478* (0.222)	0.315 (0.479)	0.478* (0.222)	-2.296 (1.192)	0.315 (0.479)	0.315 (0.479)	-0.043 (0.401)
Post.cold_w.t-1	-1.203 (0.856)	-1.436** (0.462)	-4.726 (3.423)	0.417 (0.367)	-4.394 (0.930)	-1.418 (1.024)	-0.759 (0.545)	-1.130*** (0.273)	0.331 (0.946)	-1.130*** (0.273)	-0.759 (0.545)	-1.130*** (0.273)	0.331 (0.946)	0.331 (0.946)
Terrorism.t-1	0.006 (0.007)	-0.003 (0.007)	-0.004 (0.004)	0.015*** (0.004)	-0.003 (0.002)	0.007 (0.008)	0.009 (0.001)	0.002*** (0.001)	-0.0004 (0.002)	0.002*** (0.001)	0.009 (0.001)	-0.0004 (0.002)	-0.0004 (0.002)	0.001 (0.002)
t	0.299 (0.392)	0.729 (0.613)	7.439* (3.563)	0.093 (0.129)	-0.347 (0.499)	0.536 (1.115)	0.447 (0.390)	0.072 (0.178)	8.793 (5.935)	0.072 (0.178)	0.447 (0.390)	8.793 (5.935)	8.793 (5.935)	0.451 (0.478)
f ²	-0.006 (0.009)	-0.014 (0.016)	-0.183 (0.120)	-0.003 (0.005)	0.009 (0.013)	-0.019 (0.030)	-0.011 (0.010)	-0.003 (0.004)	-0.224 (0.208)	-0.003 (0.004)	-0.011 (0.010)	-0.224 (0.208)	-0.224 (0.208)	-0.012 (0.012)
f ³	0.00005 (0.00007)	0.0001 (0.0001)	0.001 (0.001)	0.00002 (0.00005)	-0.00009 (0.0001)	0.0002 (0.0002)	0.0008 (0.0007)	0.0002 (0.00003)	0.002 (0.002)	0.0002 (0.00003)	0.0008 (0.0007)	0.002 (0.002)	0.0002 (0.00003)	0.00009 (0.0001)
Constant	30.092*** (7.109)	32.270*** (11.533)	-105.149** (33.646)	-8.176 (24.736)	-24.148 (16.405)	4.525 (30.854)	-4.995 (13.480)	-12.385** (5.792)	-107.004 (62.111)	-107.004 (62.111)	-4.995 (13.480)	-12.385** (5.792)	-107.004 (62.111)	21.735* (12.226)
Wald χ^2	189.76	199.65	231.54	26.94	32.54	11.89	176.08	198.81	59.15	176.08	198.81	59.15	73.11	
Prob > χ^2	0.000	0.000	0.000	0.000	0.000	0.0182	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Log Likelihood	-385.326	-119.470	-154.527	-920.875	-72.065	-345.842	-319.422	-823.857	-124.035	-823.857	-319.422	-124.035	-305.847	
Observations	245	245	245	245	245	245	196 ^a	245	196 ^b	245	196 ^a	245	245	

*-denotes significance at 90% confidence level, **- at 95% confidence level, ***- at 99% confidence level two-tailed test. The clustered by country robust standard errors are reported below each estimated coefficient. NB - Negative Binomial Regression, Logit1 - Logit with binary variable=1 if terrorism>0, GEE-Generalised Estimating Equations. Bootstrapped Standard Errors are obtained using 50 replications.

^aThe UK is dropped in the FE transformation as there are no non-zero values for the number of exclusively domestic terrorism casualties.

^bThe UK is dropped in the FE transformation as there are no non-zero values for the number of exclusively domestic terrorism casualties.

in the casualties and the estimations for different classifications are addressed by exploring the possibility of a non-linear relationship between refugees and asylum seekers and terrorism. It is hypothesised that the inclusion of a squared term of refugees and asylum seekers may explain the variation in the effects of the independent variables of interest.

To test this hypothesis, the squared term of refugees and asylum seekers is included in the same specifications as before. The results of these estimations for each dependent variable, using both the dataset by Enders et al. (2011) and the GTD dataset by LaFree and Dugan (2007), are presented in Table 11.3.1 in the following subsection. In addition to the overall joint significance test, an additional joint significance test is conducted for the level and squared terms of the logarithm of refugees and asylum seekers, which is also reported at the bottom of Table 11.3.1. Furthermore, the estimations in Table 11.3.1 introduce an additional control variable to enhance the standard specification.

By including the squared term, the analysis aims to capture any non-linear relationships and provide a more comprehensive understanding of the relationship between refugees and asylum seekers and terrorism incidents. Additionally, the introduction of the additional control variable helps to improve the specification and account for other relevant factors that may influence the relationship.

11.3 Additional Control and Non-linear relationship test

To further enhance the specification and account for additional factors that may influence the relationship between refugees and asylum seekers and terrorism incidents, the estimations presented in Table 11.3.1 include an additional control variable. This control variable serves as a proxy for the level of security within each country and is measured as military expenditure as a percentage of GDP, obtained from Stockholm International Peace Research Institute (2023).

Before delving into the estimations, it is important to provide an overview of the descriptive statistics for the military expenditure variable, which are presented in Table 11.3.2. Additionally, Table 11.3.3 displays the pairwise cor-

relations between the independent and control variables, including the new control variable of military expenditure. These correlations help to assess the relationships and potential collinearity among the variables.

To evaluate the impact of multicollinearity, a Variance Inflation Factor (VIF) analysis is conducted. The VIF analysis measures the inflation of the standard errors of the estimated coefficients due to collinearity. The VIF analysis, including the new control variable, confirms that the VIF values for the new specification fall within an acceptable range of 1 to 4.81¹. This suggests that multicollinearity is not a major concern in the estimations and supports the validity of the results obtained.

Table 11.3.2: Descriptive statistics of Military Expenditure as a percentage of GDP

Variable name	Mean	Std. Dev.	Min	Max	N
Ref Crises Ind	2.512	1.691	0.698	10.961	334

The inclusion of military expenditure as a control variable in the estimation models is theoretically and practically justified. It is expected to be correlated with the number of refugees and asylum seekers as well as refugee crises through the mechanism described by Boyer (1989). Boyer argued that foreign aid and military expenditure act as substitutes that influence global peace and the conditions that generate refugees. Moreover, the military expenditure of host countries is likely to have an impact on the number of terrorism incidents and potentially on casualties (Asongu et al., 2017). Therefore, omitting the control variable of military expenditure as a percentage of GDP may lead to an omitted variable bias.

Controlling for level of security within a host country has been overlooked in the existing literature on the nexus between terrorism and refugees. Its inclusion in the regression specifications is scientifically valuable as it provides an extension to the established models and contributes to the robustness of the estimated effects.

Hence, the estimation results presented in Table 11.3.1 can be considered the most robust due to the improved specification and the use of the appropriate panel data estimation method, namely Country Fixed Effects. Models 71-76 utilise the data from Enders et al. (2011), while Models 77-712 use the GTD data from LaFree and Dugan (2007). The coefficients of the control vari-

¹This is without the inclusion of the squared term for refugees and asylum seekers.

Table 11.3.3: Independent Variables Correlation Matrix with Military Expenditure

	lag_Ref.asyl	lag_Ref.Cri	lag_MilitExpend
lag_Ref.asyl	1.0000		
lag_Ref.Cri	0.4495*	1.0000	
lag_MilitExpend	0.1736*	-0.2641*	1.0000
lag_polity2	0.5661*	0.1957*	0.0647
lag_log_GDP_per_cap	0.2051*	0.2715*	-0.6003*
lag_log_pop	0.1071*	-0.2549*	0.3339*
lag_Post_cold_w	0.2124*	0.4353*	-0.4775*
lag_Sum_terror	-0.2206*	-0.2106*	0.0442
lag_Terror_n_GTD	-0.0315	-0.2319*	0.5891*
lag_Dom_terror	-0.3085*	-0.2687*	0.0463
lag_Transn_terror	0.0720	0.0061	0.0235
lag_Domest_terror_GTD	-0.2455*	-0.2229*	-0.0108
lag_Intern_terr_GTD	0.0476	-0.2165*	0.7177*
lag_N_killed	-0.1809*	-0.1756*	0.1325
lag_Nkilled_GTD	-0.0148	-0.2261*	0.6411*
lag_Dom_Killed	-0.2141*	-0.2603*	0.1077
lag_Dom_killed_GTD	-0.1879*	-0.2707*	0.0350
lag_Trans_killed_GTD	-0.0792	-0.0428	0.0837
lag_Intern_killed_GTD	0.0733	-0.1571*	0.4909*

*- denotes significance at 95% confidence level.

ables generally align with the theoretical expectations regarding their signs. Furthermore, the estimates for the control variables are consistent with those obtained in Tables 16-21, reinforcing the reliability of the results.

Models 71-73 in the analysis represent estimations for incidents of terrorism, specifically Overall, Domestic, and Transnational terrorism. Firstly, it is important to note that the joint significance test of the level and squared term of refugees and asylum seekers is statistically significant for all three models. Moreover, individually, both the level and squared terms are highly statistically significant in Model 71 and 73, particularly in relation to Transnational Terrorism. This suggests that there is a non-linear relationship between the number of refugees and asylum seekers and terrorism incidents, supporting the hypothesis. The relationship appears to follow an upward U-shape pattern, with the level term being negative and the squared term being positive.

It is notable that the relationship between the number of terrorism incidents and the number of refugees and asylum seekers is primarily influenced by Transnational terrorism incidents, as indicated by the significant individual effects of all key independent variables. On the other hand, the relationship is not as strong for Domestic terrorist events. Model 37, which is the counterpart to Model 72, represents the most appropriate relationship for the Domestic classification.

Furthermore, it is worth mentioning that all three models (71-73) demon-

strate that the impact of refugee crises is statistically significant and positive. This further supports the key results presented earlier, highlighting the influence of refugee crises on terrorism incidents.

In contrast to the findings regarding terrorism incidents, Models 74-76 indicate that refugee crises do not appear to have a significant influence on terrorism casualties, even after controlling for the non-linear term of refugees and asylum seekers and military expenditure. These estimations align with the corresponding models in Table 18. Similarly, neither of the key independent variables show a significant effect on Transnational terrorism fatality rates. The joint significance test also rejects the non-linear impact of refugees and asylum seekers.

However, Model 75 reveals a negative impact of the number of refugees and asylum seekers on domestic terrorism casualties, suggesting that an increase in the stock of refugees and asylum seekers may lead to a decrease in domestic terrorism casualties. This finding can be explained by the same argument as discussed in the key results above.

In Model 74, which considers overall terrorism casualties, the impact of the stock of refugees and asylum seekers follows a similar U-shape pattern as observed for terrorism incidents. However, refugee crises do not have a statistically significant role in influencing overall terrorism casualties. This finding further supports the initial estimation results.

Moving on to the estimations using the GTD dataset by LaFree and Dugan (2007) and the improved specification, Model 77 shows consistent results with the estimations using the data by Enders et al. (2011). The influence of the stock of refugees and asylum seekers on overall terrorism follows an upward U-shaped pattern, and refugee crises have a statistically significant positive effect on the number of terrorism events. These findings provide additional evidence to support the robustness of the original key results and those observed in Model 71.

However, it is important to note that the estimations on domestic and international terrorism incidents (Models 78-79) present a "reversed" situation due to the significant differences in classification approaches between the two datasets, as discussed in the data section of this chapter. According to the GTD data, domestic terrorism exhibits a pronounced U-shape dependence on the

stock of refugees and asylum seekers in the host country, holding other factors constant. On the other hand, purely international terrorism events seem to be significantly influenced only by refugee crises. These results align with the estimations in Table 21, indicating consistency within the dataset. Additionally, refugee crises have a statistically significant impact on international terrorism incidents, but not on domestic incidents. Nonetheless, it is important to exercise caution when interpreting the estimation results with GTD classification due to the discussed issues.

Model 710 provides a strong basis for the robustness of the estimated relationship between terrorism casualties and refugees and asylum seekers. Similar to Model 74, the relationship is estimated to be an upward U-shape, indicating that the impact of refugees and asylum seekers on terrorism casualties is non-linear. However, refugee crises do not have a statistically significant impact on terrorism casualties in this model. It is worth noting that Models 711 and 712 should be interpreted with caution due to the same classification issues. Notably, the *ceteris paribus* impact of refugee crises on international casualties is estimated to be negative in Model 711, while the coefficient for the post-Cold War period is estimated with extreme imprecision.

Finally, when evaluating the *ceteris paribus* effects of the independent variables of interest numerically, it is important to note that a minor refugee crisis (refugee crises variable reaching 1) is expected to increase overall terrorism by an average of 1.425 events, domestic terrorism by 1.353 events, and transnational terrorism by 1.762 incidents. However, the estimations using GTD data provide smaller estimates, indicating an average rise of approximately 0.8 events after a refugee crisis. These estimated effects can be considered economically significant from a humanitarian perspective, as any increase in violence or threat of violence is of great importance. However, from a statistical perspective, both predicted increases in events are relatively small compared to the mean and standard deviation of the respective datasets. For comparison one can use the mean of 28.347 and standard deviation of 46.510 for the data by Enders et al. (2011) and on the mean of 48.216 and standard deviation of 66.997 for the GTD data by LaFree and Dugan (2007).

Evaluating the non-linear effect of the stock of refugees and asylum seekers, it can be observed that the U-shape relationship implies that until a certain

number, the effect of an additional person from these categories decreases the number of terrorist events. However, after reaching that threshold, an additional person is predicted to positively influence terrorism in the host country. By calculating the necessary levels based on the models, it can be determined that for Model 71, the necessary level is approximately 1,509,475 refugees and asylum seekers present in a host country in one year. This number exceeds the maximum stock of refugees and asylum seekers for any country-year in the dataset (1,500,040 for Germany). Therefore, for the chosen countries, the effect was negative throughout the period of 1951-2019. On the other hand, Model 73 predicts that transnational terrorism may be positively influenced by the stock of refugees and asylum seekers if it exceeds 187,382 people. This indicates that the *ceteris paribus* effect of the vulnerable groups of interest was both negative and positive in different country-years. Similarly, Model 74 predicts that terrorism casualties will be positively influenced by an additional person after the stock reaches 235,788, which falls within the range of the sample. For Model 77, the threshold is 166,823, for Model 78 it is 42,479, and for Model 710 it is 1,479,286, all of which were reached within the sample used.

Therefore, the "Trojan Horse" theory of refugees becoming a vehicle for the spread of terrorism in the chosen countries is only partly supported. It may occur, but only after accommodating rather large numbers of people.

To sum up, the key results can be updated as follows.

1. *The sheer number of refugees and asylum seekers has a non-linear (U-shape) influence on overall terrorism and overall terrorism casualties in the host country.*
2. *Refugee crises, even minor ones, are expected to significantly increase the number of overall terrorism events.*
3. *Refugee crises also have a statistically significant impact on both domestic and transnational terrorist events individually.*
4. *Transnational terrorist events are estimated to have a U-shape relationship with the number of refugees and asylum seekers present in the host country, holding other factors constant.*

5. *Domestic terrorist events are expected to decrease with the increase of the stock of refugees and asylum seekers.*
6. *Consequently, domestic terrorism casualties are also expected to decrease with the increase of the stock of refugees and asylum seekers, while the casualties of transnational events are not significantly affected by such increases.*
7. *Refugee crises do not seem to have a statistically significant effect on terrorism casualties.*

11.4 Discussion of the Empirical Results

The empirical results reported in this dissertation follow a standard approach and generally contradict the existing literature on the nexus of refugees and terrorism. The specifications used in the analysis align with those employed in relevant studies, ensuring comparability and reliability.

Overall, the empirical estimations do not contradict each other, and any discrepancies that arose were carefully addressed and demonstrated robustness through various sensitivity analyses, such as the inclusion of additional variables and alternative dataset selections.

However, it is important to acknowledge the limitations of this research. One limitation relates to the sample selection process, where countries were chosen based on the availability of the refugee crises index. This may introduce some selection bias and limit the generalisability of the findings to a broader set of countries.

Another limitation is the restricted time frame of the terrorism classification dataset, which only includes observations up to 2007. This temporal constraint may limit the ability to capture more recent trends and developments in the relationship between refugees and terrorism.

Additionally, the classification of terrorism events into domestic and international categories using the GTD dataset by LaFree and Dugan (2007) poses challenges due to missing observations, which can affect the precision of the estimated coefficients.

The second limitation of this research, which is shared by the broader literature in the field, is the focus on estimating short-term effects. The analysis

in this dissertation considers the effect of refugees and asylum seekers at time $t - 1$ on terrorism outcomes at time t , without capturing the potential longer-term dynamics. However, previous chapters of this dissertation have demonstrated that the effects of refugee crises can extend beyond the immediate time period, suggesting the need to investigate longer-term effects.

To address the first limitation related to sample selection, future research could extend the analysis to include a larger number of countries or explore countries in different regions. By doing so, the findings would have a broader applicability and could provide more robust estimates. In cases where the number of countries exceeds the number of years in the dataset, employing dynamic panel data approaches such as the Arellano-Bond or Blundell-Bond estimators would be more appropriate.

Furthermore, updating the terrorism data used in this study, specifically the data by Enders et al. (2011), would be of great scientific value. The proper updating and refinement of the terrorism dataset would contribute to the accuracy and relevance of future research in this area. However, this task falls beyond the scope of the current dissertation.

To overcome the second limitation and analyse the medium- to long-term effects of the independent variables, future research could employ estimation techniques that allow for the examination of impulse response functions. For example, using Local Projections would enable the construction of dynamic models that capture the medium- to long-term effects of refugee crises or significant changes in the number of refugees and asylum seekers. Exploring these temporal dynamics would provide a deeper understanding of the relationship between refugees and terrorism over extended periods.

Chapter 12

Conclusion

The findings of Part III of this dissertation have highlighted several critical gaps in the existing literature on the relationship between refugees and terrorism. These gaps have led to the formulation of the following research questions, which aim to address these limitations and contribute to a more comprehensive understanding of the topic:

RQ 1: What is the impact of refugees on terrorist events in European countries overall?

RQ 2: Is there any difference in refugees impact on domestic and transnational terrorist events in European countries?

RQ 3: What is the impact of refugee crises on terrorist events in European countries?

The study presented in this dissertation represents the first attempt in the literature to estimate the impact of refugee crises on terrorism in host countries, with a specific focus on developed European nations. By employing established specifications and methods found in previous academic research on this subject, the research questions were thoroughly examined and addressed with rigour and precision, ultimately leading to the following conclusions:

1: Refugees have negative impact on Overall terrorism in the chosen countries. They also have the same impact on the fatality rates of overall terrorism.

2: Domestic terrorism in those countries is estimated to shrink linearly with the rise of refugees and asylum seekers stock. Domestic terrorism severity (casualties) are expected to decrease with the stock of refugees

and the Transnational terrorism incidents and casualties are unaffected.

3: Refugee Crises are predicted to increase the number of terrorist events (overall, domestic and transnational), but not to increase their fatality rates.

However, upon enhancing the specification by incorporating additional control variables and incorporating a term to capture the non-linear relationship between the stock of refugees and asylum seekers and terrorism, the conclusions can be revised and expanded as follows:

1: Refugees have a non-linear U-shaped relationship with the overall terrorism in the chosen countries. They also have the same impact on the fatality rates of overall terrorism.

2: Transnational terrorism in the chosen host countries follows the same U-shape, while the Domestic terrorism in those countries is estimated to shrink linearly with the rise of refugees and asylum seekers stock. Domestic terrorism severity (casualties) are expected to decrease with the stock of refugees and the Transnational terrorism severity is unaffected.

3: Refugee Crises are predicted to increase the number of terrorist events (overall, domestic and transnational), but not to increase their fatality rates.

The conclusions reached in this study demonstrate a robustness to dataset selection and the introduction of additional control variables, with the exception of the results obtained from the Global Terrorism Database's (GTD) classification of terrorism events into purely Domestic and International categories. Although the estimations align with the findings for Overall terrorism incidents, the significance of the results is reversed compared to the data provided by Enders et al. (2011). This discrepancy can be attributed to differences in the approach to classification and does not invalidate the overall findings. Furthermore, the estimated results exhibit robustness across various estimation methods employed in the analysis.

The aforementioned conclusions have several important policy implications. Developed European countries that host refugees and aim to minimise the occurrence of terrorism within their borders should take proactive measures to prevent the emergence of refugee crises, as described in this study.

Policy-makers should carefully manage the stock of refugees and asylum seekers, ensuring a balanced level that minimises their potential impact on terrorism. It is crucial to note that this does not imply a rejection of refugees and asylum seekers. Instead, the focus should be on establishing legal pathways for their arrival, facilitating their integration into society and labour markets, and meeting their basic needs. Additionally, concerted efforts should be made, even at the international level, to mitigate any potential negative consequences that could contribute to the fulfilment of the criteria defining a refugee crisis. By adopting such measures, the influence of refugee-related factors on the frequency and severity of terrorism can be effectively minimised.

Furthermore, it is important to address the misconceptions propagated by certain European politicians, such as Viktor Orban (Brunsden, 2017) and Michael Howard (BBC, 2005), who claim that refugees are a Trojan Horse for terrorism. The findings of this study indicate that such statements are not true in the context of Domestic terrorism and only partially hold true for Transnational and Overall terrorism. The estimated parabolic relationship between the number of refugees and asylum seekers and the latter two categories suggests that a potential increase in terrorism events may occur only when the level of arrivals surpasses a certain significantly large threshold. However, it is worth noting that the calculated turning points represent averages across all countries, and individual countries may have different thresholds. Estimating these thresholds precisely for each country poses a challenge and is an area for future research.

In addition, several significant limitations have been identified in this study. These limitations pertain to the limited number of countries included in the analysis, the use of the GTD classification system, and the focus on short-term effects only. Addressing these limitations should be the primary focus of future research in this field, which would involve expanding the analysis to include a greater number of countries and employing techniques that allow for the estimation of medium- to long-term impacts.

Finally a note of caution. The author of this dissertation does not argue that refugees are terrorists or that they for sure cause terrorism. Instead, it is argued that with larger and larger numbers of refugees in European countries (above the certain threshold), one can expect refugees to more likely become

the vehicles for or the targets of terrorism. On the other hand, the complex problematic events - refugee crises do cause terrorism one way or another.

Appendices

Appendix A

Definitions of the Relevant Terminology

A.1 Formal definitions of the vital terminology.

A Refugee:

“[Any person who] owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear is unwilling to avail himself of the protection of that country; or who not having a nationality and being outside the country of his former habitual residence...is unable or, owing to such fear, is unwilling to return to it.” (The Article 1 of the Convention or 1967 UNHCR protocol General Assembly Resolution 2198 (xxi))

The legal condition for the place where a refugee could come from varies from country to country. From a usual developed countries perspective, an asylum would be granted to those refugees or asylum seekers from non-EEA countries. While, for example, the UK may accept anyone who is not a British Citizen.

The rest of the Convention lays out the obligations toward refugees to which parties must adhere. Chief among these obligations, and often referred to as the core principle of international refugee law, is Article 33, the *non-refoulement* provision, which states:

“No contracting state shall expel or return (‘refouler’) a refugee in any man-

ner whatsoever to the frontiers of territories where his life or freedom would be threatened on account of his race, religion, nationality, membership of a particular social group, or political opinion.” (United Nations Conference of Plenipotentiaries on the Status of Refugees and Stateless Persons, Geneva (1951))

An asylum-seeker, is

“A person who seeks safety from persecution or serious harm in a country other than his or her own and awaits a decision on the application for refugee status under relevant international and national instruments. In case of a negative decision, the person must leave the country and may be expelled, as may any non-national in an irregular or unlawful situation, unless permission to stay is provided on humanitarian or other related grounds.”(IOM (2011))

Internally Displaced Persons (IDPs) are:

“persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalised violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognised state border.” (UNHCR (2015))

A Migrant, according to the International Organisation for Migration (IOM) is a person,

“who changes his or her country of usual residence, irrespective of the reason for migration or legal status.”(IOM (2011))

A War is

*“armed fighting between two or more countries or groups,
any situation in which there is strong competition between opposing sides or a great fight against something harmful.” (WarCamb (n.d.))*

While the Duhaime’s Law Dictionary (of War (n.d.)) states that a war is a state of affairs between governments and does not necessarily require military aggression from one or another.

Appendix B

Control Variables

The specification used for both the benchmark and the alternative classifications for any response variable y is the following

$$y_{i,t+j} = \alpha_i^j + \beta^j R_{j,t} + \sum_{s=1}^m \phi_s^j R_{i,t-s} + \sum_{s=1}^p \theta_s^j y_{i,t-s} + \sum_{n=1}^k \mu_n z_{n,t} + e_{i,t+j}^j \quad (\text{B.1})$$
$$j = 0, 1, \dots, 10,$$

where the i subscripts indicate countries, the t subscripts indicate time, and the j superscripts denote the horizon (years after time t) under consideration. Then $y_{i,t+j}$ is the measure of economic activity, the level of one of the chosen socio-economic indicators, or a political variable for country i at time $t + j$. The α 's are the country fixed effects used to pick up the differences in the normal behaviour of the response variable across countries. In addition to the country fixed effects, the $z_{n,t}$ are k control variables at time t and μ_n are k corresponding estimated coefficients.

The core control variables sets varied across groups of estimations. The estimations using economic variables as dependent had a rather large standard set of controls used across all estimations with a few exceptions. The social and political indicators had similarities in their controls because of the different nature of the data. The control variables are explained in detail on the example of the real per capita GDP estimation. For the next economic variables, the changes in the set of control variables are highlighted.

B.1 Control variables for the Real GDP per capita IRF to a Refugee Crisis with control variables

B.1.1 Benchmark classification

As this research is the first evaluation of the impact of refugee crises on real GDP per capita, the largest set of control variables was dictated by the cross-correlation between the independent variable of interest (Refugee Crises Index) and potential influence on the dependent variable of used. At the same time, the Variance Inflation Factor (VIF) analysis was employed to make sure the highly correlated variables did not distort the precision of estimations for the key variable of interest. The rule for exclusion a variable was to make sure that there are no variables with the VIF factor above 5.

The following list of control variables were included in the estimations with the benchmark classification for the Real GDP per capita as they were identified in the previous literature as important predictors of the dependent variable and relatively highly correlated with the refugee crises variables.

- Lag of Unemployment % of total labour force (The World Bank, 2022c). It is expected to have a negative impact on the real GDP per capita according to Barro (1996); Meidani and Zabihi (2011);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015), that is expected to have positive impact on real GDP per capita also based on Barro (1996);
- Lag of Welfare-related Total Factor Productivity at current PPPs (USA=1) (Feenstra and Timmer, 2015), which is expected to have positive impact on GDP per capita as in Dean (1985); Inklaar and Timmer (2013);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015), which is expected to be negative according to Ritter (2005);
- Lag of New measure of financial distress by Romer and Romer (2017), who predicted a significant impact of financial crises on GDP;
- Lag of Total population of the host country (in millions)(Feenstra and Timmer, 2015). It is expected to have negative impact on GDP per capita

as Barro (1996) found evidence that lower fertility, i.e. smaller population predicts higher GDP;

- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022), measuring the feasibility of policy changes in the recipient country. Thus, to which extend a change in the preferences of any one political actor may lead to a change in government policy. The variable proxies the level of Democratic vs Autocratic development, which is based on Barro (1996) can moderately positively impact real GDP per capita. Similar expectations are outlined in Henisz (2000);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c). It is expected to have a negative impact based on Barro (1996, 1995);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b)) following the predicted positive impact on real per capita GDP in Aiyar et al. (2016);
- Lag of Central government debt % of GDP (Mbaye et al., 2018), which is expected to be positive according to Spilioti (2015); Checherita-Westphal and Rother (2012).

The descriptive statistics of the control variables above are presented in Table (B.1.1 below correspondingly.

Table B.1.1: Descriptive statistics of control variables for the Real GDP per capita IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Unemp.	8.329	5.247	1.1	26.09	237
Tot. Engaged	43.996	4.616	30.637	53.636	345
Welf. TFP	.849	.124	.496	1.236	330
IRR	.089	.033	.042	.192	345
Fin. Distress	.528	1.584	0	8.5	230
Tot. Pop. Lag	47.314	23.904	6.973	83.124	340
Polit. Constraint Ind.V	.731	.200	0	.869	285
Inflation	4.654	4.522	-.501	24.538	300
Ref. & Asyl. Seek	161087.8	271536.6	271536.6	1433074	345
Centr. Gov. Debt	43.685	29.489	7.090	130.065	312

B.1.2 Alternative classification Controls

For the alternative specification, the same variables were used.

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015);
- Lag of Welfare-related Total Factor Productivity at current PPPs (USA=1) (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022), measuring the feasibility of policy changes in the recipient country. Thus, to which extend a change in the preferences of any one political actor may lead to a change in government policy;
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Central government debt % of GDP (Mbaye et al., 2018).

B.2 Control variables for the Real Government Consumption IRF to a Refugee Crisis with control variables

The set of control variables is kept for the Real Government Consumption estimations because of the dependent variable being an intrinsic part of the GDP of a country. It was also shown that GDP growth can be explained with government consumption growth with the positive relationship (Dao, 2014), hence the same control variables are valid. The real per capita GDP was not included in the list of controls because of high correlation with the main independent variable of interest and the VIF factor rising too high.

B.2.1 Benchmark Classification

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015);
- Lag of Welfare-related Total Factor Productivity at current PPPs (USA=1) (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022), measuring the feasibility of policy changes in the recipient country. Thus, to which extend a change in the preferences of any one political actor may lead to a change in government policy;
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Central government debt % of GDP (Mbaye et al., 2018).

B.2.2 Alternative Classification Controls

The same set of control variables was also used for the alternative classification.

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015);
- Lag of Welfare-related Total Factor Productivity at current PPPs (USA=1) (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022), measuring the feasibility of policy changes in the recipient country. Thus, to which extend a change in the preferences of any one political actor may lead to a change in government policy;
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Central government debt % of GDP (Mbaye et al., 2018).

B.3 Control variables for the Consumer Prices Inflation IRF to a Refugee Crisis with control variables

For the estimations with the Consumer Prices Inflation, the set of control variables was slightly amended, to take into account the exchange rates impact, which can be correlated with refugee crises, as when a large number of foreigners appear in a country, one can expect an increase in demand of foreign exchange because of the higher demand for remittances and other types of international financial products, influencing the exchange rates, probably downwards (a similar situation was demonstrated in Li (2017)). However, the core body of the control variables was kept unchanged. Because of the expected to negative relationship with per capita real GDP (Barro, 1996, 1995), the expected impacts of the already used variables are expected to reverse.

B.3.1 Benchmark classification

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015), positive impact is predicted based on Kara and Nelson (2003);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015), expected positive impact based on traditional Phillips Curve (Roberts, 1995);
- Lag of Welfare-related total factor productivity at current PPP, taking USA equal to 1 (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));

- Lag of Central government debt % of GDP (Mbaye et al., 2018), the impact is expected to be positive (Aimola and Odhiambo, 2020).

Table B.3.1: Descriptive statistics of control variables for the Consumer Prices Inflation IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Exch. rate	.860	.496	.234	2.147	345
Tot. Engaged	43.996	4.616	30.637	53.636	345
Welf. TFP	.849	.124	.496	1.236	330
IRR	.089	.033	.042	.192	345
Fin. Distress	.528	1.584	0	8.5	230
Polit. Constraint Ind.V	.731	.200	0	.869	285
Ref. & Asyl. Seek.	161087.8	271536.6	271536.6	1433074	345
Centr. Gov. Debt	43.685	29.489	7.090	130.065	312

B.3.2 Alternative classification Controls

The control variables for the alternative classification remained the same.

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015), positive impact is predicted based on Kara and Nelson (2003);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015), expected positive impact based on traditional Phillips Curve (Roberts, 1995);
- Lag of Welfare-related total factor productivity at current PPP, taking USA equal to 1 (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Central government debt % of GDP (Mbaye et al., 2018), the impact is expected to be positive (Aimola and Odhiambo, 2020).

B.4 Control variables for the Unemployment IRF to a Refugee Crisis with control variables

The control variables for the unemployment, given the expected inverse relationship with inflation predicted by Phillips Curve, are mostly remained the same with a few exceptions. Addition of a lag of human capital index, controlling for the overall level of education and returns to education.

B.4.1 Benchmark classification

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015). The negative relationship with the unemployment is expected based on Bakhshi and Ebrahimi (2016);
- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015), which is expected to have negative relationship (Cairó and Cajner, 2018);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Total population of the host country (in millions) (Feenstra and Timmer, 2015);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Central government debt % of GDP (Mbaye et al., 2018).

B.4.2 Alternative classification

The control variables remained the same for the alternative classification of a refugee crisis variable.

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015). The negative relationship with the unemployment is expected based on Bakhshi and Ebrahimi (2016);

Table B.4.1: Descriptive statistics of control variables for the Unemployment IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Exch. rate	.860	.496	.234	2.147	345
Human cap.	2.798	.521	1.805	3.774	345
IRR	.089	.033	.042	.192	345
Fin. Distress	.528	1.584	0	8.5	230
Tot. Pop.	47.314	23.904	6.973	83.124	345
Polit. Constraint Ind.V	.731	.200	0	.869	285
Ref. & Asyl. Seek.	161087.8	271536.6	271536.6	1433074	345
Inflation	4.654	4.522	-.501	24.538	300
Centr. Gov. Debt	43.685	29.489	7.090	130.065	312

- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015), which is expected to have negative relationship (Cairó and Cajner, 2018);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Total population of the host country (in millions) (Feenstra and Timmer, 2015);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Central government debt % of GDP (Mbaye et al., 2018).

B.5 Control variables for the Shadow Economy IRF to a Refugee Crisis with control variables

The size of Shadow economy is generally expected to be negatively related to the level of GDP of a country (Schneider et al., 2010), so the core set of controls is kept from the estimations above. In addition to that, it was decided to control for population density, to mimic the approaches in Wu and Schneider (2019) and the one for the social and political dependent variables estimations (Harries, 1980).

B.5.1 Benchmark classification

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015);
- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of population density (number of people to 1 sq. km.) (author's own calculation using data by The World Bank (2022a), Population Pyramid (2018), The World Bank (2022b));
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));

B.5.2 Alternative classification

The controls for the alternative classification remained the same.

- Lag of Exchange rate, national currency/USD (Feenstra and Timmer, 2015);

Table B.5.1: Descriptive statistics of control variables for the Shadow Economy IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Exch. rate	.860	.496	.234	2.147	345
Unemp.	8.329	5.247	1.1	26.09	237
Tot. Engaged	43.996	4.616	30.637	53.636	345
IRR	.089	.033	.042	.192	345
Price level	.503	.342	.062	1.232	345
Human cap.	2.798	.521	1.805	3.774	345
Inflation	4.654	4.522	-.501	24.538	300
Pop. Density	161.075	23.904	6.973	83.124	345
Polit. Constraint Ind.V	.731	.200	0	.869	285
Shadow Econ.	22.387	10.598	9.34	50.25	272
Ref. & Asyl. Seek.	161087.8	271536.6	271536.6	1433074	345

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Total percentage % of people engaged (Feenstra and Timmer, 2015);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of population density (number of people to 1 sq. km.) (author's own calculation using data by The World Bank (2022a), Population Pyramid (2018), The World Bank (2022b));
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));

B.6 Control variables for the Human Capital IRF to a Refugee Crisis with control variables

For the estimations for the Human Capital variable, the standard set of controls was, trying to control to an multidimensional impact of the economy of a country experiencing a refugee crisis.

B.6.1 Benchmark classification

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Total population of the host country (in millions) (Feenstra and Timmer, 2015).

Table B.6.1: Descriptive statistics of control variables for the Human Capital IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Unemp.	8.329	5.247	1.1	26.09	237
IRR	.089	.033	.042	.192	345
Fin. Distress	.528	1.584	0	8.5	230
Polit. Constraint Ind.V	.731	.200	0	.869	285
Inflation	4.654	4.522	-.501	24.538	300
Ref. & Asyl. Seek.	161087.8	271536.6	271536.6	1433074	345
Tot. Pop.	47.314	23.904	6.973	83.124	345

B.6.2 Alternative classification

The control set for the alternative classification remained unchanged.

- Lag of Unemployment % of total labour force (The World Bank, 2022c);
- Lag of Real internal rate of return (annual %) (Feenstra and Timmer, 2015);
- Lag of New measure of financial distress by Romer and Romer (2017);
- Lag of Political constraint index V (Henisz, 2017) & Teorell et al. (2022);
- Lag of Inflation, consumer prices (annual %) (The World Bank, 2022c);
- Lag of Total number of refugees and asylum seekers in the recipient country (author's own calculation using UNHCR (2022b));
- Lag of Total population of the host country (in millions) (Feenstra and Timmer, 2015).

B.7 Control variables for the Crime Level per thousand people IRF to a Refugee Crisis with control variables

B.7.1 Benchmark classification

- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015). An inverse relationship is expected based on Lochner (2004);
- Lag of male population as a percentage of total population (United Nations, 2019) a positive impact is expected based on Piopiunik and Ruhose (2017);
- Lag of population density (author's own calculation using data by The World Bank (2022a), Population Pyramid (2018), The World Bank (2022b), which is expected to have a positive relationship with crime according to Harries (1980);
- Lag of Unemployment % of total labour force (The World Bank, 2022c), a positive impact is expected as well (Altindag, 2012);

Table B.7.1: Descriptive statistics of control variables for the Crime Level per thousand people IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Human cap.	2.798	.521	1.805	3.774	345
Male Pop.	48.402	.743	46.432	49.445	309
Pop. Density	161.075	23.904	6.973	83.124	345
Unemp.	8.329	5.247	1.1	26.09	237

B.7.2 Alternative classification

The control variables for the alternative classification of the refugee crises were not changed.

- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015);
- Lag of male population as a percentage of total population (United Nations, 2019);

- Lag of population density (author's own calculation using data by The World Bank (2022a), Population Pyramid (2018), The World Bank (2022b));
- Lag of Unemployment % of total labour force (The World Bank, 2022c);

B.8 Control variables for the Votes for a right-wing party IRF to a Refugee Crisis with control variables

B.8.1 Benchmark classification

The estimation for the chosen political indicator required a completely different set of control variables from the economic indicators estimations above, but similar to Crime level estimations.

- Lag of average age of the population of the recipient country (United Nations, 2019), with the positive relationship predicted in, for example, Geys et al. (2022) ;
- Lag of Unemployment % of total labour force (The World Bank, 2022c), positive relationship is predicted based on Siedler (2011);
- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015), following the approach by Albanese and de Blasio (2021);
- Lag of male population as a percentage of total population (United Nations, 2019), following the approach by Cox (1968).

Table B.8.1: Descriptive statistics of control variables for the Right-wing party votes IRF to a Refugee Crisis with control variables, **benchmark classification**.

Control Var.	Mean	Std. Dev.	Min	Max	N
Avg. Age	33.410	4.571	24.823	42.486	345
Unemp.	8.329	5.247	1.1	26.09	237
Human cap.	2.798	.521	1.805	3.774	345
Male Pop.	48.402	.743	46.432	49.445	309

B.8.2 Alternative classification

The set of control variables remained unchanged for the alternative classification.

- Lag of Unemployment % of total labour force (The World Bank, 2022c);

- Lag of Human capital index based on years of schooling and returns to education (Feenstra and Timmer, 2015);
- Lag of male population as a percentage of total population (United Nations, 2019)
- Lag of average age of the population of the recipient country (United Nations, 2019);

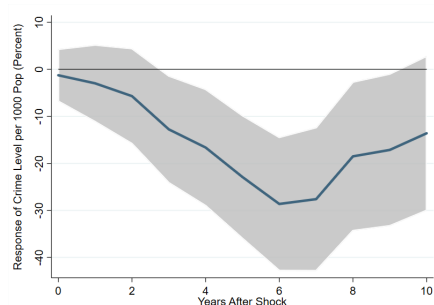
Appendix C

Sub-sample Estimations

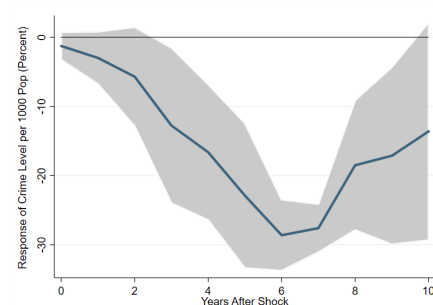
Crime per thousand people.

Figure C.1: Response of the Crime Level to a Refugee Crisis, No Spain Sample, OLS

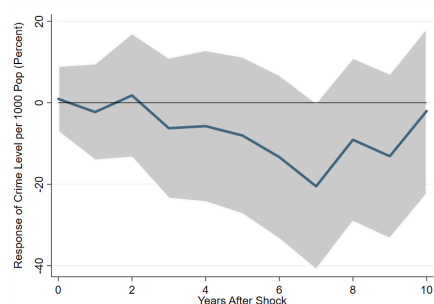
Panel A. Crime Level Per 1000 People, Country and Time FE



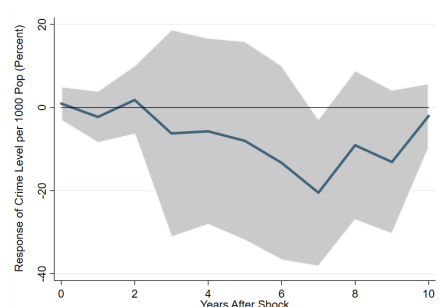
Panel B. Crime Level Per 1000 People, Country and Time FE, Heteroscedasticity Robust SE



Panel C. Crime Level Per 1000 People, Country FE, Control Variables



Panel D. Crime Level Per 1000 People, Country FE, Control Variables, Heteroscedasticity robust SE



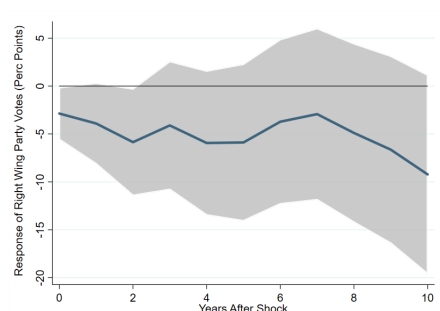
Notes: The panels show the impulse response functions for *Crime Level Per 1000 People* as percentage of total labour force to an impulse of 5 in the measure of refugee event severity. All countries included in the study, the whole sample period using OLS. The grey area around the average impulse response exhibit the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis, that the country fixed effects are jointly statistically zero, is strongly rejected for both specifications presented in this Figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

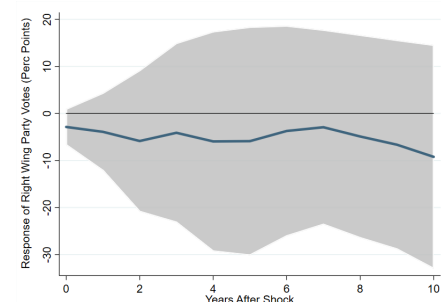
BIC chose the specification (0,7) for Panels A and B and (7,7) for Panels C and D, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

Figure C.2: Response of the Right-wing Party Votes to a Refugee Crisis, No Spain Sample, OLS

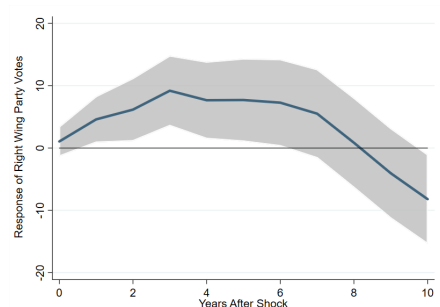
Panel A. Votes to a Right-Wing Party, Country and Time FE



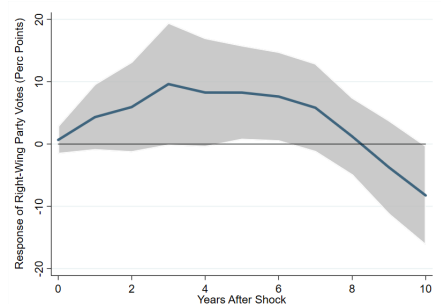
Panel B. Votes to a Right-Wing Party, Country and Time FE, Heteroscedasticity Robust SE



Panel C. Votes to a Right-Wing Party, Country FE, Control Variables



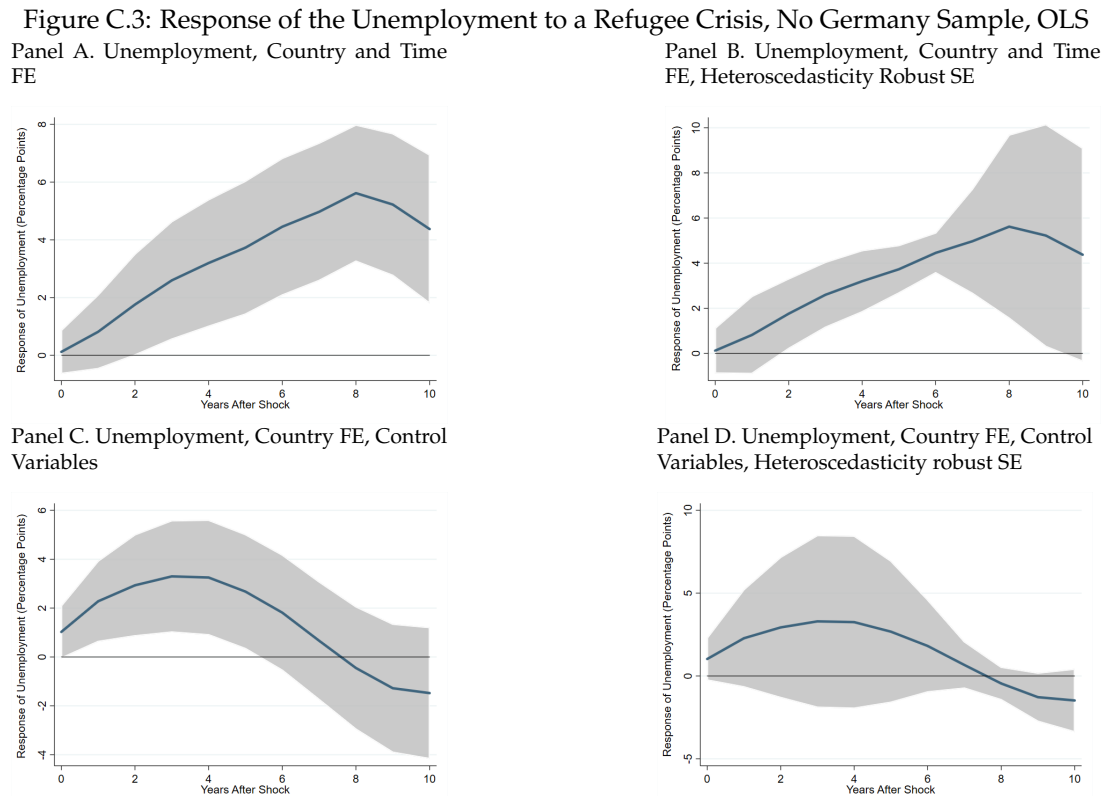
Panel D. Votes to a Right-Wing Party, Country FE, Control Variables, Heteroscedasticity robust SE



Notes: The panels show the impulse response functions for *Votes to a Right-Wing Party* as percentage of total labour force to an impulse of 5 in the measure of refugee event severity. All countries included in the study, the whole sample period using OLS. The grey area around the average impulse response exhibit the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis, that the country fixed effects are jointly statistically zero, is strongly rejected for both specifications presented in this Figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

BIC chose the specification (0, 7) for Panels A and B and (0, 2) for Panels C and D, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.



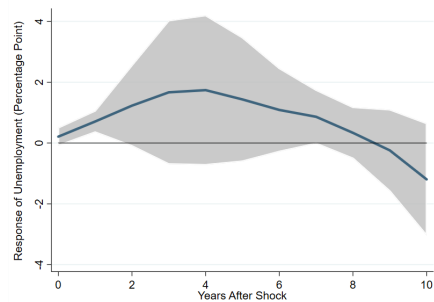
Notes: The panels show the impulse response functions for *Total Unemployment* as percentage of total labour force to an impulse of 5 in the measure of refugee event severity. All countries included in the study, the whole sample period using OLS. The grey area around the average impulse response exhibit the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis, that the country fixed effects are jointly statistically zero, is strongly rejected for both specifications presented in this Figure. Similarly, the first specification (*Panels A and B*) has the time fixed effects also jointly significant for all horizons. For the second specification (*Panels C and D*), the hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons.

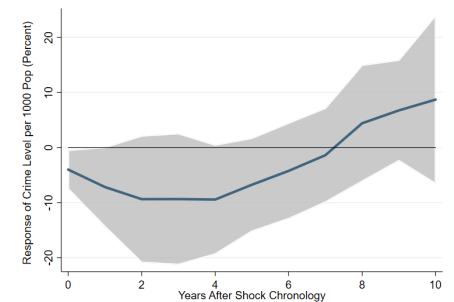
BIC chose the specification (0, 7) for Panels A and B and (0, 7) for Panels C and D, where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

Figure C.4: Response of the Economic, Socio-Economic & the Political variables to a Refugee Crisis, Alternative classification, Full Sample, OLS

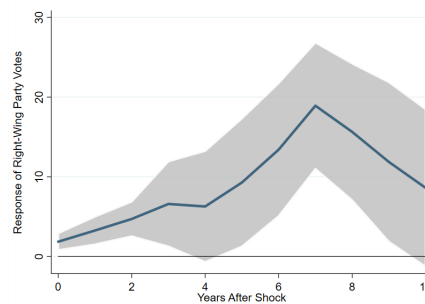
Panel A. Unemployment, Country FE, Control Variables, Heteroscedasticity Robust SE, No Germany Sample



Panel B. Crime Level Per 1000 People, Country FE, Control Variables, Heteroscedasticity Robust SE, No Spain Sample



Panel C. Votes For a Right-Wing Party, Country FE, Control Variables, No Spain Sample



Notes: The panels show the impulse response functions for the **Economic, Social and Political** variables to an impulse of 5 in the measure of refugee event severity. All countries included in the study, the whole sample period using OLS. The grey area around the average impulse response exhibit the two-standard-error confidence interval.

For each of the four IRFs, the null hypothesis, that the country fixed effects are jointly statistically zero, is strongly rejected for both specifications presented in this Figure. The hypothesis of joint insignificance of the control variables is strongly rejected even at later horizons for all dependent variables.

BIC chose the specification for: Panel A - (0, 2), Panel B - (0, 7), Panel C - (0, 7), where the first in the brackets is the number of lags for the shock and the second - the number of lags for the response variables.

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