



universität
wien

MASTERARBEIT/MASTER'S THESIS

Titel der Masterarbeit/Title of the Master's Thesis

“Syrian Refugees in the EU: What Are the Determinants
of the Choice of Refuge?”

verfasst von/submitted by

Christopher Singhuber, Bakk.rer.soc.oec.

angestrebter akademischer Grad/in partial fulfilment of the requirements for the
degree of

Master of Science (MSc)

Wien, 2017 / Vienna, 2017

Studienkennzahl lt. Studienblatt / degree
programme code as it appears on the stu-
dent record sheet:

A 066 913

Studienrichtung lt. Studienblatt / degree
programme as it appears on the student
record sheet:

Masterstudium Volkswirtschaftslehre

Betreut von/Supervisor:

Univ.-Prof. Dipl.-Ing. Dr. Robert Kunst

Acknowledgements

This thesis would not have been possible without the help of Clemens, Johannes and Oliver who I had insightful discussions with and who gave practical advice.

I have had the support of my co-workers, allowing me to spend necessary extra time.

Thanks go to Prof. Robert Kunst for his supervision.

Thanks to everybody who took the time to answer my questionnaire.

I would particularly like to thank Anna, for teaching me a lot about what constitutes good scientific work, and for her persistent encouragement.

Contents

1	Introduction	2
2	Model Considerations	6
2.1	Push and Pull Framework	6
2.2	Literature Review	7
2.3	Pull Factors/Determinants of Destination Choice	9
2.4	The Response Variable	15
3	Methods and Data	18
3.1	A Statistical Model for a Zero Inflated Fractional Response . .	18
3.2	The Data and its Properties	20
4	Results	27
5	Conclusion	32
6	Appendix	34

1 Introduction

In 2014, according to UNHCR, more than 50 million people have been forcefully displaced worldwide for the first time after World War II.¹ Many of those who were looking for refuge outside of their home countries applied for asylum in the EU. There were more than 3.6 million applications in EU countries from early 2011 to mid 2016.² By the end of 2015, the unequal distribution of asylum applications has become the most controversial issue between EU member states.

The sudden increase in refugee numbers was mainly caused by the Syrian Civil War, displacing a total of 12.1 million people, of which around 6.5 million people sought refuge inside Syria³ and about 5.6 million people left their country⁴ until mid 2016. The conflict was triggered in March 2011, as 6 people were shot dead by police during protests in Dar'a, a city located in the south of Syria, near the border with Jordan. Further antigovernment demonstrations were answered with brute force and unrest spread to other parts of the country. The events escalated quickly. So far, more than 450,000 people were killed and many more injured.⁵

The majority of Syrians – about 4.4 million until mid 2016 – fled to the neighboring countries Turkey, Lebanon and Jordan. A smaller, but still considerable number – approximately 783,970 - applied for asylum in one of the EU countries, accounting for about 21.3% of all applications from outside the EU in that period.

¹see <http://www.unhcr.org/53a155bc6.html>

²Throughout this thesis, data regarding numbers of asylum applications in the EU are taken from the Eurostat database: ec.europa.eu/eurostat/en/data/database

³Data is provided by UNHCR at: <http://www.unhcr.org/sy/29-internally-displaced-people.html>

⁴UNHCR data from: <http://data.unhcr.org/syrianrefugees/regional.php>

⁵see <http://www.aljazeera.com/news/2016/05/syria-civil-war-explained-160505084119966.html>

In order to reach the EU, Syrian citizens undertook a long dangerous journey and used the expensive services of people smugglers who sent them from Turkey to Greece on overcrowded boats. Most of them continued to travel via the Western Balkan Route to West European countries.⁶

In no year before 2011, the number of asylum seekers from Syria to the EU

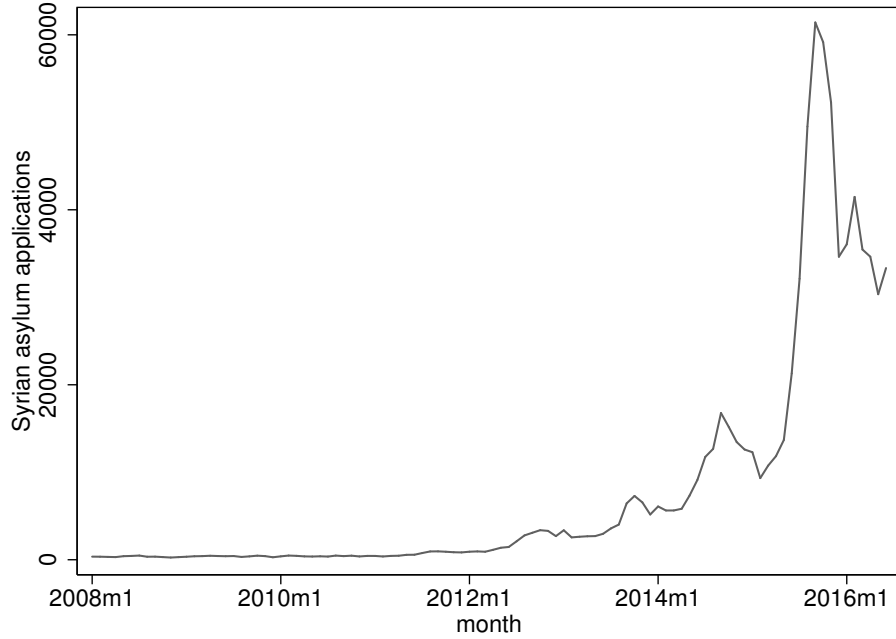


Figure 1: Monthly asylum applications by Syrian citizens to the EU

exceeded 1,300 per quarter, but started to steadily increase to about 1,680 in the first and 3,995 in the second quarter of 2011. For a more detailed picture I provide figure 1, showing the total monthly numbers of asylum applications from Syrian citizens in EU countries from January 2008 to June

⁶These are total asylum applications, where ‘total’ means that it includes both first time applications and a negligible number of refugees who have already applied to another country before. In the following, whenever the number of asylum applications is mentioned, it refers to the total asylum applications definition, simply because Eurostat provides data for every country and period for total – but not for first time – asylum applications.

2016. The peak with around 61,415 applications in September 2015 marks what is prominently referred to as the European Refugee Crisis.

Around 85% of those refugees applied for asylum in only 5 of the 28 EU countries. Consequently, most EU countries had rather few Syrian asylum applications. The unequal distribution of applications was not a problem with respect to Syrians alone - most other refugees migrating to the EU preferred roughly the same destinations.

Growing concern was voiced by some governments and local media that costs for reception and, more importantly, for social welfare will increase to levels which can or should not be covered by the community. The public was divided into those who welcomed refugees and thought of them as rightfully fleeing an armed conflict, and those who disapproved of them, doubted their need for protection or perceived them as a threat to their culture - most of the refugees were Sunni Muslims. Voices were raised that Islamist terrorists would be finding their way to Europe along with the asylum seekers. As national elections in the EU showed, the trend towards right-wing populist parties was further strengthened.

A few countries, primarily Italy and Greece, had to manage the refugee arrivals by sea largely themselves. They provided food and shelter to the refugees and went to some lengths to save people from drowning in the Mediterranean.⁷ Furthermore, according to the Dublin Regulation, an asylum claim lies in the responsibility of the member state of first entry, putting more pressure on the comparatively poorer countries in the south of Europe. It is obvious that the matter bore a lot of potential for conflict between EU member states. Even more so, as the EU failed to push through a solution for the unequal distribution of the so called refugee burden.

This thesis seeks to detect the determinants of differences in the relative

⁷3072 refugees died in the Mediterranean Sea in 2014 alone, according to the International Organisation for Migration (IOM)

numbers of asylum claims that were lodged by Syrian citizens in EU countries from the beginning of 2011 to mid 2016. It is organized as follows: Section 2 provides an outline of the push and pull factor approach, a review of literature, a list of possible pull factors and a discussion of the features of the response variable. The statistical model and the properties of the data are covered in section 3. In section 4, I present and discuss results, which is followed by concluding remarks in section 5.

2 Model Considerations

2.1 Push and Pull Framework

For my analysis I employ the push-pull factor approach, introduced by Lee (1966), and well known from migration economics. A source country's characteristic that affects the number of its emigrants is called a push factor. A pull factor is a destination country's characteristic affecting the number of immigrants to that destination. Such factors can reflect wage differentials of source to destination pairs, migration policy, political unrest in the source, etc. This is a very simple concept, basically stating that there are incentives and that migrants respond to them. According to Hagen-Zanker (2008) it "...is barely a theory, it is more a grouping of factors affecting migration, without considering the exact causal mechanisms (p.9)." Nevertheless, I regard it to be the most suitable approach for my purpose, as it allows for including all kinds of possible influence factors in a straightforward way.

Both push and pull factors can have an influence on the total number of migrants in a destination country, and almost all existing literature on refugee migration studies the number of asylum applications in destination countries from both perspectives. I will, however, drop the push factor side of the framework and focus my attention solely on pull factors. This is possible, as I only observe one source country, which is Syria. Hence, there are no differences in source country's characteristics to consider. I will be able to concentrate on the relative attractiveness of EU countries based on their policy, as there are no exogeneous disturbances, and I hope, that the quantitative results will be more precise, there being less potential influence factors for the migration decision.⁸

⁸This is only feasible with a response variable that cancels out absolute variations in time, see section 2.4.

2.2 Literature Review

In the following I give a brief outline of earlier quantitative work that covers the most noteworthy findings on pull factors.

Thielemann (2004) examines the share of asylum seekers for 20 OECD countries over the period from 1985 to 1999, normalised by the destination country's population size. The shares refer to the total number of asylum seekers within a destination country, thus no disaggregation by source country was conducted. He employs a pooled time series ordinary least squares regression on panel data using a standard error transformation to correct for invalid standard errors of the parameter estimates. A number of pull factors are tested. Among them is a deterrence index Thielemann created himself. It includes – for example – a measure for low recognition rates - the share of recognized asylum seekers (see section 2.3) - and a measure for the right to work for asylum seekers. To test for network effects - friends and family already living in a destination as a push factor - he includes the stock of foreign nationals from the top 5 asylum sources. A measure for distance is created analogously: it is the average of the distance to the top 5 asylum sources. The unemployment rate and the growth rate of GDP serve as measures of economic opportunities.

He finds that network effects have a strong, significant positive effect on the number of asylum applications, while his deterrence index and the unemployment rate have a negative effect. The growth rate of GDP and the geographical distance are insignificant. However, I believe that the distance measure suffers severely from its imprecise specification. Thielemann concludes that the most prominent deterrence measures are less effective than expected. He finds two explanations for this: First, the network effect is the most important determinant of destination country choice. Second, refugees have less information and a lower degree of choice of destination than policy makers believe.

In Hatton (2009) the response variable is the log of the annual number of asylum applications from source to destination from 1997 to 2006 - the log of the number of applications of country pairs. As destination country specific fixed effects are employed, nothing can be said about the determinants of relative attractiveness of the destination countries. The approach focuses on the overall effectiveness of changes in policy. Hatton includes a similar set of pull factors as Thielemann, while testing for somewhat different policy strains.

He finds strong evidence for the network effect. Low recognition rates and policy on limiting access to a country's territory lowered the number of asylum seekers by a lot. By contrast, policy affecting socioeconomic conditions had little effect. He concludes that only a third of the decline in asylum applications within the observed period was caused by policy. Hatton (2016) employs a similar approach with more recent data.

Neumayer (2004) uses the same response variable as Thielemann (2004): The relative number of asylum applications normalised by the population size of a country or its reception capacity⁹. He observes country pairs for the years from 1982 to 1999, using OLS and source-destination pair fixed effects. The author, again, finds strong evidence for network effects, concluding that this 'friends and family' effect dominates policy. So it is difficult to deter refugees as soon as a high share of them has applied in the past. Unemployment, social expenditure in % of GDP and GDP growth had no significant influence, while the level of GDP did. Distance deters refugees and constitutes a significant effect. Also the percentage of voters of right wing populist parties serves as a deterrent and is significant. This is an indirect policy indicator, assuming that policies are influenced by the median voter.

⁹The paper provides a discussion on that practice, see section 2.4

All the aforementioned papers have in common that they test for the effects of distance, networks, and living standards and/or employment opportunities. Also, they all test for the effects of policy, although there are differences in the manner this is conducted, both methodologically and with respect to the type of questions asked. In my thesis, I apply a different set of policies, which will be listed in the subsequent section. Further, it tries to find determinants of differences in attractiveness for EU countries only, neglecting exogeneous factors, which do not lie within reach of EU policy makers.

2.3 Pull Factors/Determinants of Destination Choice

This section discusses possible determinants of destination choice, beginning with factors that I consider in the empirical part of this thesis, followed by factors not included in my model.

Network Effects

There is very strong evidence for network effects being the key incentive for the choice of refuge throughout the literature. The idea behind it is simple: People living in a source country will follow their friends and families in the destination country. Apart from the benefit someone might have from joining a friend or relative, strong networks are associated with lower costs for newcomers, because immigrants connect with locals, establish labor networks and learn how local institutions work. The effect is believed to be self perpetuated as soon as networks grow large enough. (Massey et al. (1993))

Distance

The further away a destination is from the source country, the more costly the journey becomes. The costs would not be worth mentioning if they referred to differences in prices of airline tickets. But since the Syrian civil war

started, it is not possible for Syrian citizens to take a plane to Europe. Due to the carrier liability provision in Article 26 of the Schengen Convention, it lies in the responsibility of an airline to return passengers who are denied access to the Schengen Area. As Schengen countries usually did not issue visas to refugees, airlines simply would not transport them. Non-Schengen countries in the EU apply similar rules. Therefore, Syrians take land routes and pay large sums to people smugglers.¹⁰

Population Size

The size of the population of a country is, naturally, a major pull factor for refugees. Previous studies did not even include the variable as a regressor. Already anticipating the effect and accounting for a country's reception capacities, they adjusted their response variables by it, leaving little room for debate on the role of a country's size. I provide a more detailed discussion on that issue in section 2.4.

Living Standard & Employment Opportunities

In all previous studies on push and pull factors for refugees, there was some sort of measure of living standard or employment opportunities. The former usually being a country's GDP per capita, the latter either represented by the unemployment rate or the growth rate of GDP. It is obvious that employment opportunities and standard of living play a role in the field of labor migration. It is, however, doubtful if the same holds true for refugees.

Further, GDP might, to some extent, serve as a measure of living standard, but it will do a bad job on measuring expected earnings of Syrian asylum seekers in the EU. They are very likely to depend on welfare payments at

¹⁰A very detailed and insightful report on migrant smuggling was published by the European Migration Network (EMN) in 2015. It is called "A study on smuggling of migrants" and is accessible at: https://ec.europa.eu/home-affairs/what-we-do/networks/european_migration_network/reports/studies_en

some point in time or to find themselves on the lower end of the income distribution. Median income will better serve that purpose, as it accounts for welfare payments and it is higher for more equal societies.¹¹

Recognition Rates

A destination country's recognition rate is the percentage of positive court decisions on some form of refugee status.

Usually, refugees who apply for asylum, apply for the convention refugee status according to the 1951 "Convention Relating to the Status of Refugees". In the following, I will refer to it as asylum status, asylum or convention status.

Every state in the EU has at least one other form of protection, such as subsidiary protection or temporary protection, which imply a limited amount - or extent - of rights compared to asylum. Among EU member states there is yet no uniform distinction between those alternative forms of protection, although the EU is already attempting to harmonize national laws on the matter (Directive 2011/95/EU). Therefore, I will lump those protection statuses together and refer to them as alternative or other forms of protection. I define three recognition rates, analogously to the two forms of protection I specified: a recognition rate for asylum, a recognition rate for other forms of protection, and the sum of the two, called total recognition rate. The recognition rates for asylum vary substantially in West European countries, which is obvious, as there are some source countries which are politically more instable than others, and people from those countries are thereby more likely to fall within the universal definition of a convention refugee. However,

¹¹Alternatively, one could test for the effect guaranteed minimum income provisions have on the number of asylum applications, using data from the social policy indicators database (SPIN) done by Stockholm University (<http://www.spin.su.se>). It would be particularly interesting to investigate the effect of minimum income provisions which are less favorable for refugees, as in Denmark or parts of Austria. I will, however, not do so here.

recognition rates also vary substantially for refugees from the same countries of origin. Neumayer (2005) shows that the recognition rate for asylum falls with unemployment and high past numbers of asylum seekers in destination countries, implying that the decisions on asylum are not solely based on need, but also on political considerations. This reveals that recognition rates for asylum are being used as a policy measure, either aimed at cutting down on costs, or at deterring refugees, or both. Often, destinations compensate for the lower amount of positive decisions on asylum by granting a higher number of alternative forms of protection status, keeping the total recognition rate high. This practice is probably a consequence of limited possibilities to make legal changes to the extent of rights granted to convention refugees.¹² I describe how recognition rates for asylum and alternative forms developed for Syrian refugees in the EU from 2011 to 2016 in section 3.2.

So far, there is no clear evidence regarding the effect of recognition rates. Most studies included them as part of a deterrence index (see section 2.2), or did not yield a consistent result, as in Havinga and Böcker (1999), who did a qualitative study, suggesting that low recognition rates are a deterrent in some, but not all destinations, and that their effectiveness also varies for refugees from different source countries.

Migration and Integration Policy Index (MIPEX)

MIPEX was a project of the Migration Policy Group, financed by the EU Commission, and published yearly from 2007 to 2014.¹³ It is a policy index containing legislation relevant for migrants, which is organized in eight policy categories: labor market mobility, education, access to nationality, anti-discrimination, health, political participation, permanent residence, and family reunion. Technically, it ranges from 0 to 100, with high values pointing

¹²It certainly is questionable if the targeted cost reduction is a sufficient justification for the loss of legal security in countries that circumvent the 1951 Convention.

¹³The index and its methodology can be accessed here: <http://mipex.eu>

to more open policy towards migrants. It covers legislation of third country nationals, not asylum seekers. However, I will assume that countries that are welcoming towards third country nationals, also have more open regulations for refugees.

The index was criticised for ranking countries according only to their policies and not to their results regarding integration. For example, Austria and Germany, countries with more restrictive welfare provisions for migrants - lowering a country's MIPEX score - show better results when it comes to integration into the labor market (Koopmans (2010)). I do, however, believe that the index is well suited for the purpose of this thesis, which is measuring a destination's attractiveness. Czaika and De Haas (2013) offer a critical discussion on the understanding of policy effectiveness; Gest et al. (2014) comment on the loss of complexity due to aggregation of indicators.

There are factors that are not included in my research for various reasons, but one should be aware of them for a full understanding of destination choice. For completeness, I discuss them below.

Family Reunification

According to UNHCR-Greece (2015), 54.48% of Syrian refugees who have been interviewed in April 2015 at Greek border entry points were planning to apply for family reunification in their favoured asylum destination. Family reunion policy might, therefore, be a relevant factor for destination choice. Consequently, EU governments could be prompted to restrict family reunification policies for refugees, as they can expect high subsequent immigration by family members of refugees who have been granted asylum.

To test for family reunion policies with more accuracy, than is provided by MIPEX, which is done for third country nationals, I conducted my own survey among several scientific institutions concerned with refugee policy,

national sections of the Red Cross, foreign ministries and ministries of the interior. The questions were based on the European Migration Network's Synthesis Report from January 2008¹⁴.

Unfortunately, too few of the offices that I contacted actually replied. Even after I tried to fill the gaps going through the EMNs ad-hoc enquiries and other sources, the information was too fragmentary to be the basis of the policy indicator I had in mind. Anyhow, the conclusions I could draw from collecting information on family reunification policy in the EU should not be withheld and are reported in the annex.

Reception Conditions

Exploring differences in reception conditions would certainly add to the understanding of motives for destination choice. But while it might be possible to get information on cash allowances for asylum seekers, there is no detailed information on the average duration of the process, living conditions in reception centres, whether or not people are allowed to work while waiting for status determination to finish, as well as rules for detention.¹⁵

Access to territory

The monetary effort of border monitoring, the reintroduction of Schengen border controls, the magnitude of penalties for people smugglers and, most importantly, the construction of fences, constitute the third strain of policies that is missing from my study. It has been documented before that measures targeted at impeding access to a country's territory have an effect on the numbers of asylum applications (see section 2.2). The journey to the desired destination becomes both more troublesome, and more costly.

¹⁴accessible at: https://ec.europa.eu/home-affairs/what-we-do/networks/european_migration_network/reports_en

¹⁵By advancements in information technology, it became easier for friends and relatives to pass on knowledge to people who have not yet decided where to apply for asylum. This should also be taken into account for other destination characteristics.

Several border fences have been constructed from mid 2015 onwards, but the dynamics of the resulting shifts in migration routes are too complex to be captured by the push-pull framework in use.¹⁶

Reputation

Perceived friendliness or hostility towards refugees may have changed many people's minds about where to apply for asylum, but I will not make it a subject of this thesis.

2.4 The Response Variable

As mentioned in section 1, I observe the total number of asylum applications - not first time applications - by Syrian citizens to country i in quarter t .

In this study, it is my goal to examine the unequal distribution of Syrian refugees among EU countries. I put the total number of Syrian refugees in the denominator to cancel out fluctuations in the size of the refugee movement, which are caused both by factors outside and inside the EU. While this approach sacrifices the power to explain the effect EU-policy and other factors have on absolute numbers of asylum applications, it allows me to focus on the relative attractiveness of countries. By cancelling out the exogeneous dimension of the response variable, I do not have to explain absolute variations in the number of asylum applications by including push factors, which bear the potential of making the interpretation of my results unnecessarily

¹⁶It can be argued that the effects of more restrictive policy on access to territory will put more emphasis on the distance variable. However, it is not suited to test for policy effectiveness.

vague, as already discussed in section 2.1.¹⁷

$$propapp_{it} = \frac{no.applications_{it}}{\sum_{i=1}^{28} no.applications_{it}} \quad (1)$$

The response in equation 1 should be seen as the probability of an application for asylum in country i , given that the asylum seeker is applying in an EU country. Note that the variable does not change with the total number of asylum seekers.

In almost all previous studies the response variable was divided by population size to adjust for the size of a country which is supposed to naturally attract more refugees, as argued by Hatton (2009), or to yield more meaningful results with respect to public debates on fair burden sharing, as described by Thielemann (2004). While also adjusting the response by population size, Neumayer (2004) argues that it could as well be included in the right hand side of the model from a mere technical point of view, and that it is not at all clear what constitutes a fair share of the burden. Some consider GDP or country size to be important factors. Others think that countries of first entry should be responsible for refugees. Hence, a destination's location might play a role in arguing what country has too many and what country has too few asylum applications in the EU. But the primary reason I will not adjust the response by population size, is that every way of doing so would destroy its probability interpretation. Rather, I include it as a regressor (see section 2.3).

As shown in figure 2, most values of the response variable are either zero or close to zero.

¹⁷To go even further, I am certain that no combination of push factors can capture the variations in the number of asylum applications in a reliable way. That unexplained variation is likely to be falsely attributed to the pull factors by any statistical model.

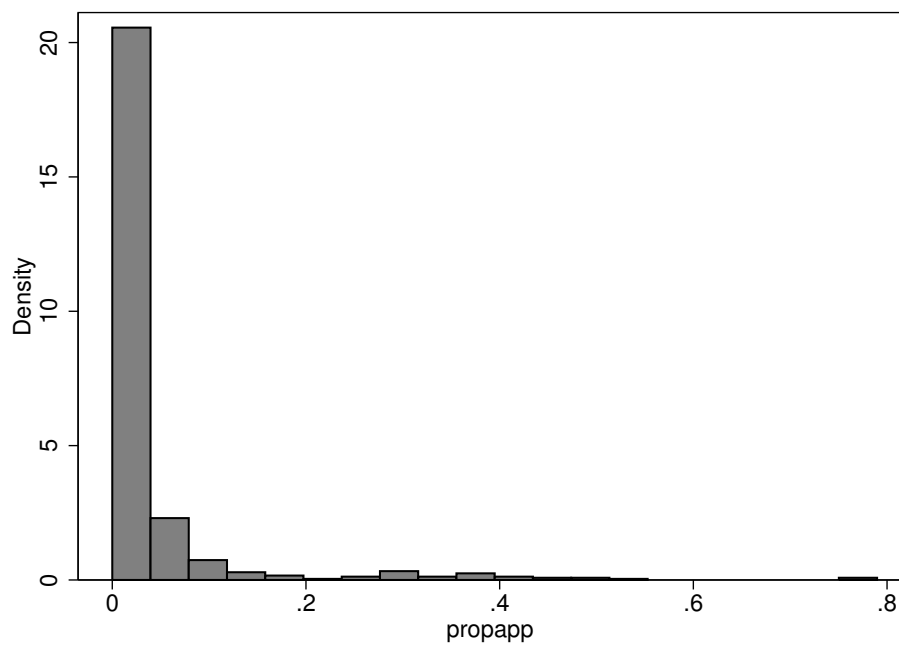


Figure 2: Density of propapp

3 Methods and Data

I elaborate on the employed model in section 3.1. Then, I discuss the data properties of the regressors in section 3.2.

3.1 A Statistical Model for a Zero Inflated Fractional Response

Considering the properties of the response, which I discussed in the previous section, researchers might be tempted to employ a tobit regression, which is questionable, as it is advised not to think of the zero values as originating from a censoring problem.¹⁸ Thielemann (2004) bypasses the issue completely by only observing the flows from the top sources to top destinations, which never yields a zero observation, systematically excluding observations on unpopular destinations. Hatton (2009) accounts for the skewness of the response's distribution - I presume that his data looks somewhat similar to that presented in figure 2 - by taking the log, but adding 1 to every observation, so he is not forced to drop those with a zero value.

A suited model should restrict values of the dependent variable to the interval $[0,1]$. I provide a solution to the problem, which is one of those presented in Baum (2008), who summarized the issue briefly and gave pertinent advice.

For my analysis, I use a Generalized Linear Model with a binomial distribution and a logit link function, as proposed by Papke et al. (1993), with adjusted standard errors to account for the fact that observations are not independent, if taken from the same country.

¹⁸For censoring to occur, the hypothetical 'true' values of the response still need to be feasible. This is not the case for values outside the unit interval, when applied to proportions.

Generalized Linear Models (GLM)

Here, I introduce the employed statistical model, largely following McCullagh and Nelder (1989) in terms of model description and notation. Despite the fact that I have a panel dataset, there will be no representation of time. Basically, the data are treated as independent over time, i.e. cross-sectional data. But, as mentioned above, I will adjust standard errors for 28 EU countries/clusters. As an alternative one could use Generalized Estimating Equations (GEE) (see Liang and Zeger (1986)) - an extension of GLM. It allows for more general assumptions on the structure of dependency over time. However, none of the popular goodness-of-fit measures, known from maximum likelihood models, are available for GEE. Further, it sacrifices the subject-specific interpretation of coefficients in favor of a population-averaged one, which is not well suited for this type of research question.

GLMs are maximum likelihood models and a generalization of classical linear models, developed by Nelder and Wedderburn (1972). They are applied in situations that necessitate non-normal error distributions from an exponential family, such as count data.

A GLM has

1. *a random component* - or noise model - which is usually assumed to come from a distribution of an exponential family, including normal, exponential, poisson or binomial distributions. It is chosen according to the distribution of the response variable.
2. *a systematic component*, i.e. the linear predictor

$$\eta_i = \sum_{j=1}^k x_{ij}\beta_j; \quad i = 1, \dots, n. \quad (2)$$

3. *a link function* $g(\mu_i)$ transforming the response variable, such that there

is a linear relationship between the explanatory variables and the transformed response, where μ is the mean of the response.

GLM for the Binomial Family

Due to the response's properties, I choose the random component to come from a binomial distribution with parameter π , the success probability, which replaces μ in the binomial case. π_i corresponds to the probability that a Syrian refugee applies for asylum in country i .

The variance is given by

$$\sigma^2 = \pi(1 - \pi)$$

It is zero in the extremes and high for $\pi = 0.5$.

The canonical link functions are either logit or probit. Logit is the standard choice, hence

$$g(\pi_i) = \log \left(\frac{\pi_i}{1 - \pi_i} \right) = \eta_i \quad (3)$$

is the link function I use. Taking the inverse of that link yields

$$\pi_i = g^{-1}(\eta_i) = \left(\frac{e^{\eta_i}}{1 + e^{\eta_i}} \right), \quad (4)$$

the so called mean function, which maps the entire interval $[-\infty, \infty]$ of the linear predictor η in (2) onto the unit interval as demanded by π being a probability.

Naturally, the percentages of asylum applications sum up to one in each quarter. However, it should be noted that the predictions calculated by the model are not restricted in such a way.

I use the Stata12.1 software package for model outputs and graphics.

3.2 The Data and its Properties

Proportion of Applications (The Response)

The number of total asylum applications by Syrian citizens in EU countries is available monthly from the Eurostat database. The monthly numbers are

added up to get quarterly values. There are observations on 28 EU countries for 22 periods, with the numbers for the first 8 quarters missing for Croatia, this makes a total of 608 observations. Figure 3 shows the quarterly proportions of asylum applications by Syrian citizens (*propapp*) over time from the 1st quarter of 2011 to the 2nd quarter of 2016 for countries which received more than a total of 8,000 applications for asylum in that period.

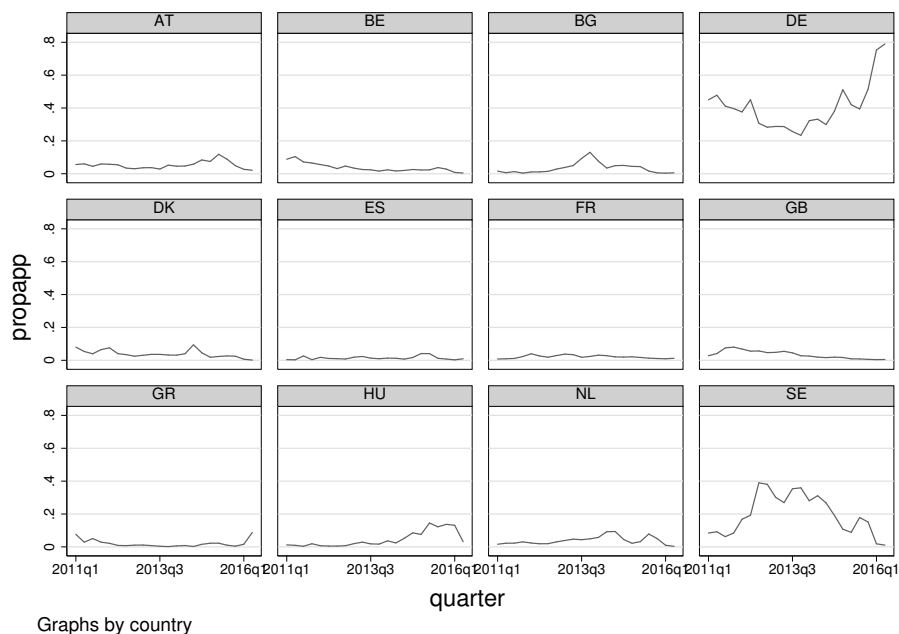


Figure 3: Proportion of applications for countries with more than 8,000 applications

The vast majority of asylum applications - about 51% - were filed in Germany, followed by Sweden with around 14.5%. For the remaining countries the graphs look flatter, with Estonia, Slovakia and Lithuania having less than a total of 100 Syrian applications for asylum in the reference period.

There is the possibility that people who filed an application in an EU mem-

ber state withdraw their claim before a court decision on their status has been made. If there was a high number of applications but also a high number of withdrawals, the country should not be seen as very attractive for asylum seekers. Therefore, the number of asylum applications should be adjusted for withdrawals. Although Eurostat provides data on withdrawals, it is not possible to adjust the numbers in a correct way, because withdrawals cannot be assigned to the period the corresponding application was filed in. However, the problem is negligible except for the case of Hungary in 2015. Wagner et al. (2016) state that "...many of the registered applicants probably did not remain in Hungary longer than a few days" (p. 28), and contrast a total of 174,400 asylum applications in Hungary in 2015 to 103,000 withdrawals in the same period. They are then double-counted in the next country refugees apply to. The picture is similar for Syrian asylum seekers with 64,590 applications and 33,750 withdrawals within 2015. Subtracting withdrawals from applications for Hungary turns a total of 71,065 applications for asylum within the period observed into 19,410. In the ranking of countries that had the most Syrian asylum applications it falls from the 3rd to the 6th place. Still, as the issue concerns only 4 observations out of a total of 616 and as it is within bounds, it should not noticeably bias my results.

Networks

To cover network effects (*census2011syrianbornpop*), I took the number of Syrian-born people living in a country at the beginning of 2011 in thousands from the 2011 EU Census, accessible at <http://ec.europa.eu/eurostat/web/population-and-housing-census/census-data/2011-census>. The database reports a total of 132,783 Syrian-born people living in the EU in 2011.

Distance

The distance of an EU country in hundred kilometers from Syria (*distance*) is taken from the CEPII's distances and geographical database: http://www.cepii.fr/CEPII/en/bdd_modele/bdd_modele.asp.

Population

Yearly numbers on the size of a EU country's population in thousands (*population*) are taken from the Eurostat database.

Living Standard & Employment Opportunities

All following indicators were extracted from the Eurostat database. Two indicators for living standard are provided:

The first is the unadjusted quarterly gross domestic product at 2010 market prices in thousand Euros (*GDP*) from the first quarter of 2011 to the second quarter of 2016, which is divided by population size to get the GDP per capita (*GDPPC*). The second indicator is the yearly median equivalised net income in thousand Euros (*medinc*), which is divided by four to get quarterly values and make it comparable to the first indicator. Unfortunately, not all countries have yet reported the median income for 2016 to Eurostat. In such cases I took 2015 values to avoid loss of observations.

As measures for employment opportunities, I included the annual change of the real GDP in % compared to the preceding year (*GDPgrowth*), and the unadjusted unemployment rate of the active population (*unemployment*).

MIPEX

I included the Migration and Integration Policy Index from 2011 for the years 2011, 2012 and 2013, and from 2014 for the years 2014, 2015 and 2016 (*mipex1114*), as the index was discontinued after 2014. I did this to include as much information as possible, while ensuring a regular frequency. The scores for the observed countries range from 32.6 (Latvia) to 80.1 (Sweden);

within-country changes from 2011 to 2014 values are small.

Recognition Rate

I want to examine if Syrian asylum seekers are influenced in their choice of refuge by the lagged recognition rate for asylum (*lagrecog*). For that, I divide the number of Syrians who have been granted asylum by the total number of court decisions on protection status, including asylum, other forms of protection and negative decisions for Syrians. Both numbers are available monthly in the Eurostat database. I added them up to get quarterly values, which are lagged by one period to avoid possible endogeneity issues.

The total recognition rate is the lagged number of all positive decisions divided by the total number of decisions, accordingly (*totalrecog*). The recognition rate for other forms of protection is the difference between the total recognition rate and the recognition rate for asylum (*otherrecog*).

For a total of 159 observations, there were no decisions on asylum for Syrian citizens, which resulted in missing values for the recognition rates, due to zeros in the denominator. In such cases, I insert the last known defined value to avoid the loss of observations. In line with this, asylum seekers will, if anything, consider the last information that is known to them for their decision.

Figure 4 shows *totalrecog* for countries with more than a total of 8,000 Syrian asylum applications for the reference period. The rates provided by the graph all develop over time in a similar way; starting off low at the beginning of the Syrian civil war, and then increasing to a level close to one by the 2nd quarter of 2013, when the conflict was widely recognized by the international community. However, as I already discussed in section 2.3, many countries adjusted the recognition rate for asylum and compensated for it with recognitions of alternative forms (*lagrecog* & *otherrecog*) in order to keep the total recognition rate at a steady level. The phenomenon is illustrated in figure 5 for the same set of countries and the same time frame used in figure 4. There

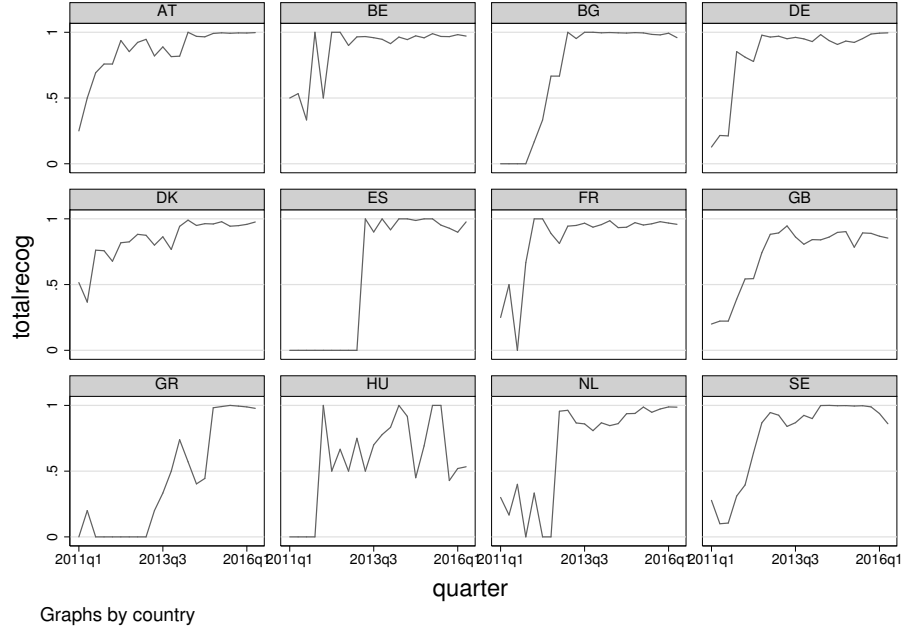
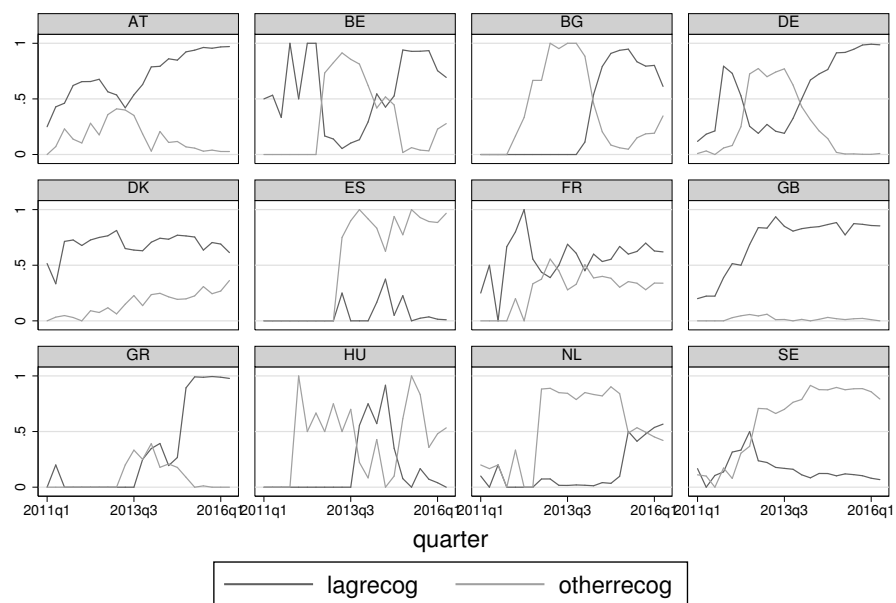


Figure 4: Total recognition rates for countries with more than 8,000 applications

is large variation of both types of rates among countries and over time. It can be seen that the recognition rate for alternative forms of protection - the grey line - tends to fall, as the recognition rate for asylum - the black line - rises, and vice versa. This implies that countries primarily used the share of positive court decisions on convention status as a policy measure. Therefore, I include the recognition rate for asylum, not the total recognition rate, to test for policy effectiveness. It is not trivial to do so. As a matter of fact, by examining the same types of recognition rates for Afghan asylum seekers¹⁹, one can not observe an overall attempt to guarantee a high total recognition rate while varying the recognition rate for asylum, as it is the case for Syrian

¹⁹Data for court decisions on Afghan asylum cases is also available from the Eurostat database.



Graphs by country

Figure 5: Total recognition rates and recognition rates for other forms of protection for countries with more than 8,000 applications

refugees. This makes the choice of indicator more ambiguous.

4 Results

In this section I compare outputs for different model specifications. All estimations are made using robust standard errors, and the reported coefficients give the usual subject-specific change of the response for a one unit change of the regressor.

The first set of model outputs is provided in table 1.

The first specification includes as regressors the network effects indicator *census2011syrianbornpop*, the distance in kilometers (*distance*), population size (*population*), *GDPPC* as an indicator for living standard and *unemployment* to account for employment opportunities, and the policy indicators *mipex1114* and *lagrecog*.

All coefficients are significant at the 1%, 5%, or 10%-level, except for *population* and *GDPPC*. The literature broadly agrees that GDP per capita has no significant effect on the number of asylum applications. It is, however, not the case that population size is irrelevant for destination choice. It is very likely that the information in *population* is, for the most part, contained in *census2011syrianbornpop*, because population sizes are relatively constant over time, and they already must have played a role in migration considerations for those Syrians who were counted in the 2011 EU census. The high correlation coefficient ($r = 0.66$) between the two regressors also points to this conclusion.

For the second specification I drop the population variable and replace the insignificant standard of living indicator *GDPPC* by *medinc* to account for differences in income distribution. It is also insignificant at the 10%-level, implying again that a country's wealth is not a key determinant of destination choice.

	(1)	(2)	(3)
propapp			
census2011syrianbornpop	0.104*** (8.70)	0.0908*** (12.75)	0.0976*** (15.87)
distance	-0.0617*** (-2.71)	-0.0775*** (-3.71)	-0.0601*** (-3.12)
population	-0.00000759 (-1.26)		
GDPPC	-0.0000274 (-0.51)		
unemployment	-0.0715* (-1.87)	-0.0680* (-1.69)	
mipex1114	0.0432*** (2.77)	0.0482*** (3.83)	0.0479*** (5.21)
lagrecog	0.857*** (3.83)	0.694*** (3.79)	0.789*** (3.21)
medinc		0.0000352 (0.28)	
GDPgrowth			-0.00459 (-0.11)
_cons	-4.456*** (-4.86)	-4.699*** (-5.50)	-5.721*** (-9.22)
<i>N</i>	608	608	608
<i>AIC</i>	120.5	118.6	117.6
<i>BIC</i>	155.7	149.5	144.1

z statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 1: Model outputs 1 to 3

Consequently, the third specification does not contain any standard of living indicator. I substitute *unemployment* by *GDPgrowth* to compare the two employment opportunities variables. While the unemployment rate had a negative effect and is significant at the 10%-level in both previous specifications, the growth rate of GDP is insignificant at the 10%-level. I will, therefore, keep *unemployment*.

Note that both of the usual goodness-of-fit measures - the Akaike-Info-Criterion (AIC) and the Bayesian-Schwarz-Info-Criterion (BIC) - improve for every specification compared to the previous one.

Two more specifications are provided in table 2:

In section 3.2, I showed that EU countries used the recognition rate for asylum, not the total recognition rate, as a policy instrument. Accordingly, in the fourth and fifth specification, I compare the statistical significance of the effects that lagged total recognition rates (*totalrecog*) and lagged recognition rates for asylum (*lagrecog*) had on the proportion of applications. While *lagrecog* had a strong positive effect on *propapp* and is highly significant ($p < 0.01$) in all 4 specifications that include the variable, *totalrecog* is insignificant at the 10%-level. This shows that recognition rates for asylum have effectively been used as a short-term policy measure.

The final results can be found in the output for the fifth model specification. It is the same as the first specification without the two insignificant regressors and the AIC and BIC dropped from 120.5 to 116.7 and from 155.7 to 143.1, respectively. The high negative coefficient of the intercept of -4.71 is striking, but it doesn't have any meaningful interpretation, as zero values are unrealistic for most of the regressors. The coefficients of the regressors allow for ranking the determinants of destination choice by their importance

	(4)	(5)
propapp		
census2011syrianbornpop	0.0929*** (12.18)	0.0905*** (12.61)
distance	-0.0678*** (-3.16)	-0.0769*** (-3.68)
unemployment	-0.0775* (-1.89)	-0.0714* (-1.90)
mipex1114	0.0441*** (6.00)	0.0512*** (5.77)
totalrecog	0.345 (1.28)	
lagrecog		0.717*** (3.17)
_cons	-4.509*** (-5.42)	-4.708*** (-5.48)
<i>N</i>	608	608
<i>AIC</i>	117.3	116.7
<i>BIC</i>	143.8	143.1

z statistics in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 2: Model outputs 4 & 5

and evaluating policy effectiveness.

For a thousand Syrian-born people that have been living in an EU country at the beginning of 2011, the proportion of asylum applications by Syrian citizens increased by about 9.05 percentage points in the time following. If a country is a hundred kilometers further away from Syria, the probability of an application dropped by 7.69 percentage points. A one percentage point increase in the unemployment rate reduced the probability of application by 0.07 percentage points. If a country scored one point higher on the MIPEX score, it could expect the proportion of applications to increase by 5.12 percentage points, while increasing the recognition rate by one percentage point was associated with a 0.72 percentage point increase of the proportion of applications.

The results show that networks are the dominant factor in the migration decision of Syrian refugees, followed by differences in migration policy (*MIPEX*), and recognition rates for asylum. The unemployment rate, although significant at the 10%-level, had little influence on destination choice. Geographic distance to Syria was a strong deterrent.

5 Conclusion

In this section I discuss the results and provide concluding remarks.

I was able to show that migrant networks were a strong pull factor for Syrian refugees from the beginning of 2011 to mid 2016. Those countries in which a large number of Syrian-born people were already residing prior to the Syrian civil war tended to have a higher proportion of asylum applications by Syrian citizens in the years following.

Both the overall policy index and the lagged recognition rates had a strong positive effect on the number of asylum applications. Hence, Syrian refugees must have had information on differences in migration policies, which they could have received from the media, people smugglers or foregoing migrants. Unfortunately, the overall MIPEX indicator in use is a very fuzzy policy measure. It verifies policy effectiveness in general, but it is not informative with respect to the type of policy adopted. Disaggregating it by policy strains and adjusting it such that it covers policy relevant for refugees, not third country nationals, would allow for a deeper understanding of policy effectiveness.

I revealed that governments successfully used low recognition rates for asylum as a deterrent for Syrian refugees, even though the practice contravenes the 1951 Convention by basing decisions on asylum on factors other than the degree of need.

Previous studies claim that policy is dominated by network effects as soon as migrant communities grow large enough compared to a country's population size. The methods of this study do not allow for a verification of that claim. Nevertheless, I suggest that the sudden and permanent drop of Swedish recognition rates for asylum in the 2nd quarter of 2012 (see figure 5) was responsible for disrupting the momentum of the Syrian refugee flow to Sweden (see figure 3), although Sweden had the 2nd highest per capita number of Syrian-born people in the 2011 EU census. Either, Syrian com-

munities were still too small for the effect to occur, or the phenomenon does not exist.

Economic indicators seem to have played, if anything, a minor role in destination choice. GDP per capita as well as median income failed to explain differences in the proportion of asylum applications, while high unemployment rates are suspected to have a weak negative effect. Thus, I could also find no indication of Syrian refugees being inclined to apply for asylum in countries with generous social security provisions, which should be largely covered by median income, as it includes transfer payments.

Geographic distance was a powerful deterrent for Syrians who applied for refuge in the EU. Longer distances are associated with greater risk and higher monetary cost. Further, all measures impeding access to territory, such as building border fences or increasing penalties for people smugglers, are expected to be covered by this figure. Anyhow, with the available means, it is not possible to examine the effectiveness of such policy.

I advise caution when intending to generalize the above results to other groups than Syrian citizens. Cultural differences, or differences with respect to education levels, etc. are likely to change the way people respond to incentives. Although the single source country approach is prone to suffer from a low number of observations, I recommend to repeat it in future studies, as it allows for a more individual evaluation of the behaviour of particular refugee groups. Also, my design makes it possible to neglect push factors, which, for the most part, are out of reach for destination country's governments and potentially bias the statistical findings on pull factors.

6 Appendix

Here are the preliminary results based on my questionnaire on family reunification provisions.

Family reunion provisions mainly differ among EU countries with respect to

- *the maximum time allowed for decision* ranging from 1 to 9 months.
- *the favourable conditions period* which is a period countries set to anything from 3 to 12 months, starting from the day the sponsor²⁰ has been granted asylum. Within that time the usual conditions for sponsors of family reunification do not apply. These conditions are: providing an accommodation, to have a sufficient amount of income, while not being dependent on welfare payments, and to have social insurance. In most cases the period is 3 months, some countries do not have the rule at all, and/or do not impose any of the requirements.
- *provisions on who can be a dependant* including maximum age rules for children and minimum age rules for spouses²¹ and rules on what other family members are allowed beyond the nuclear family.

Also, countries have different rules on who has to apply for family reunification. In some countries the sponsor has to apply within the destination country. If the dependant has to apply in the source country, it might be important whether or not there is a diplomatic representation. Many embassies closed in the course of the Syrian Civil War. Therefore, dependants would have to go to EU country's embassies located in Lebanon or Turkey

²⁰The sponsor is a person with a residence permit who applies for family reunification of the dependant, i.e. his/her spouse, children and - if permitted - parents or grandparents who cannot sustain themselves.

²¹The intention is to prevent forced marriages.

instead, which might make a destination less attractive.

List of Figures

1	Monthly asylum applications by Syrian citizens to the EU . .	3
2	Density of propapp	17
3	Proportion of applications for countries with more than 8,000 applications	21
4	Total recognition rates for countries with more than 8,000 applications	25
5	Total recognition rates and recognition rates for other forms of protection for countries with more than 8,000 applications .	26

List of Tables

1	Model outputs 1 to 3	28
2	Model outputs 4 & 5	30

References

- Baum, C. F. (2008). Stata tip 63: Modeling proportions. *Stata Journal*, 8(2):299.
- Czaika, M. and De Haas, H. (2013). The effectiveness of immigration policies. *Population and Development Review*, 39(3):487–508.
- Gest, J., Boucher, A., Challen, S., Burgoon, B., Thielemann, E., Beine, M., McGovern, P., Crock, M., Rapoport, H., and Hiscox, M. (2014). Measuring and comparing immigration, asylum and naturalization policies across countries: Challenges and solutions. *Global Policy*, 5(3):261–274.
- Hagen-Zanker, J. (2008). Why do people migrate? a review of the theoretical literature. *Working Paper No. 2008/WP002, Maastricht Graduate School of Governance*.
- Hatton, T. J. (2009). The rise and fall of asylum: What happened and why? *The Economic Journal*, 119(535).
- Hatton, T. J. (2016). Refugees and asylum seekers, the crisis in europe and the future of policy. *Discussion Paper No. DP11271, Centre for Economic Policy Research (CEPR)*.
- Havinga, T. and Böcker, A. (1999). Country of asylum by choice or by chance: Asylum-seekers in belgium, the netherlands and the uk. *Journal of ethnic and migration studies*, 25(1):43–61.
- Koopmans, R. (2010). Trade-offs between equality and difference: Immigrant integration, multiculturalism and the welfare state in cross-national perspective. *Journal of ethnic and migration studies*, 36(1):1–26.
- Lee, E. S. (1966). A theory of migration. *Demography*, 3(1):47–57.

- Liang, K.-Y. and Zeger, S. L. (1986). Longitudinal data analysis using generalized linear models. *Biometrika*, 73(1):13–22.
- Massey, D. S., Arango, J., Hugo, G., Kouaouci, A., Pellegrino, A., and Taylor, J. E. (1993). Theories of international migration: A review and appraisal. *Population and development review*, pages 431–466.
- McCullagh, P. and Nelder, J. A. (1989). Generalized linear models, no. 37 in monograph on statistics and applied probability.
- Nelder, J. and Wedderburn, R. (1972). Generalized linear models. *Journal of the Royal Statistical Society. Series A (General)*, 135(3):370–384.
- Neumayer, E. (2004). Asylum destination choice what makes some west european countries more attractive than others? *European Union Politics*, 5(2):155–180.
- Neumayer, E. (2005). Asylum recognition rates in western europe: their determinants, variation, and lack of convergence. *Journal of conflict resolution*, 49(1):43–66.
- Papke, L. E., Wooldridge, J. M., et al. (1993). Econometric methods for fractional response variables with an application to 401 (k) plan participation rates. Technical report, National Bureau of Economic Research, Inc.
- Thielemann, E. (2004). Does policy matter? on governments’ attempts to control unwanted migration. *Center for Comparative Immigration Studies*.
- UNHCR-Greece (2015). Interim survey results on the profile of persons from syria arriving at the greek borders.
- Wagner, M., Dimitriadi, A., O’Donell, R., Perumadan, J., Schlotzhauer, J. H., Simic, I., and Yabasun, D. (2016). The implementation of the common european asylum system. *Brussels: European Parliament*.

Abstract

The European Refugee Crisis was one of the most significant events in EU history with more than one million applications for asylum in the EU in 2015 alone, most of them filed by Syrian citizens. Large differences in the numbers of asylum applications led to tensions between EU countries, culminating in the construction of fences along some national borders and the temporary and partial reintroduction of Schengen border controls.

This thesis seeks to explain these differences by finding the pull factors that determined the choice of destination for Syrian citizens who filed an application for asylum in an EU country in the time from the beginning of 2011 to mid 2016. It is estimated how demographic, economic and policy indicators affect a member states' proportion of applications. For that, a generalized linear model is employed to account for the properties of the zero inflated fractional response variable.

It is found that the stock of Syrian-born people and more open migration policies increased the number of asylum applications, while geographic distance to Syria was a strong deterrent. Further, it is shown that recognition rates for asylum were effectively used as a short-term policy measure by EU member states. Economic indicators played, if anything, a minor role in destination choice, which is in line with the results of the previous push and pull factor literature on refugees.

Keywords: Asylum, EU, European Refugee Crisis, Generalized Linear Model, Pull Factors, Recognition Rates, Syrian Refugees, Zero Inflated Fractional Response

Zusammenfassung

Die Europäische Flüchtlingskrise war eines der bedeutendsten Ereignisse in der Geschichte der EU, während dem mehr als eine Million Asylanträge allein im Jahr 2015 gestellt wurden, die meisten davon von Syrischen Staatsbürgern. Große Unterschiede in Flüchtlingszahlen haben zu Spannungen zwischen Mitgliedsstaaten geführt, die ihren Höhepunkt in der Errichtung von Grenzzäunen und der vorübergehenden, teilweisen Wiedereinführung von Schengen Grenzkontrollen gefunden haben.

Diese Masterarbeit versucht diese Unterschiede zu erklären, indem sie jene pull factors ausfindig macht, die für die Wahl des Ziellandes von Syrischen Staatsbürgern, die einen Asylantrag in einem EU-Land im Zeitraum von 2011 bis Mitte 2016 gestellt haben, ausschlaggebend waren. Um zu schätzen wie demografische und ökonomische Faktoren, sowie Gesetze und andere politische Maßnahmen den Anteil der Asylanträge eines Mitgliedsstaates beeinflussen, wird ein generalisiertes lineares Modell verwendet, damit die statistischen Eigenschaften der abhängigen Variablen korrekt berücksichtigt werden. Die Zahl der bereits im Zielland lebenden Syrer und liberale Zuwanderungsregelungen erhöhen die Anzahl der Asylanträge, während die geografische Distanz zu Syrien abschreckend wirkt. Weiters wird gezeigt, dass Anerkennungsraten für Asyl erfolgreich als kurzfristige Politikmaßnahme eingesetzt wurden. Ökonomische Faktoren scheinen, wenn überhaupt, nur eine geringfügige Rolle bei der Ziellandwahl gespielt zu haben, was die Ergebnisse der bisherigen Literatur zum Thema bestätigt.

Schlagwörter: Anerkennungsraten, Asyl, EU, Europäische Flüchtlingskrise, Generalized Linear Model, Pull Faktoren, Syrische Flüchtlinge, Zero Inflated Fractional Response