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A New Home: An Empirical Analysis of Pull Factor Influences on EU Asylum Applications

Dawson Reisig
University of Montana, dawson.reisig@umontana.edu

A NEW HOME:

AN EMPIRICAL ANALYSIS OF PULL FACTOR INFLUENCES ON EU ASYLUM APPLICATIONS

By

DAWSON NEAL REISIG

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Approved by:

Ranjan Shrestha, Assistant Professor
Department of Economics

Abstract

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An Empirical Analysis of Pull Factor Influences on EU Asylum Applications

Faculty Mentor: Ranjan Shrestha

As Europe continues to face the largest flood of immigration since World War II, the foundational solidarity of the European Union (EU) is being severely strained under the burden of allocating such a massive population influx and the subsequent issues resulting from complex and divisive notions of national responsibility, cooperation, and integration. In struggling to find a cooperative solution to this refugee crisis, a greater understanding of the destination country characteristics that shape the asylum application preference would be highly beneficial for policy makers and EU citizens. In examining the relative influences of these pull factors I implement a fixed effects regression model in which I analyze the response of monthly asylum applications over the period of 2008-2014 to differences in destination country characteristics such as income opportunities, welfare benefits, the unemployment rate, the strength of various production sectors, and the existing immigrant stock. In line with previous literature examining migration preference, I find that network effects exert a strong upward pressure while the unemployment rate exerts a downward pressure. However, my results show that a country's welfare benefits exert a statistically significant and stronger upward pressure than previously found. These findings shed light on the lack of convergence in asylum applications as they indicate asylum seekers are influenced by the economic conditions of destination countries, although historical migration networks tend to play a larger role in the destination decision. As the pull factors I found to be significant are difficult for policy makers to influence, my results suggest policy makers should instead focus on EU-wide programs such as Tradable Immigration Quotas (TIQ)'s, rather than decreasing a country's relative attractiveness.

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Introduction

In the years following 2011, widespread social unrest in Syria developed into sectarian conflict and eventually a fully-fledged civil war, displacing entire populations as violence and brutal persecution grew to encompass the area. Adding to the masses of refugees already fleeing oppression in regions such as the Middle East and North Africa puts estimates at over one million migrants entering the EU in 2015 alone (IOM, 2015); this practically unprecedented volume of forced migration has put a severe strain on the institutional solidarity, infrastructure, and security of the European Union. In stark contrast to attempts at alleviating the crisis through refugee relocation programs and targeted aid stands a rising trend towards right-wing, anti-immigrant sentiment. Following the November 13th Paris attacks, countries are increasingly calling for the reinstatement of national border controls due to concerns that the EU's policy of a border-free interior region is facilitating the travel of radicalized individuals (WSJ, 2015). While there has long been a large distributional gap in asylum application rates, under this extreme impetus various member states are enacting increasingly restrictive migration polices and concentrating the blame of attracting high rates of refugees on the shoulders of countries such as Germany for having overly-welcoming policies and too generous of a welfare state. Finding a unified solution to this crisis is paramount to the survival of the EU's foundational policy of border-free travel, not to mention the humanitarian implications of improper action.

Boldly declaring his position on the importance of EU solidarity, Hungarian Prime Minister Viktor Orban proclaims, "The problem is not a European problem. The problem is a German problem. Nobody would like to stay in Hungary" (BBC, 2015). Regardless of whether Mr. Orban's assertion stems more from an analysis of asylum trends or an attempt to relieve his country of humanitarian responsibility, the existing body of migratory research suggests asylum seekers do prefer some countries over others. Once an asylum seeker has made the decision to flee their home country, what shapes this preference? Specifically, what socioeconomic characteristic is the most influential pull factor on an asylum seeker's determination of the most desirable EU destination country? Based on the findings of previous studies, the significant determinants of migration inflows I will primarily focus on include: income opportunities, the unemployment rate, welfare benefits, network effects, the recognition rate, and lastly, the

strength of various production sectors (Neumayer, 2004; Hatton, 2009; Thielemann, 2004; Mayda, 2005; Jimenez-Jimenez, 2014).

Asylum Policy History

In order to gain a good grasp on asylum application trends in the EU and the issues stemming from them, it is necessary to have a brief understanding of its history of migration and asylum policies. Fully established in 1995, the Schengen Area refers to the interior region of the EU that is free of internal border controls and consists of common visa policies across all member states, although it does maintain external border controls for those attempting to enter into the Schengen Area. In creating a free-travel area for the purpose of international trade, its goal was to facilitate the creation of a single European market (European Commission, 2010). The second major policy advancement came in the form of rules implemented under the Dublin Regulation, of which the most recent version was signed in 2013. The Dublin Rules deal directly with asylum seekers, and establish policies regarding the determination of which EU member state is responsible for processing an asylum application. Unless petitioned on the grounds of having immediate family members in another EU country, the "country of first entry" rule states that the first EU member country an asylum seeker sets foot in is responsible for processing their claim of asylum. If a member state believes another EU country should have been liable for processing a particular asylum claim, they can file an official Dublin Request in an attempt to place the responsibility on the relevant EU member (UNHCR). As highlighted by issues stemming from the current refugee crisis, the rules established under the Dublin Regulation have been heavily criticized for placing an unfair burden on those exterior EU states.

An important introductory distinction to make is the difference in relative definitions between an asylum seeker, a refugee, and a migrant. As defined by Amnesty International, a refugee is "a person who has fled their country of origin and is unable or unwilling to return because of a well-founded fear of being persecuted because of their race, religion, nationality, or membership of a particular social group or political opinion" (Amnesty International, 2015). An asylum seeker, then, is someone who is seeking international protection under claims of persecution, but has yet to have their asylum application approved by the country to which it was submitted, and so has not yet been officially recognized as a refugee. Finally, an immigrant is simply a person who has relocated permanently to a foreign country; thus all asylum seekers

technically fall under the definition of immigrants, although an immigrant does not have to be an asylum seeker as the term includes those economic migrants who have relocated purely to improve their economic well-being. While I plan on incorporating the methodologies of some migration flow studies into my framework (Mayda, 2005; Jimenez-Jimenez, 2013; De Giorgi and Pellizzari, 2009), it is prudent to remember this distinction as asylum seekers tend to be under much higher pressure to leave their origin country and thus would likely be less swayed by the economic conditions of destination countries than those solely seeking a more prosperous livelihood.

While the ongoing refugee crisis has dramatically highlighted the stark disparity of asylum seeker burden-sharing within the EU, unequal rates of asylum application and refugee recognition have been a persistent phenomenon. Examining relative asylum application shares from the period of 1982-1999, Neumayer (2004) found differences as large as France and Germany respectively receiving 20.8% and 15.7% of total EU asylum applications. This is contrasted with countries such as Denmark and Spain, both receiving only 4.3% of total applications, after normalizing by destination country population. Likewise, when comparing the two time periods of 1997-2001 with 2001-2006, Hatton (2009) found that yearly applications rose by roughly 50% in France, Austria, and Sweden, while falling by more than 50% in Germany, Hungary, and the Netherlands. Although some of the temporal single-country application rate changes found can be explained by variation in source country push factors, the opposite direction of trends in geographically proximate countries and the consistent discrepancy of asylum application rates among EU member states suggest that an asylum seeker's choice of destination is influenced by the relative characteristics of possible receiving countries.

Compounding the issue of an unequal distribution of asylum applications is the persistent lack of asylum policy harmonization seen in the substantial variation of refugee recognition rates across the EU. Examining cross-country differences in recognition rates for 1999, Neumayer (2005) found the success rates of Iraqi applications to be only about 10% in the Netherlands, 28% in Austria, 43% in Germany, and 83% in Denmark. As the integrity of the "country of first entry" policy implemented under the Dublin Regulation is contingent upon the equal treatment of asylum seekers, this lack of convergence in recognition rates undermines the goal of facilitating a Common European Asylum System (CEAS). Previous studies have reached conflicting conclusions about this variation, with interpretations ranging from it being the result

of free riding in the provision of a public good (Suhrke, 1998), to the more recent approach of modelling it as a competitive regulatory game in which each country competes to minimize its own refugee inflow (Barbou des Places and Deffains, 2004); however, a greater understanding of recognition rate differences is not the primary purpose of this paper outside of the role this variation plays in determining asylum seeker inflows. By viewing asylum seeker reception standards and recognition rates as possible factors influencing the disparate distribution of asylum application rates in the EU, a greater understanding of the largely unequal burden of refugee protection faced by member states will hopefully be reached.

Literature Review

While numerous studies have already examined asylum application determinants, most of the work done focuses on past trends ranging from the 1980's to the early 2000's. By combining aspects of those previous studies and applying my framework to an updated dataset I hope to extend the literature through a comprehensive empirical analysis of modern asylum application trends in the EU. When comparing the economic state of pre-2000 Europe with more recent conditions, it becomes obvious that there have been dramatic changes in many of the explanatory variables found to be significant in previous studies. For example, following the European Debt Crisis, unemployment rates skyrocketed in many EU countries with 2012 rates reaching over 24% in Spain and Greece, 10% in Poland, France, Italy, and Hungary; while conversely remaining around 5% in countries such as Germany, Austria, and the Netherlands (Eurostat). Additionally, developing regional turbulence has driven large shifts in asylum trends, with the top five source countries of asylum seekers from 1982-2006 being Afghanistan, Ethiopia, Iraq, Lebanon, and Serbia (Hatton, 2009); compared with the top five in 2015 being Syria, Afghanistan, Kosovo, Iraq, and Albania (BBC). Although Iraq and Afghanistan remain consistent sources of asylum seekers, the war in Syria has dramatically increased overall applications to EU member states and consequently reshaped asylum patterns and even policy. Due to this almost unprecedented level of asylum applications, a more recent analysis of pull factor influences would be highly beneficial to EU policymakers attempting to find a common response the rapidly escalating crisis.

Models and Dependent Variables of Previous Studies

Building off well-established models in the literature, I plan to use cross-country panel data in regressing the monthly asylum application of EU-28 countries on a number of theoretically important destination country characteristics. As done in Neumayer (2004), Hatton (2009), and Mayda (2005), I will run a panel data regression, only using a fixed effects model instead of the bilateral flows model done by Neumayer and Mayda. Benefiting greatly from the recently established standards of data submission for EU member states reporting to Eurostat, I will examine monthly asylum applications from 2008-2014. As migration data was submitted under far looser guidelines in the form of a "gentleman's agreement" prior to 2008, it often resulted in incomplete and inconsistent data (DeWaard, 2012). By using Eurostat data from 2008-2014, I will have access to a more reliable dataset than those studies conducted prior to its establishment. Due to it being a robust collection of data covering a wide variety of statistics, I should be able to use Eurostat as the source of most of my explanatory variables.

Although my empirical analysis is aided by the existence of established methodologies and access to more accurate data, there are a variety of complications that could potentially force me to alter my planned framework. Using a monthly rate would require the controlling of seasonal variation and it seems reasonable to expect a lag of at least a year in the decision of application destination. Additionally, while previous studies have attempted to determine methods of dealing with difficult to measure variables such as network effects and migration policies, in some cases they may be imprecise or difficult to emulate.

In evaluating the response of migration flows to cross-country variations in pull factors, a common method of controlling for origin country effects is to take the total number of asylum seekers or emigrants from each origin country as a given, and then determine the relative annual application rates for each destination country (Neumayer, 2004; Mayda, 2005) or the log number of relative annual application rates (Hatton, 2009). As in my proposed model, a simpler method of controlling for origin country effects is to utilize a fixed effects model in which dummy variables are included for each time period, and comparisons are made within those time periods.

As done by Thielemann (2003) in his analysis of pull factor determinants, an additional option for making wide-ranging asylum application quantities more comparable is to divide each destination country's yearly application rate by its population size and calculate a country's proportion based on the total number of asylum seekers, then divided by the total population of all EU destination countries. Another possibility is to follow the framework of Jimenez-

Jimenez's (2013) study of EU-15 migrant density in which her dependent variable was the percentage of foreign citizens over the total population of an individual country in each year, substituting asylum applications for foreign citizen stock in my regression. However, in using this method there is the likelihood that I would pick up origin country effects, which would require additional modifications to my proposed model.

Independent Variables of Previous Studies

For the assessment of my explanatory variables I will incorporate the methods found to be successful in the existing literature, while in some cases making appropriate adjustments in order to better suit my available dataset. In measuring labor market conditions such as GDP per capita and the unemployment rate, I will follow the straightforward method of simply retrieving the relevant panel data from Eurostat, with the possibility of taking the log of GDP per capita to reduce distributional spread. While estimations of strength for those variables vary across the literature, per capita income tends to be one of the most significant economic pull factors (Neumayer, 2004; Thielemann, 2003). Similarly, Mayda (2005) found that a 10% increase in GDP per worker implies a 19% increase in immigration rate. However, it is important to note that she was investigating total migration flows instead of asylum trends, which would likely cause her findings of economic pull factors to be more influential than those found in a study purely investigating asylum application rates.

A third potential pull factor characterized by the economic conditions of possible destination countries is the production structure of each individual country. In examining trends of migrant density in the EU-15 from 2000-2010, Jimenez-Jimenez (2013) measured the strength of the agriculture, industrial, and construction sectors by determining the relative percentages of employment for each in every individual destination country. She found that high rates of employment in both the agriculture and construction sectors attract migrants, while a greater reliance on the industrial sector was associated with lower migration inflows. Although this study was also investigating pull factors on total migration flows, and thus may have yielded stronger results than what I will find, it was an inclusion I didn't see anywhere in the literature analyzing asylum application rates and it would be interesting to see if I find evidence of a similar conclusion.

Commonly found to be the most significant pull factor of migration inflows, network effects based on a destination country's existing immigrant stock are largely used in the determination of the influence of historical ties between pairs of countries. While Neumayer (2004) also included a variable measuring the number of years between 1900 and 1960 that an origin country was a former colony of a destination country, most of the other literature has found colonial and historical ties to be well instrumented for by measurements of existing immigrant stock. In the bilateral flows model, the methodologies for capturing network effects include Neumayer's (2004) use of the average share of asylum seekers from each origin country who applied to a destination country over the course of the previous two to five years, or Hatton's (2009) use of the total stock of immigrants from a given origin country in each individual destination country.

Alternative to the bilateral flows model, Jimenez-Jimenez (2013) captured network effects by including the log total of the foreign-born population for each destination country, and found it to be the second most influential pull factor behind GDP per capita. Lastly, Thielemann (2003) determined network effects by using a lagged variable measuring the stock of immigrants from the top five asylum origin countries for each destination country, also finding it to be one of his most significant explanatory variables. Combined, the conclusions reached by previous studies suggest that asylum seekers place high importance on the presence of fellow countrymen when determining a destination country, which is to be reasonably expected when faced with forced migration under circumstances of fairly limited information.

Despite being a theoretically sensible inclusion among pull factor determinants, the generosity of a country's welfare benefits has typically been found to have low levels of significance in past analyses. As there isn't a reliable source of data for the assessing the level of welfare benefits designed explicitly for asylum seekers, some measure of a country's overall welfare benefits is often used as a substitution. In specifically examining welfare-induced migration stemming from EU enlargement, De Giorgi and Pellizzari (2009) used the OECD's calculation of benefits by which they take the average wage of a manufacturing worker and compute the amount of benefits that wage level is entitled to in the case of unemployment. Although concluding that welfare distortions could potentially be large enough to distort the benefits of a more mobile labor force, they found that increasing welfare benefits by one standard deviation caused an increase in migration inflow equal to only 37% of what a congruent

increase in wages would cause. Similarly, Neumayer (2004) found his measure of welfare benefits as general welfare expenditures relative to GDP to be insignificant. Even with these results, it seems plausible that welfare benefits are still taken into consideration when making a decision about potential destinations, and I feel it is prudent to include some metric of benefits in my analysis as it has been well documented that immigrant households are more likely to receive some type of welfare benefit when compared with native households (Borjas and Hilton, 1996; Riphahn, 1998).

Exploiting the previously discussed lack of convergence in asylum recognition rates across the EU, many studies have explored the relationship between an asylum applicant's likelihood of approval in a specific country and that country's asylum application rates. Measured in a variety of ways, the probability of asylum recognition and a country's overall migration policies have typically been found to exert a significant influence on migration inflows. In evaluating the effect of a country's recognition rate, Neumayer (2004) uses a lagged variable of each destination's total first-instance recognition rate for all asylum applicants. He uses a lagged variable for the reasons of it being unlikely that an asylum seeker has information on current-year recognition rates as well as to avoid potential endogeneity problems. Using this measurement he found that a lower recognition rate is in fact associated with a lower asylum application rate. In comparison, Hatton (2009) found the coefficient on total recognition rate to be small and insignificant. Due to the fact that the probability of approval is likely to be an influential factor in theory, he attributed this insignificance to endogeneity problems in his model and instead instrumented for recognition rate using indices of three different dimensions of policy consisting of measurements for ease of access, processing procedure, and asylum seeker welfare. Focusing on the processing procedure indicator, he found that increases in the likelihood of a country designating asylum claims as manifestly unfounded rather than granting a form of subsidiary status resulted in an estimated 16% reduction in application rates for every 10 percentage point decrease in recognition rate. As Eurostat has data on total recognition rates, as well as measurements of Dublin Requests and the number of immigrants refused at the border, I plan on incorporating a variety of these variables in my model to reach a robust conclusion on the effect of probability of approval.

Other studies have likewise implemented indices consisting of various measures of a country's policies toward immigrants and asylum seekers, such as Jimenez-Jimenez's (2013)

integration policy index and Thielemann's (2003) asylum seeker deterrence index. Measuring the extent to which a country's law treats immigrants with the same rights as native citizens, the use of MIPEX by Jimenez-Jimenez (2013) resulted in the finding that EU-15 countries with an index value above the average tended to have higher concentrations of foreign populations. As highlighted earlier, the fact that she was examining total immigration rather than the subset of asylum seekers that I am analyzing could lead to different results, although the direction of influence for this variable is likely to be the same. Specifically focusing on the effect of deterrent policy measures on asylum seeker inflows, Thielemann (2003) created an index of three dummy variables for whether a country had an applicant dispersal scheme, a non-cash based system of benefits, and a prohibitive law preventing asylum seekers from working until their claim has been approved. Based on this index, he found that deterrent policies are significant in the negative direction, although they are not as influential as historic and economic pull factors.

Policy Implications

Widely referred to throughout the literature as a "race to the bottom", the trend of EU member states attempting to reduce their relative attractiveness to asylum seekers through the enactment of increasingly restrictive policy measures has led to varied conclusions throughout the literature. As previously referred to, Barbou des Places and Deffains (2004) have modeled this widespread spiral of restrictions in asylum legislation as a competitive regulatory game in which countries were competing to provide as little protection as possible in an attempt to decrease the escalating costs associated with a rapid influx of asylum seekers. However, others such as Kvist (2004) in his analysis of a potential "race to the bottom" in setting welfare benefits during a past EU enlargement have contended that similar decreases in benefit levels are the result of individual labor market conditions rather than a strategic interaction among member states. Despite these contentious views, it is my opinion that a "race to the bottom" is indeed taking place, exemplified by the recent actions of numerous EU states such as the shuttling of asylum seekers to alternative EU destinations, the recent erection of razor-wire fences in Hungary and Slovenia, and the announcement that Macedonia, Serbia, Croatia, and Slovenia were no longer allowing in migrants unless they were from Syria, Afghanistan, and Iraq (WSJ, 2015).

As an attempt to reduce the unequal burden of refugee protection in the EU and internalize the positive externality of poverty alleviation, Moraga and Rapoport (2014) propose a system of tradable immigration quotas (TIQs), in which a market is created where countries could essentially pay other countries to accept their allotted proportion of asylum seekers. In order to improve efficiency, they recommended supplementing the TIQ system with a matching mechanism attempting to pair countries and immigrants based on specific preferences. In a following paper, Moraga and Rapoport (2014) show that the creation of a TIQ market has the added advantage of embracing heterogeneous EU conditions by exploiting the comparative advantages of destination countries and allocating labor to where it is needed. While this is theoretically a very convincing system, much more research needs to be done in order to determine the initial allocation of quotas as well to better estimate the refugees' relative rates of destination country preferences. A greater knowledge of pull factors would highly benefit this model and the proposed plan to initiate the redistribution of 160,000 refugees (WSJ, 2015) , as it could allow the European Union to spread incoming refugees amongst countries with socioeconomic characteristics most closely associated to those that are highly desirable to refugees.

It is of dire importance that the European Union finds a common and diligent response to the ever-mounting pressure of such an extreme inflow of asylum seekers, lest it falter and let the foundational solidarity upon which it was constructed be succumbed by conflicting notions of responsibility. In this regard, it would be highly beneficial for policymakers in the EU, as well as all countries facing an influx of immigrants, to have a better understanding of the socioeconomic characteristics that attract asylum seekers to particular destinations over others. I hope to extend the existing literature evaluating asylum application distributions by incorporating the methods found to be successful in previous studies into a comprehensive, updated analysis using recently standardized data. While there will doubtlessly be difficulties in the actual construction of my proposed regression model, the extensive literature examining the subject of asylum application rate distributions will provide me with the necessary answers and alternative methods to overcome those obstacles and build a theoretically sound and well-functioning model of the pull factor determinants of individual EU member state asylum application rates.

Data and Models

In evaluating the relative influences of destination country pull factors on monthly asylum applications, my primary model will be a panel data fixed effects model in which I include dummy variables for monthly fixed effects. This will allow my model to avoid biases stemming from source country push factors in each time period that affect asylum applications across all destination countries. While this method may be a less elegant way of controlling for source country push factors when compared to the bilateral flows model, it should still provide an accurate representation of the relative significance of included pull factors. Similarly, the fact that I could only find annual data for some of my explanatory variables may lead me to lose some accuracy in the estimations of my regression coefficients, although collapsing my data into an annual format provides a nice check of robustness. All of my data over the time period of 2008-2014 was taken from the Eurostat database, with the exception of data for total airline passengers, which was found in the World Bank database. Each of my explanatory variables is lagged one year to account for the time delay in the spread of information.

Estimating Model

$Y_{it} = \beta_0 + \beta_j X_{ji(t-12)} + \varepsilon_{it}$, where $\varepsilon_{it} = w_t + v_{it}$ (Equation 1)

Where

- Y_{it} = Monthly asylum applications to country$_i$ in month$_t$
- $X_{ji(t-12)}$ = A vector containing the ten explanatory variables, lagged by one year
- W_t = Unobserved time fixed effects
- V_{it} = Stochastic error term

Table 1: Summary Statistics

VARIABLES	(1) N	(2) Mean	(3) SD	(4) Min	(5) Max
% Change in Construction Production	2,016	-4.680%	11.694%	-48.300%	27.300%
% Change in Manufacturing Production	2,016	-0.877%	8.494%	-25.400%	22.500%
Agricultural Production	2,016	102.270	6.471	83.900	126.400
Monthly Applications	2,280	1,074.886	2,029.290	0.000	22,500.000
Unemployment Rate	2,352	9.718%	4.660%	3.100%	27.900%
Income Per Capita	2,352	25,408.163	10,663.743	11,000.000	73,000.000
Refused at Border	2,292	14,679.450	57,083.883	0.000	510,010.000
Immigrant Pop.	1,968	1.8 million	2.7 million	30,474	10.2 million
Welfare Expenditure (% GDP)	1,992	24.549%	6.109%	13.000%	38.200%
Exterior Countries (10)	840	1.000	0.000	1.000	1.000
Interior Countries (18)	1,512	0.000	0.000	0.000	0.000
Total Air Passengers	2,328	21 million	31 million	29,031	125 million
Residence Permits	2,352	26,001.490	52,634.837	0.000	349,091.000
Number of Countries	28	28	28	28	28

Highlighted in Table 1, the European Union is anything but homogenous in regards to the characteristics included in my model. Comparing the minimum and maximum for monthly applications as well as for my various explanatory variables emphasizes the disparate conditions of each country. Likewise, while some variables may not change greatly over time within each country, exploiting the large cross-country differences seen will allow me to test the influence of each pull factor.

Dependent Variable

As my dependent variable I will be using the log of monthly asylum applications for each EU-28 destination country over the years 2008-2014. Rather than normalizing monthly applications by population, I included a variable for the annual population of each destination country. As the monthly applications do not follow a normal distribution, I am taking a log to smooth the distribution. To avoid time and seasonal biases that affect total asylum applications to all countries, I will incorporate a monthly fixed effects estimator. While there has been a strong increase in monthly applications for almost all countries observed in my model, the

persistent lack of convergence allows me to analyze what socioeconomic factors are driving this disparity.

Figure 1

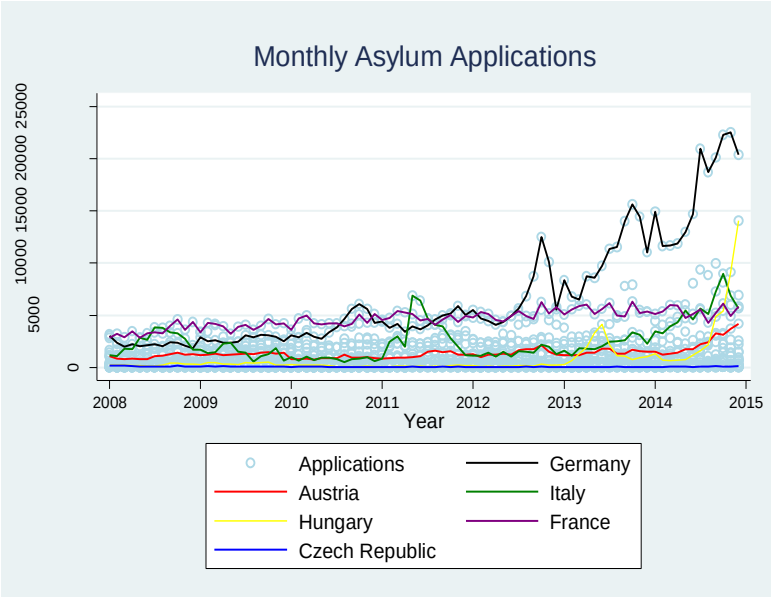

Figure 2

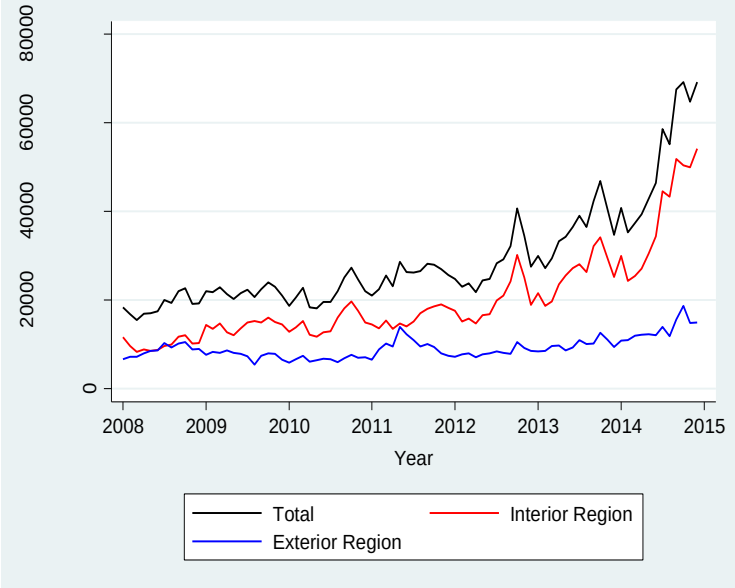

Figure 1 provides an example of the disparity in monthly asylum applications for six EU countries. Figure 2 highlights the difference in asylum applications between interior region EU countries and those on the exterior, as discussed in the explanation of my region variable below. These graphs show that some destination countries do seem to be more attractive to asylum seekers, with Figure 2 providing evidence that large numbers of asylum seekers seem to ignore the standards set by the Dublin Regulation and are driven to journey further inwards in order to apply for asylum at a more attractive destination.

Independent Variables

Starting with my independent variable capturing income opportunities, I will be using country$_{i(t-12)}$*'s* log(GDP per capita), measured in Purchasing Power Standards (PPS). This allows for cross-country comparisons by accounting for differences in the purchasing power of the

different currencies used in my destination countries. As per capita income has been found to be a significant pull factor in the previous literature (Neumayer, 2004; Thielemann, 2003), I expect this variable to be statistically significant and to assert a positive influence on application rates.

In evaluating labor market conditions, I will be using the monthly unemployment rate of country$_{i(t-12)}$. As there has been large but unequal changes in EU unemployment rates across this time period, this variable should give an accurate approximation of how asylum seekers respond to changes in the labor market. While I am unsure how aware asylum seekers are of labor market conditions, it is theoretically sound to assume the ease with which an asylum seeker believes he will find a job should influence his decision, leading country$_i$'s unemployment rate to put downward pressure on monthly application rates. Figure 3 shows that EU countries have wide-ranging unemployment rates, and this difference likely plays a role in the destination decision.

(Figure 3)

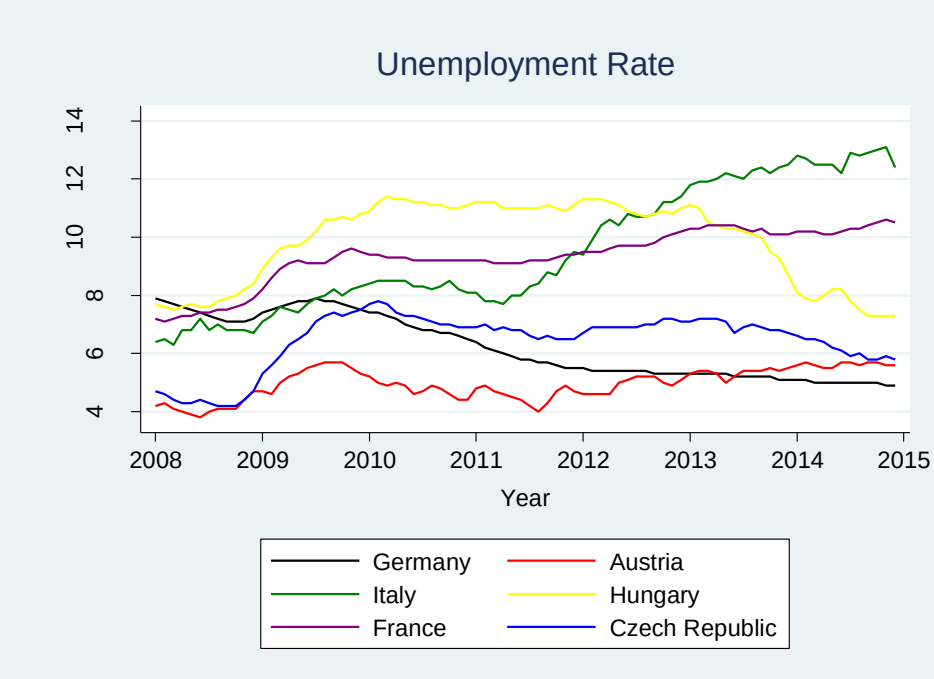

Figure 3- Monthly unemployment rate graph highlighting persistent disparity in labor market conditions

As a third measurement of destination country economic conditions, I am including a variable for potential welfare benefits, measured as a percentage of GDP. Although country$_{i(t-}$

$_{12)}$'s welfare expenditure hasn't been found to be statistically significant in previous studies (Neumayer, 2004: De Giorgi and Pellizzari, 2009), I think it is wise to include a metric of social protection expenditure from the updated Eurostat database. Asylum seekers are likely to need some sort of government aid as they settle in their new country, and thus this variable should exert a positive influence on monthly asylum application rates.

As a final estimator of economic pull factors I am using variables measuring the strength of various production sectors found to be statistically significant in previous migration studies (Jimenez-Jimenez, 2013). While she found that high rates of employment in both the agriculture and construction sectors attract migrants, a greater reliance on the industrial sector was associated with lower migration inflows. Although this was an analysis of total migration and not solely asylum application, I expect the relative strengths of those sectors to exert a similar influence.

In order to account for the effect of differences in the reception of asylum seekers on application rates, I am including an annual variable measuring the logged number of migrants refused at the border for country$_{i(t-12).}$ Although I initially planned on including a variable measuring each country's asylum application rejection rate, I ran into endogeneity problems between this rate and my dependent variable. By using a measurement of the number of migrants refused at the border I hope to still capture the effect of differences in migrant reception standards among my destination countries. The probability that an asylum applicant will be allowed in and recognized should theoretically influence the decision of destination country, and thus higher numbers of refusals should put downward pressure on monthly application rates.

In order to capture the effect existing immigrant populations have on asylum application rates, I am including an annual variable measuring the logged number of non-EU immigrants for each destination country. Commonly found to be the most significant pull factor on migration inflows (Neumayer, 2004; Hatton, 2009; Thielemann, 2003), I expect network effects to exert a highly positive influence on monthly asylum applications. This is theoretically sound, as having a linkage of migrants from a source country facilitates a greater spreading of information, a network of support, and a greater likelihood of familial connections.

While most of the focus on the plight of asylum seekers tends to be on those making the dangerous journey across the Mediterranean Sea or through Turkey, there is likely a group of seekers who were either able to afford a flight to their destination country or who were already

temporarily residing in an EU country, and applied for asylum in order to avoid the danger of returning to their source country. To test for the potential draw of a country being an easily accessible air hub, I included an annual variable measuring the total number of aircraft passengers for air carriers registered in each country. To test for the effect of temporary residents in turn applying for asylum, I included a variable measuring the total number of three-to-eleven month temporary resident passes granted for work or education in each country. As my explanatory variables are lagged by one year, all of these passes would be expired by the time they are incorporated into my asylum application model, leading the permit holders to pursue means of continuing to reside in EU destination countries.

Finally, in order to account for the geographical proximity of certain countries to the common migration routes through the Mediterranean Sea and Turkey, I included a dummy variable coded 1 for those EU countries in the exterior region and coded 0 for primarily landlocked countries in which asylum seekers would have to travel through other EU countries in order to apply for asylum. According to the Dublin Regulation, asylum seekers are supposed to apply for asylum in the country they first step foot in, yet many asylum seekers pass through those exterior countries in order to seek refuge in Northern European countries. This dummy variable was also intended to serve a secondary purpose, as most of the Eastern European countries asylum seekers would first pass through tend to be less wealthy when compared to their Northwestern counterparts. It was hoped that the inclusion of this dummy variable would then aid in a more accurate approximation of the influence of income opportunities on asylum applications.

Interior Region Countries:

Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, Germany, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Sweden, United Kingdom

Exterior Region Countries:

Bulgaria, Croatia, Cyprus, France, Greece, Italy, Malta, Romania, Slovenia, Spain

Results

As seen in Table 2, I ran my monthly application regression under three different specifications to test for the consistency of my estimates. Table 3 shows these same models, except my data is collapsed to annual figures in order to test the robustness of my results without as much variation from factors such as seasonality. Column 1 shows my results for the Ordinary Least Squares (OLS) method of regression in which no fixed effects are controlled for. Column 2 shows the estimation results of my primary model as specified by Equation 1, in which monthly fixed effects are controlled for. Finally, Column 3 shows my results for a model controlling for both monthly fixed effects and time invariant country fixed effects. My explanatory variables are lagged by one year in all model specifications.

Table 2: Monthly Regression Results

VARIABLES	(1) OLS	(2) Time Fixed Effects	(3) Time and Country Fixed Effects
Log(Income Per Capita)	-0.822***	-0.810	3.349**
	(0.169)	(0.556)	(1.445)
Welfare Expenditure (% GDP)	0.132***	0.135***	-0.021
	(0.009)	(0.015)	(0.100)
Unemployment Rate	-0.114***	-0.112***	0.051
	(0.009)	(0.013)	(0.030)
% Change in Construction Production	0.016***	0.016	-0.004
	(0.003)	(0.009)	(0.006)
% Change in Manufacturing Production	0.008**	0.016	0.004
	(0.004)	(0.030)	(0.007)
Agricultural Production	0.004	0.007	-0.004
	(0.006)	(0.016)	(0.009)
Log(Refused at Border)	-0.013	-0.013	0.141
	(0.026)	(0.050)	(0.104)
Log(Immigrant Pop.)	0.588***	0.575***	-0.156
	(0.045)	(0.113)	(1.346)
Log(Residence Permits)	0.079***	0.085	0.017
	(0.018)	(0.067)	(0.032)
Log(Total Air Passengers)	0.097***	0.099	0.073
	(0.029)	(0.078)	(0.183)
Months	0.014***		
	(0.002)		
Region = 1	0.483***	0.530***	
	(0.076)	(0.122)	
Region = 1, omitted			-
Constant	-7.740***	0.704	-27.968
	(1.840)	(5.472)	(19.340)
Observations	1,560	1,560	1,560
R-squared	0.697	0.698	0.109
Number of Months		72	
Number of Countries			28

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

My Column 1 results show that before accounting for monthly fixed effects, ten explanatory variables were found to be statistically significant, nine of which were found to be

highly significant. While a majority of the coefficients for those variables found to be significant exert influences as hypothesized, the variables for annual percent change in manufacturing output and log of income per capita were found to go in the opposite direction. The income variable is of particular surprise as it exerts a strongly negative influence even after accounting for the poorer, exterior EU countries.

As seen in my Column 2 results, the majority of my explanatory variables lose significance under my primary time fixed effects model. However, even after controlling for monthly fixed effects, the variables of welfare expenditure as a percent of GDP, unemployment rate, and log of existing immigrant population are all found to be highly significant and exert influences as hypothesized. In agreement with the findings of Hatton (2009), Neumayer (2004), and Thielemann (2003), a destination country's existing immigrant population is the strongest pull factor on the asylum application choice, with a 1% increase in immigrant population associated with a .575% increase in monthly asylum applications, *ceteris paribus*. While found to be more significant than in previous studies, the welfare expenditure and unemployment rate of a potential destination country are theoretically plausible strong influencers on asylum applications, as asylum seekers will likely need some sort of government aid upon arrival and would also likely prefer a destination in which it is relatively easier to find work.

Lastly, Column 3 shows the results for my model in which both monthly fixed effects and country fixed effects are controlled for. As seen in the R^2 statistic, this model explains very little of the variation in monthly asylum applications, and the variables previously found to be statistically significant lose their significance. One possible explanation is that while the time fixed effects model is comparing the influence of explanatory variables from a cross-section of diverse countries in each time period, this model is attempting to make that comparison after controlling for destination country characteristics already incorporated into the model. Also of note is the log of income per capita variable, as it regains the significance lost in the time fixed effects model and its coefficient changes signs. Suggesting that a 1% increase in destination country income per capita is associated with a 3.35% increase in monthly asylum applications, *all else equal*, this finding is more in line with the results of previous studies such as Mayda (2005), Neumayer (2004), and Thielemann (2003). However, the fact that this variable changes signs so extremely makes me question the validity of results from this particular specification.

Seen below in Table 3, running my regressions with annual data yielded results similar to those found in Table 2. However, the annual data produces more closely matched results between the OLS and time fixed effects models, leading me to believe that the variables found to be significant only in the monthly OLS regression are not very good indicators of true significance. As welfare expenditure, unemployment rate, and existing immigrant population are robust to changes in specification and keep their significance for both monthly and annual data in OLS as well as time fixed effects models, I believe my results accurately indicate their strength as pull factors. Once again, the time and country fixed effects model yields contrasting results to my previous estimates. Perhaps incorporating country fixed effects into my model provides a more accurate way of controlling for those included explanatory variables that change very little for each country over time as well as any unobserved variables, and thus provides a more accurate estimation of income opportunity effects.

Table 3: Annual Regression Results

VARIABLES	(1) OLS	(2) Time Fixed Effects	(3) Time and Country Fixed Effects
Log(Income Per Capita)	-0.697	-0.674	3.273**
	(0.499)	(0.447)	(1.519)
Welfare Expenditure (% GDP)	0.120***	0.122***	-0.049
	(0.029)	(0.014)	(0.101)
Unemployment Rate	-0.115***	-0.114***	0.048
	(0.030)	(0.015)	(0.033)
% Change in Construction Production	0.018*	0.018	-0.004
	(0.010)	(0.009)	(0.006)
% Change in Manufacturing Production	0.011	0.017	0.007
	(0.013)	(0.028)	(0.009)
Agricultural Production	0.003	0.004	-0.007
	(0.019)	(0.017)	(0.008)
Log(Refused at Border)	-0.045	-0.046	0.049
	(0.084)	(0.053)	(0.092)
Log(Immigrant Population)	0.570***	0.564***	-0.605
	(0.149)	(0.099)	(1.159)
Log(Residence Permits)	0.075	0.078	0.021
	(0.060)	(0.067)	(0.028)
Log(Total Air Passengers)	0.115	0.116	0.089
	(0.096)	(0.071)	(0.173)
Year	0.144*		
	(0.075)		
Region = 1	0.588**	0.622***	
	(0.257)	(0.104)	
Region = 1, omitted			-
Constant	-286.402*	2.694	-17.236
	(151.195)	(4.536)	(16.166)
Observations	134	134	134
R-squared	0.712	0.710	0.199
Number of Years		6	
Number of Countries			28

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusion

As indicated by my results and supported by previous findings, asylum seekers are indeed aware of differences in destination country characteristics and these differences do play a role in the asylum application choice. While the network effects resulting from a large existing immigrant population undoubtedly lead to increases in asylum applications through the benefits of increased connection, communication, and information, there is strong evidence that economic conditions such as the labor market and the welfare state also affect the destination decision. Once the decision to flee their home is made, asylum seekers take stock of and are influenced by the relative likelihoods of finding employment as well as receiving support in the form of government provided welfare benefits. The fact that these explanatory variables are both statistically significant leads to potential insights into the motivations behind the asylum seeker decision, such as having the need for welfare support yet having the desire to find gainful employment. In addition, all three of the variables I found to have significant influence are difficult for destination country governments to manipulate, suggesting the need to find alternative policy measures rather than attempts to make a country relatively less attractive.

One potential solution to the disparate distribution of asylum applications is the previously mentioned creation of an EU-wide market for tradable immigration quotas (TIQ's) as proposed by Moraga and Rapoport (2014). By internalizing the positive externality associated with alleviating the massive, uneven burden faced by various EU member states, the EU could reach a common solution while preserving foundational policies such as the Schengen Agreement. Preserving a border-free travel zone would yield immense benefits to all EU members, yet without a unified solution this crisis threatens to greatly exacerbate rising divisive sentiment. My results show that the destination decision is largely based on unchangeable factors, and unless the difficult crises in Syria and the Middle East radically improve, these asylum trends will only continue to grow. Supported by previous findings such as Hatton (2004), this means that instead of searching for individualistic ways of dealing with this influx, the EU needs to reach a rational solution that accurately reflects the existing conditions. By imposing a system of TIQ's, the EU could ease the mounting pressure faced by select member states while simultaneously allocating asylum seekers to those countries with a comparative

advantage in refugee reception and a need for increased labor. This system would provide massive windfalls for both the EU and asylum seekers in desperate need of sanctuary.

An asylum seeker would not make the decision to embark on a difficult and very dangerous journey, permanently leaving their home and past life, unless it was absolutely necessary. The fact that they choose to confront harsh conditions and enlist the aid of traffickers in order to trek into an unknowable future shows how desperate they are to escape the despair of their homeland. It is understandable then, that after making this exhaustive journey an asylum seeker would want to settle in a country that provides the most utility and opportunity. Based on the results of my analysis, the most important factors playing into this decision are the existence of network effects stemming from a large immigrant population, an easing of hardship in the form of government provided welfare benefits, and the likelihood of finding gainful employment. If the EU wants find a common solution to this crisis and halt the crumbling of its foundational policies and institutions, it must come to terms with the large role these factors play in the disproportionate distribution of asylum applicants. A solution to this crisis is of dire importance for the displaced masses, the European Union, and global stability.

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