**Asylum Seekers' Effects on Social Spending in the EU**

Carsten Savage

Applied Econometrics

Professor Cutter

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**Introduction**

Germany is one of the largest economies in the world. While Germany is no stranger to minority populations, it has historically been racially homogenous. In recent years, EU nations like Germany have accepted significant numbers of immigrants from the developing world; during the 2015-2019 period, Germany accepted 1.5 million migrants (Chase and Goldenberg 2019). Germany also witnessed the growth of AfD, or Alternative for Deutschland, a political party which has opposed mass immigration from the Middle East (Chase and Goldenberg 2019). AfD was founded in 2013, and four years later during the 2017 election, AfD became the third-largest political party in the Bundestag, Germany's federal parliament (Chase and Goldenberg 2019). Other European nations have birthed similar movements. The 'Brexit' campaign of 2016 could be partially attributed to a divisive issue: Should the UK's refugee policy be up to the EU or the UK (Mauldin 2016)? In southern Europe, Italians witnessed the emergence of the Five Star Movement, a political party in favor of anti-immigration policies (Pianta 2020, pp. 13).

My objective for this research paper is to analyze immigration's effects on social spending across the EU from 2000 to 2017. Due to data constraints, immigration will be measured by the number of asylum applications select EU nations receive per year. My secondary objective will be to evaluate indicators of asylum seekers' success in EU countries, where success can be indicated by unchanged or lower national social spending. In this paper, the term 'origin country' refers to an asylum applicant's country of origin, while the term 'host country' refers to an asylum applicant's desired country of residence. The host countries are the EU countries included in this paper[1], while the origin countries are the included non-EU countries[2]. To analyze the marginal effects of the number of asylum applications on social spending in a given country, I will regress components of the aggregate social spending equation provided by "The Socx Manual" on host country-level variables and variables related to native and foreign-born populations in a given host country (Adema and Ladaique 2011, pp. 98-100).

Through this work, I also hope to analyze the aspects of origin countries that lead to refugees' financial success in host countries. Therefore, GDP per capita, education, and distance factors related to origin countries will be secondary independent variables of interest.

**Literature Review**

While Europe has been home to significant immigrant populations for centuries, immigration in the past two decades has been politically polarizing. In recent years, European countries dissatisfied with EU immigration legislation have spawned political movements intent on reducing immigration. The Five Star Movement in Italy (M5S), Alternative for Deutschland in Germany (AfD), and 'Brexit' in the UK involve anti-immigration ideology (Pianta 2020, pp. 13; Chase and Goldenberg 2019; Mauldin 2016). The idea that immigrants and refugees are taking advantage of European social spending systems is no longer uncommon. Perceptions of immigrants' impact on the economy can lead to more movements of this nature, shaping the future of Europe. My paper aims to analyze asylum seekers' effects on social spending in select EU countries from 2000 to 2017, especially considering economic and education-related factors affecting the asylum seekers' countries of origin.

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[1] See Appendix A for the list of 22 EU nations included in the data.
[2] See Appendix B and Appendix C for the list of 125 EU nations included in the data.

In "The Socx Manual," Adema and Ladaique detail the variables that the Organisation for Economic Co-operation and Development (OECD) utilizes to calculate social expenditures on the national level. For a given country, the OECD employs expenditures concerning pensions and services for the elderly; transfers to the dependents and spouses of the deceased; cash transfers and services for those with disabilities; public spending on health services; family-related transfers (including parental leave); programs to help potential workers find employment; transfers to the unemployed; housing subsidies and support; and transfers to immigrants, refugees, and indigenous people and 'other' uncategorizable expenses comprise the final variable (Adema and Ladaique 2011, pp. 98-100). Since this paper intends on using a panel data comprised of OECD social expenditure data for EU countries, health care transfers, family-related transfers, and housing subsidies and support will be combined into one variable, and this variable and an unemployment transfer variable will be present as dependent left hand side (LHS) variables in separate linear regression equations.

The number of asylum applications each EU member state receives from 2000-2017 should be added to the regression equation to account for asylum seekers' effects on the two social spending variables. It is important that the number of asylum applications is a stock variable from 2000-2017 to identify recessions, which are correlated with "anti-migration feelings" that could lead to policy change (Bacci 2018, pp. 702). The number of asylum applications admitted, as well as the amount of social expenditures, could be impacted by cyclical recession and internal responses to it (Bacci 2018, pp. 702). In addition, the growth rate of each EU country's economy from 2000-2017—in which positive growth rates indicate expansion and negative growth rates recession—should be included in the linear regression to capture the effects of this cyclicality.

According to Jaime-Castillo et al., countries with higher social expenditures are more likely to view immigrants and refugees positively in the long run (Jaime-Castillo et al. 2016, pp. 1101). Native-born populations may believe that substantial social spending can better integrate immigrant populations into the workforce (1101). Yet, in the short-run, natives may believe that immigrants and refugees will drive up social spending, which could create resistance to increased social welfare expenditures (Jaime-Castillo et al. 2016, pp. 1101). To distinguish between natives' impact on social spending and that of refugees, the native-born populations' unemployment rates in EU member states will control for social expenditure transfers to non-refugees (Jaime-Castillo et al. 2016, pp. 1091). Immigrants and refugees generally work lower-paid jobs, and less educated, lower-income natives must compete for these jobs (Jaime-Castillo et al. 2016, pp. 1091). Since natives' unemployment rates are now controlled, foreign-born unemployment rates for each country should be added to the linear regression to account for the unemployed refugees.

While unemployed immigrants may increase the percentage of GDP consumed by social spending, Bacci notes that EU nations' populations are decreasing, and population declines are often positively correlated with shrinking GDPs (Bacci 2018, pp. 697). According to Bacci, each European country's "ageing process" varies in speed, and the European populations that age faster will incur more economic damage (Bacci 2018, pp. 700). To account for the ageing effect, the age structure of each EU country's population should be added to the linear regression to analyze changes in social spending. Each country's population will be divided into separate variables for the following segments: 0-14 years, 15-64 years, and 65 years and older. The variable comprised of the percentage of EU countries' populations between 15-64 years old will be the base group and will be omitted from the regressions.

In addition to analyzing EU countries' social expenditures, this paper's goal is also to analyze factors related to origin countries that may affect asylum seekers' financial success in host countries. Geis et al. note that despite falling transportation costs, distances between origin and host countries are important determinants of immigration levels nevertheless (Geis et al. 2011, pp. 774). Refugees who travel greater distances could be perceived as being more capable of overcoming greater obstacles, and their determination may allow them to succeed financially in host countries. The linear regression, therefore, should include distances between origin and host countries in kilometers. As previously mentioned, the term 'financial success' describes the situation in which a refugee population has a null effect on social spending or decreases social spending in the EU countries.

In his US-focused paper "Why are some immigrants more successful than others," Lazear claims that an origin country's educating ability can also be a predictor of immigrant success depending on its "economies of scale" in education production (Lazear 2018, pp. 16). A developing country may provide a much higher quality education standard than another due to a larger gross domestic product (Lazear 2018, pp. 16). This argument suggests that the GDP per capita of each origin country should be added to the model. Cim et al. study immigrant overeducation and undereducation in "Occupational mismatch of immigrants in Europe: the role of education and cognitive skills" and find that degrees obtained in origin countries and those obtained by natives in host countries are incomparable (Cim et al. 2020, pp. 96). Due to difficulty comparing average attained degrees across countries, literacy rates will be employed instead. Literacy rates can provide insight into origin countries' education standards and will help illuminate the prevalence of higher education. Literacy rates will therefore be added to the linear regressions.

The linear regression equations detailed above may reveal significant correlations between the aforementioned variables and EU nations' social spending levels. An important note is that immigration can serve to expand a nation's population and prevent long-term GDP loss due to ageing populations and insufficient workforces. This paper will only analyze EU nations in the short-term, however, and so this effect will not be taken into account in the regressions.

**Theory of Equations**

This work aims to build off of the OECD's framework for calculating social spending. "The Socx Manual" details nine variables composing aggregate social spending at the national level, and five of these variables will be conglomerated into two variables that will serve as LHS[3] dependent variables (Adema and Ladaique 2011, pp. 98-100). The two LHS variables will be regressed on the number of asylum applications EU countries receive annually to isolate the effects of asylum seekers on national social spending. Additional variables related to the host countries' economies will follow. This work then includes origin country-related variables intended to control for factors that may contribute to asylum seekers' financial success in their host countries.

The framework the OECD employs can be represented by dependent variable $Y_{ij}$, in which each ascending j equals one of the two social expenditure variables Adema and Ladaique claim composes OECD social spending in "The Socx Manual" (Adema and Ladaique 2011, pp. 98-100). To calculate social spending, two variables will be created: The first variable, *FAMT*, combines health care transfers, family-related transfers, and housing subsidies and support, and the second variable, *EPT*, is composed of unemployment transfers (Adema and Ladaique 2011, pp. 98-100). Both *EPT* and *FAMT* are measured in euros per inhabitant per EU country at the 2010 price level.

$Y_{ij} = $ , in which $j_1 = $ *FAMT*, $j_2 = $ EPT

Bacci discusses the impact the number of immigrants admitted to a country in a given time period can have on attitudes towards immigration. Countries that receive greater numbers of immigrants and refugees, especially during economic expansions, develop more positive long-term attitudes towards immigration (Bacci 2018, pp. 702). These attitudes may then influence nations' immigration and asylum policies. The overall flow of immigration in this model will be measured by the number of asylum applications that EU member states receive from origin countries per year, *ASYLUM*. Since the number of asylum applications per host country is measured yearly, *ASYLUM* will be a stock variable. Hatton states that gross inflows of immigrants into the EU tend to decrease sharply during recessions, especially during the Great Recession of 2008 (Hatton 2016, pp. 209). Conversely, immigration increases gradually during expansions (209). From this relationship, I expect *ASYLUM* to be positively correlated with social spending.

Before analyzing the effects of asylum applications on nations' social spending, the linear regressions should first control for natives' effects on social expenditures. The aforementioned cyclicality of economic expansion and recession periods can be measured by each EU member nation's growth rates of GDP over time, measured as a flow variable *EUGDPG*. I expect EU GDP growth over time to be negatively correlated with social spending. To avoid attributing unemployment transfers arbitrarily, a variable for natives' unemployment rates per EU country *NATIVUNEM* will control for increases in welfare spending unaffected by asylum seekers, and I expect *NATIVUNEM* to be positively correlated with social spending.

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[3] Left hand side (LHS)

In addition, the demographics of each EU member country will be broken down into three variables. *DEMOEU14* will measure the percentage of each total population between 0-14 years old; *DEMOEU64* measures the percentage of each total population that is between 15-64 years old; and *DEMOEU65* measures the percentage of each total population over 64 years old. I expect *DEMOEU14* to be positively correlated with social spending, *DEMOEU64* to be negatively correlated with social spending, and *DEMOEU65* to be positively correlated with social spending. As the largest of these groups, *DEMOEU64* will be the base group and will be omitted from the regression. Through these means, the relationship between EU nations' populations of specific ages and social spending should become clearer, and effects on social spending that were previously in the unobservable may reveal themselves.

$$Y_{ij} = \beta_0 + \beta_1 ASYLUM + \beta_2 EUGDPG + \beta_3 NATIVUNEM + \beta_4 DEMOEU14 + \beta_5 DEMOEU65 + \mu$$

The above equation solidifies the main components of social spending, gauges the effect of asylum seekers on social spending, and controls for host country-related factors involving social welfare consumption. Thus, independent variables of interest related to refugees' effects on social spending can be added to the equation. While the linear regression equations include native-born unemployment, foreign-born unemployment rates *FRNUNEM* will account for wealth transfers to immigrants. I expect this variable to be positively correlated with social spending. Before adding this to the linear regressions, a side regression equation will be created to explain foreign unemployment. Native-born unemployment *NATIVUNEM* will be the RHS variable of the side regression equation with foreign-born unemployment *FRNUNEM* as the LHS variable.

$$FRNUNEM = \beta_0 + \beta_1 NATIVUNEM + \mu$$

The above equation will disclose the degree that native unemployment rates *NATIVUNEM* explain foreign-born unemployment rates *FRNUNEM* in a given country. Then, *FRNUNEM* will be added to the main regressions to account for foreign-born unemployment's effect on social spending.

$$Y_{ij} = \beta_0 + \beta_1 ASYLUM + \beta_2 EUGDPG + \beta_3 NATIVUNEM + \beta_4 DEMOEU14 + \beta_5 DEMOEU65 +$$

$$\beta_6 FRNUNEM + \mu$$

Origin countries' ability to produce refugees who are financially successful in their host countries is a primary driving question in this work. To explore this concept, the educating ability of each origin country will be evaluated through two variables. The first variable, *GDPORGN,* will capture the per capita GDP of each origin country over the 2000-2017 time period. I expect *GDPORGN* to negatively correlate with social spending.

$Y_{ij} = ß_0 + ß_1 ASYLUM + ß_2 EUGDPG + ß_3 NATIVUNEM + ß_4 DEMOEU14 + ß_5 DEMOEU65 +$

$ß_6 FRNUNEM + ß_7 GDPORGN + \mu$

The second variable will consist of each origin country's average literacy rate over the 2000-2017 period. This will measure each nation's educating ability. I expect *LIT* to negatively correlate with social spending.

$Y_{ij} = ß_0 + ß_1 ASYLUM + ß_2 EUGDPG + ß_3 NATIVUNEM + ß_4 DEMOEU14 + ß_5 DEMOEU65 +$

$ß_6 FRNUNEM + ß_7 GDPORGN + ß_8 LIT + \mu$

In addition to educating ability, distances between host and origin countries will become an independent variable of interest and may be a determinant of refugees' financial success. Origin countries that are further away from host countries may produce more-determined and harder-working immigrants and refugees (Geis et al. 2011, pp. 774). Therefore, the relationship between social spending and distances (in kilometers) will be explored through the variable *ORDESKM*. I expect *ORDESKM* to correlate negatively with social spending. The model this paper employs is the following:

$Y_{ij} = ß_0 + ß_1 ASYLUM + ß_2 EUGDPG + ß_3 NATIVUNEM + ß_4 DEMOEU14 + ß_5 DEMOEU65 +$

$ß_6 FRNUNEM + ß_7 GDPORGN + ß_8 LIT + ß_9 ORDESKM + \mu$ in which j = 1, 2 for family-related

transfers FAMT and employment-related transfers EPT respectively.

**Data Section**

This work includes a panel data for 147 countries, including 22 European Union (EU) countries[4] and 125 countries outside the EU[5]. The panel data is composed of data sets from select sources covering a 17-year time period from 2000 – 2017. This specific time period was chosen because the 21st century encompasses a significant period of migration activity in Europe due to refugee crises. Unfortunately, Syria was omitted due to non-existent data[6]. The panel data ends in the year 2017 because of data availability constraints. Data is measured from 2000 to 2017 unless stated otherwise. Summary statistics are provided in Appendix E.

In this model, the number of asylum applications each EU member nation receives per year is the primary independent variable of interest. Due to data constraints, asylum applications received per year are employed to represent immigration to the EU. Then, asylum seekers' 'financial success' is proxied by (1) their origin countries' literacy rates, (2) physical distances between origin and host (EU) countries in kilometers, and (3) origin countries' GDP per capita in current USD. The origin countries' literacy rates data was extracted from UIS-UNESCO through The World Bank[7]. The physical distances between origin and host countries data (in kilometers) was extracted from CEPII[8]. The physical distance data was not measured yearly. The origin countries' GDP per capita data, measured in current USD, was extracted from The World Bank[9]. The origin GDP per capita data was measured yearly between 2000-2017 for each origin country. The number of asylum applications per year data was extracted from the United Nations High Commissioner for Refugees Agency[10]. In the regressions, asylum applications received by EU nations per year are denoted by *ASYLUM*. Origin countries' literacy rate data is denoted by *LIT*; physical distances in kilometers between origin and host countries are denoted by *ORDESKM*; and origin countries' GDP per capita in current USD data is denoted by *GDPORGN*. According to Figure 0, higher quantities of asylum applications originate from less-developed nations with literacy rates between 50-60%, as well as from highly developed nations with literacy rates over 95%.

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[4] Appendix A. The EU countries included are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, and UK.

[5] Appendices B and C.

[6] Syria is classified as part of the "Stateless" category in data sources.

[7] Source for *LIT*: https://data.worldbank.org/indicator/se.adt.litr.zs

[8] Centre d'Études Prospectives et d'Informations Internationales. Source for *ORDESKM*: http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=6

[9] Source for *GDPORGN*: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

[10] Source for *ASYLUM*: http://popstats.unhcr.org/en/asylum_seekers_monthly
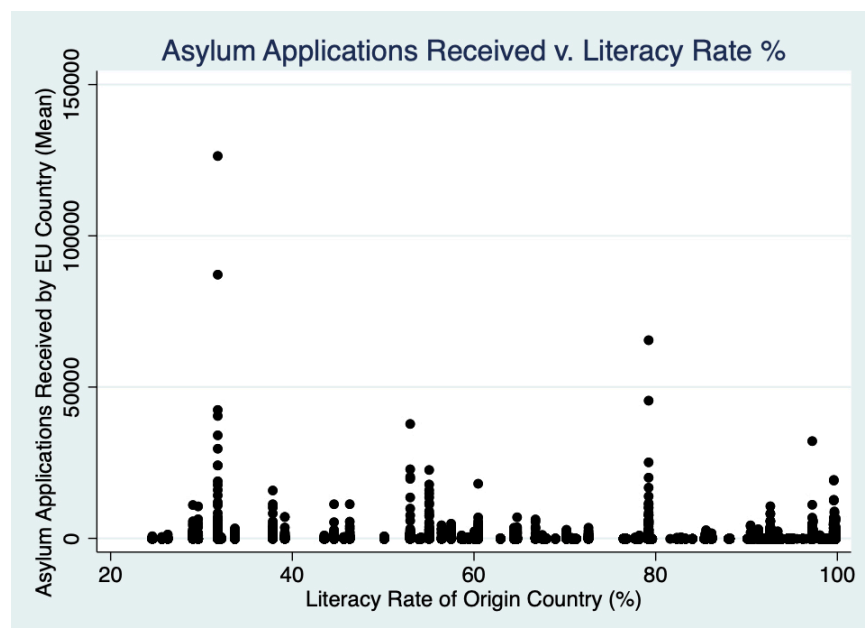
Figure 0: The mean number of asylum applications select EU countries receive and the literacy rates of origin countries (%) from which the applications originated.

      The two dependent variables in the main regressions are (1) the agglomeration of housing, family, and health care-related transfers per inhabitant in euros at the 2010 price level, *FAMT*, and (2) unemployment transfers per inhabitant in euros at the 2010 price level, *EPT*. The data composing both variables was extracted from Eurostat[11]. However, *FAMT* required combining individual datasets. Specifically, housing transfer data per inhabitant in euros at the 2010 price level was combined with family and health-care datasets using identical units to create agglomerated *FAMT*. According to Figure 1, as the number of asylum applications countries receive increases, the unemployment transfers paid per inhabitant per country (€, 2010 price level) seem to decrease. Figure 2 indicates that as the number of asylum applications countries receive increases, the family-related (family, health care, and housing) transfers paid per inhabitant per country (€, 2010 price level) stay stagnant.

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[11] Source for *FAMT* and *EPT*: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=spr_exp_sum&lang=en
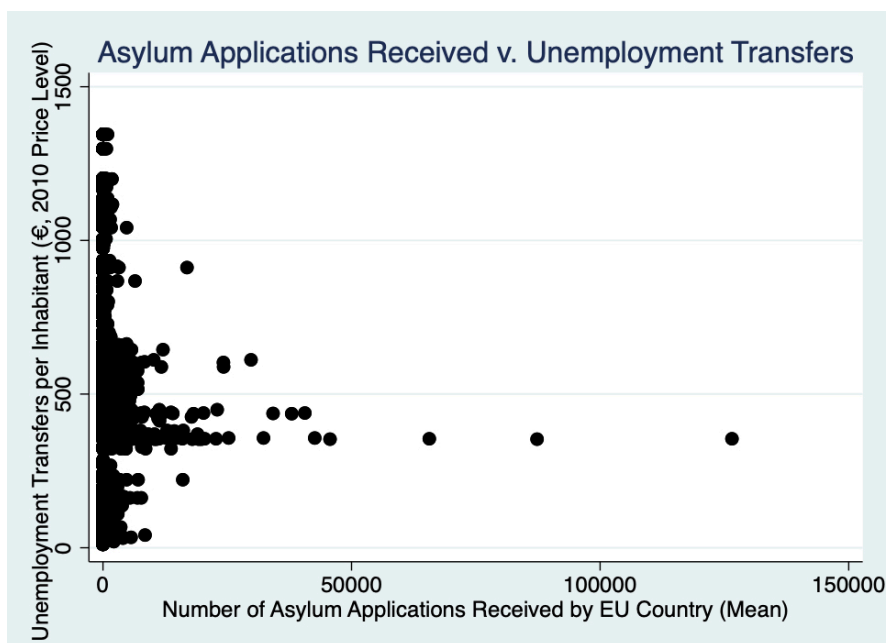
Figure 1: Number of asylum applications received (mean) against the unemployment transfers per inhabitant per country (€, 2010 price level).
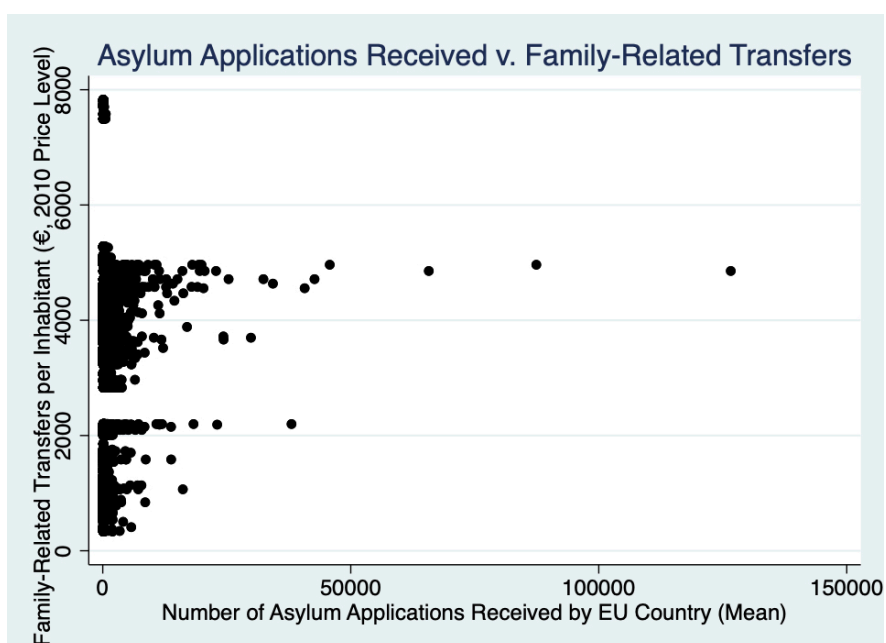


Figure 2: Number of asylum applications received (mean) against family-related transfers per inhabitant per country (€, 2010 price level).

Native and foreign-born unemployment rates will be important factors in accounting for each nation's social spending. A given EU country has a native-born unemployment rate, which is the unemployment rate for natives of that country, and a foreign-born unemployment rate, which is the unemployment rate for those who are not natives but do inhabit said country. Data

for both native-born[12] and foreign-born[13] unemployment rates was extracted from the OECD. Native-born unemployment rate data is denoted by *NATIVUNEM*, while foreign-born unemployment rate data is denoted by *FRNUNEM*. Prior to adding both to the regressions, a side regression was conducted with foreign-born unemployment rates as the left-hand side (LHS) dependent variable and native-born unemployment as the right-hand side (RHS) independent variable. This side regression will exemplify how much native-born unemployment rates in EU countries explain foreign-born unemployment rates in those countries.

Once this relationship has been analyzed, native and foreign-born unemployment will be added to the regressions in two steps. First, a regression will be conducted on the unconstrained model that includes native-born unemployment and excludes foreign-born unemployment. This will isolate the effect unemployed natives have on social spending in each EU country. Then, foreign-born unemployment will be added to the regression to analyze the effect foreigners have on each EU nation's social expenditures. Figure 3 indicates that family-related social spending generally does not increase despite high levels of foreign-born unemployment. According to Figure 4, higher foreign-born unemployment rates seem to slightly increase unemployment transfers per inhabitant more than comparable increases in native-born unemployment rates.
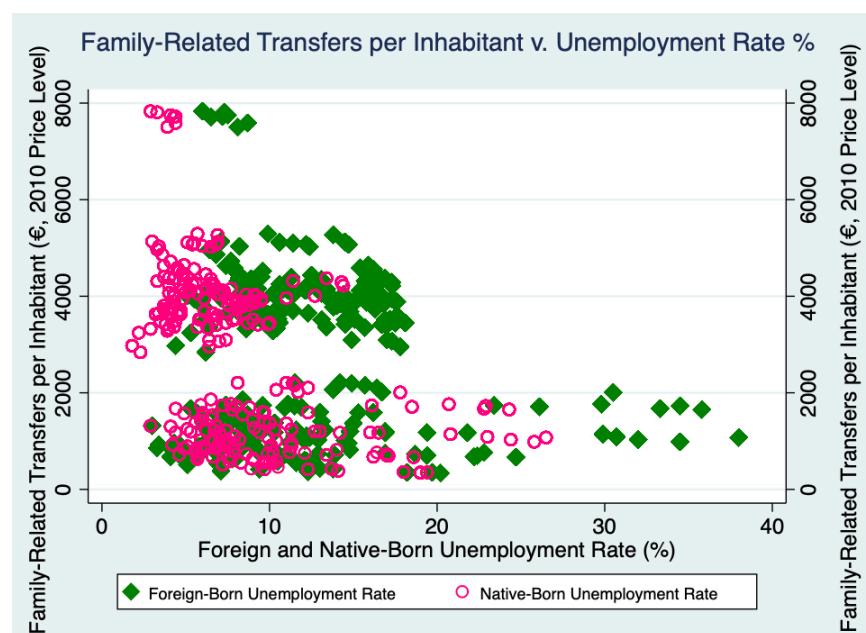


Figure 3: Foreign-born and native-born unemployment rate per country against family-related transfers per inhabitant per country (€, 2010 price level).

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[12] Organisation for Economic Cooperation and Development. Source for *NATIVUNEM*: https://data.oecd.org/migration/native-born-unemployment.htm
[13] Organisation for Economic Cooperation and Development. Source for *FRNUNEM*: https://data.oecd.org/migration/foreign-born-unemployment.htm

Figure 4: Foreign-born and native-born unemployment rate per country against unemployment transfers per inhabitant per country (€, 2010 price level).

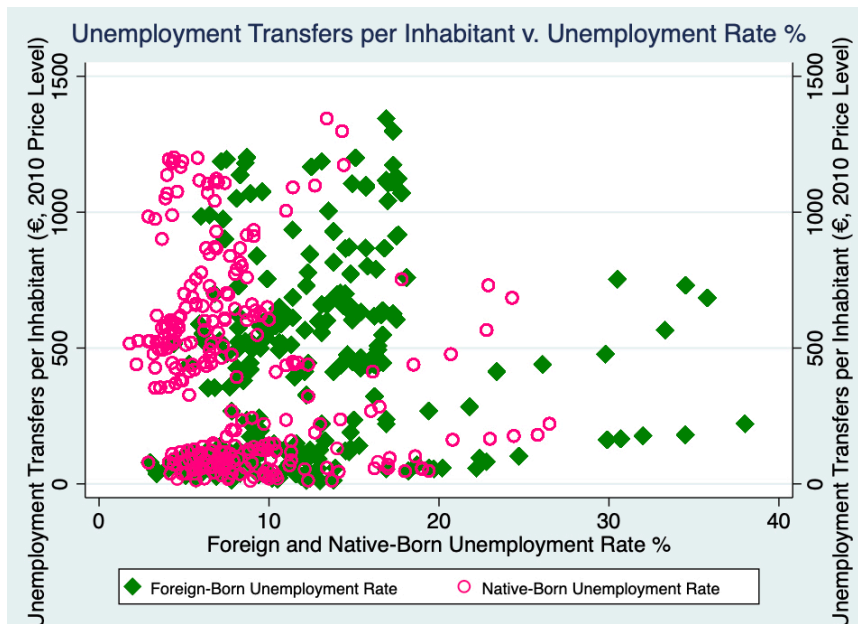Before determining the impact of the number of asylum applications EU nations receive on their social spending, it is necessary to first control for factors within the EU nations. The demographic-related control variables in this model are (1) the percentage of each EU nation's population that is between 0-14 years old[14], *DEMOEU14*, (2) the percentage of each EU nation's population that is between 15-64 years old[15], *DEMOEU64*, and (3) the percentage of each EU nation's population that is over 65 years old[16], *DEMOEU65*. The data for these variables was extracted from The World Bank. An additional control variable is GDP growth for each EU nation, *EUGDPG*. The data for GDP growth per EU country was also extracted from The World Bank[17].

As discussed previously, creating *FAMT* required the combination of multiple datasets. For all variables, data from each source required additional steps to ensure that unneeded countries were eliminated and that country names matched across datasets.

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[14] Source for DEMOEU14: https://data.worldbank.org/indicator/sp.pop.0014.to.zs
[15] Source for DEMOEU64: https://data.worldbank.org/indicator/sp.pop.1564.to.zs
[16] Source for DEMOEU65: https://data.worldbank.org/indicator/sp.pop.65up.to.zs
[17] Source for EUGDPG: https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg

**Results**

### Table 1: Side Regression

Dependent Variable: Foreign-Born Unemployment Rate for Select EU Countries (FRNUNEM)

| VARIABLES | (1) Foreign-Born Unemployment Rate in EU Country (FRNUNEM) |
|---|---|
| Observations | 13,498 |
| R-squared | 0.715 |
| Adjusted R-squared | 0.715 |
| VARIABLES | |
| Native-Born Unemployment Rate in EU Country (NATIVUNEM) | 1.116*** |
| | (184.097) |
| Constant | 3.953*** |
| | (71.067) |
| | |
| T-statistics in parentheses | |
| *** p<0.01, ** p<0.05, * p<0.1 | |

Table 1 indicates multicollinearity between foreign-born unemployment rates and native-born unemployment rates in select EU countries; native-born unemployment rates play a significant role in determining foreign-born unemployment rates in the EU. According to Table 1, a one percentage point increase in native-born unemployment rates increases foreign-born unemployment rates by 1.116 percentage points, and this result is significant at the 99 percent confidence level.

**Table 2: Main Regression**

Dependent Variables: (1) EPT, or Unemployment Transfers per Inhabitant per Select EU Country (€, 2010 Price level), and (2) FAMT, or Family, Housing, and Healthcare-Related Transfers per Inhabitant per Select EU Country (€, 2010 Price Level)

| VARIABLES | (1) Family-Related Transfers per EU Country Inhabitant in €, 2010 Price Level (FAMT) | (2) Unemployment Transfers per EU Country Inhabitant in €, 2010 Price Level (EPT) |
|---|---|---|
| Observations | 13,498 | 13,498 |
| R-squared | 0.544 | 0.472 |
| Adjusted R-squared | 0.544 | 0.472 |
| VARIABLES | | |
| Num. of Asylum Applications Received Annually per EU Country (ASYLUM) | 0.0290*** | 0.0012 |
| | (6.535) | (1.202) |
| Literacy Rate of Origin Country (LIT) | -2.320*** | -0.361*** |
| | (-5.661) | (-3.807) |
| GDP per Capita of Origin Country (GDPORGN) | 0.010*** | 0.000 |
| | (8.520) | (-1.055) |
| Distance between Origin and EU Country (km.) (ORDESKM) | 0.0292*** | 0.0011 |
| | (8.797) | (1.437) |
| Percentage of EU Country Between 0-14 Yrs. Old (DEMOEU14) | 379.040*** | 65.682*** |
| | (57.302) | (42.865) |
| Percentage of EU Country Over 65 Yrs. Old (DEMOEU65) | 168.155*** | -7.487*** |
| | (32.783) | (-6.301) |
| Growth Rate of GDP of EU Country (EUGDPG) | -41.024*** | -8.092*** |
| | (-13.721) | (-11.684) |
| Foreign-Born Unemployment Rate in EU Country (FRNUNEM) | 105.779*** | 48.876*** |
| | (34.123) | (68.065) |
| Native-Born Unemployment Rate in EU Country (NATIVUNEM) | -271.229*** | -59.391*** |
| | (-68.926) | (-65.154) |
| Constant | -5,036.962*** | -554.867*** |
| | (-28.021) | (-13.325) |
| T-statistics in parentheses | | |
| *** p<0.01, ** p<0.05, * p<0.1 | | |

Interestingly, all independent variables were significant at the 99 percent confidence level for family-related transfers, *FAMT*. With the exception of the variables for the number of asylum applications, the GDP per capita of origin countries, and the distances between host and origin countries, the independent variables were also significant at the 99 percent confidence level for unemployment transfers, *EPT*. As predicted, Table 2 indicates a positive correlation between *ASYLUM* and social expenditure variables *FAMT* and *EPT*. The number of asylum applications EU countries receive marginally increases national social expenditures for the two categories, *FAMT* and *EPT*. A percentage point increase in the number of asylum applications received in a given year increases family, housing, and healthcare-related transfers (family-related transfers) for EU countries by .029 euros[18] and increases unemployment transfers by .001 euros. Origin countries' literacy rates, meanwhile, are negatively correlated with social expenditures. A one percentage point increase in the literacy rate of asylum seekers' origin countries decreases family-related transfers by 2.32 euros and decreases unemployment transfers by .36 euros, indicating that asylum seekers from origin countries with higher literacy rates decrease EU countries' social expenditures.

An interesting observation is that origin countries' GDP per capita, *GDPORGN*, and distances between origin and host countries, *ORDESKM*, affect EU countries' family-related spending, but have only a slight effect on unemployment spending; a one percentage point increase in *GDPORGN* increases EU countries' *FAMT* social expenditures by .01 euros, and contrary to the initial prediction, a one percentage point increase in *ORDESKM* boosts *FAMT* expenditures by .029 euros. Notable is that neither variable has a significant impact on unemployment transfers. The null effect that *GDPORGN* and *ORDESKM* have on unemployment transfers suggests that refugees' financial success in host countries is influenced by neither distance nor GDP per capita. Also notable is that the results for *ASYLUM* and *ORDESKM* are quite similar for both social spending variables.

Contrary to initial expectation, the percentage of each EU country's population over 65 years old, *DEMOEU65*, is negatively correlated with unemployment transfers, although the variable is positively correlated with family-related transfers. Since the percentage of EU countries' populations between 15 and 64 years old, *DEMOEU64*, is the largest of the three variables, this variable was treated as the base group and was omitted from the regression. As predicted, the percentage of each EU country's population between 0 and 14 years old is positively correlated with both family-related transfers and unemployment transfers. A one percentage point increase in the percent of EU countries' populations between 0-14 years old increases family-related transfers by €379.04 more than the base group and increases unemployment transfers by €65.68 more than the base group. Additionally, a one percentage point increase in the percent of EU countries' populations over 65 years old increases family-related transfers by €168.15 more than the base group and decreases unemployment transfers by €7.48 more than the base group.

According to Table 2, growth rates for select EU countries' GDP, *EUGDPG*, are negatively correlated with both *FAMT* and *EPT*. A one percentage increase in *EUGDPG* reduces family-related transfers by €41.02 and reduces unemployment transfers by €8.09. This is most likely due to reduced unemployment during economic expansions.

Table 2 also exhibits a linear relationship between foreign-born unemployment rates, *FRNUNEM*, and social expenditure categories *FAMT* and *EPT*. A one percentage point increase in *FRNUNEM* increases family-related social expenditures by €105.77 and increases

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[18] For all variables, the results should be read in terms of euros per inhabitant at the 2010 price level.

unemployment social expenditures by €48.87. More puzzling, however, is the relationship between native-born unemployment rates, *NATIVUNEM*, and social expenditures. Conflicting with the hypothesis for this relationship, Table 2 demonstrates that *NATIVUNEM* is negatively correlated with *FAMT* and with *EPT*. A one percentage point increase in EU countries' native unemployment rates decreases family-related transfers by €271.22 and decreases unemployment-related transfers by €59.39. This result may be due to the multicollinearity between *FRNUNEM* and *NATIVUNEM*.

**Conclusion**

The linear regression model delineates a statistically significant positive correlation between the number of asylum applications EU countries receive and family-related social expenditures per inhabitant. A percentage point increase in the number of asylum applications received in a given year increases family, housing, and healthcare-related transfers by .029 euros per inhabitant and increases unemployment transfers by .001 euros per inhabitant. According to this result, asylum seekers do not substantially impact unemployment transfers in EU countries but do have a statistically significant effect on family-related transfers. In comparison, literacy rates of asylum seekers' origin countries have a much larger impact on EU countries' social spending; a one percent increase in the literacy rate of origin countries decreases family-related transfers by 2.32 euros per inhabitant and decreases unemployment transfers by .36 euros per inhabitant. Equally notable is the negative correlation between EU nations' native-born unemployment rates and social expenditures compared to the positive correlation between foreign-born unemployment rates and social spending.

The results from the demographic-related variables mostly follow the hypothesized outcome. Increases in the percentage of EU countries' populations between 0-14 increased family-related and unemployment social spending more than the base group, while increases in the percentage of populations over 65 years of age also increased family-related transfers more than the base group but decreased unemployment transfers, which is logical considering that most of this population has likely already exited the labor market. Both demographic-related variables were statistically significant at the 99 percent confidence level.

Contrary to initial predictions, one percentage point increases in origin countries' GDP per capita and distances between origin and host countries result in increases in family-related social expenditures. According to the results, asylum seekers who travel farther distances may potentially require more social welfare expenditures than those who travel shorter distances. Yet, the distance variable had a null effect on unemployment transfers. In addition, those from higher GDP per capita origin countries seem to have a greater impact on increases in host countries' social spending levels than those who come from lower GDP per capita origin countries. Both of these relationships could be explored in greater detail.

A significant limitation of the data employed for this paper is the omittance of Syria. A substantial number of refugees have originated from Syria in recent years, and including these refugees would be beneficial to ensuring that the analysis encompasses the complete picture. Further explorations of this topic could focus on creating a Syria-inclusive dataset. In addition, future studies could analyze the effects that ageing immigrant populations have on social spending across the EU.

**Appendix A: EU Countries in Panel Data, 1-22.**

| | |
|---|---|
| Austria | 1 |
| Belgium | 2 |
| Czech Rep. | 3 |
| Germany | 4 |
| Denmark | 5 |
| Spain | 6 |
| Estonia | 7 |
| Finland | 8 |
| France | 9 |
| Greece | 10 |
| Hungary | 11 |
| Ireland | 12 |
| Italy | 13 |
| Luxembourg | 14 |
| Latvia | 15 |
| Netherlands | 16 |
| Poland | 17 |
| Portugal | 18 |
| Slovakia | 19 |
| Slovenia | 20 |
| Sweden | 21 |
| UK | 22 |

**Appendix B: Non-EU Countries in Panel Data, 1-90.**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Afghanistan | 1 | Barbados | 19 | Ecuador | 37 | Israel | 55 | Mali | 73 |
| Angola | 2 | Brunei Darussalam | 20 | Eritrea | 38 | Jamaica | 56 | Myanmar | 74 |
| Albania | 3 | Bhutan | 21 | Ethiopia | 39 | Jordan | 57 | Mongolia | 75 |
| United Arab Emirates | 4 | Botswana | 22 | Fiji | 40 | Japan | 58 | Mozambique | 76 |
| Argentina | 5 | Canada | 23 | Gabon | 41 | Kazakhstan | 59 | Mauritania | 77 |
| Armenia | 6 | Switzerland | 24 | Georgia | 42 | Kenya | 60 | Mauritius | 78 |
| Antigua and Barbuda | 7 | Chile | 25 | Ghana | 43 | Cambodia | 61 | Malawi | 79 |
| Australia | 8 | China | 26 | Guinea | 44 | Kiribati | 62 | Malaysia | 80 |
| Azerbaijan | 9 | Cote d'Ivoire | 27 | Guinea-Bissau | 45 | Kuwait | 63 | Namibia | 81 |
| Burundi | 10 | Cameroon | 28 | Equatorial Guinea | 46 | Lebanon | 64 | Niger | 82 |
| Benin | 11 | Colombia | 29 | Grenada | 47 | Liberia | 65 | Nigeria | 83 |
| Burkina Faso | 12 | Comoros | 30 | Guatemala | 48 | Libya | 66 | Nicaragua | 84 |
| Bangladesh | 13 | Cabo Verde | 31 | Guyana | 49 | Sri Lanka | 67 | Norway | 85 |
| Bahrain | 14 | Costa Rica | 32 | Honduras | 50 | Lesotho | 68 | Nepal | 86 |
| Bosnia and Herzegovina | 15 | Cuba | 33 | Haiti | 51 | Morocco | 69 | Nauru | 87 |
| Belarus | 16 | Djibouti | 34 | Indonesia | 52 | Madagascar | 70 | New Zealand | 88 |
| Belize | 17 | Dominica | 35 | India | 53 | Maldives | 71 | Oman | 89 |
| Brazil | 18 | Algeria | 36 | Iraq | 54 | Mexico | 72 | Pakistan | 90 |

**Appendix C: Non-EU Countries in Panel Data, 90-125.**

| | | | |
|---|---|---|---|
| Panama | 91 | Thailand | 110 |
| Peru | 92 | Tajikistan | 111 |
| Philippines | 93 | Turkmenistan | 112 |
| Palau | 94 | Tonga | 113 |
| Paraguay | 95 | Trinidad and Tobago | 114 |
| Zambia | 96 | Tunisia | 115 |
| Russian Federation | 97 | Turkey | 117 |
| Rwanda | 98 | Uganda | 118 |
| Saudi Arabia | 99 | Ukraine | 119 |
| Sudan | 100 | Uruguay | 120 |
| Senegal | 101 | United States | 121 |
| Singapore | 102 | Uzbekistan | 122 |
| Solomon Islands | 103 | Vanuatu | 123 |
| Sierra Leone | 104 | Samoa | 124 |
| El Salvador | 105 | South Africa | 125 |
| Somalia | 106 | | |
| Seychelles | 107 | | |
| Zimbabwe | 108 | | |
| Chad | 109 | | |

**Appendix D: Variable List**

| Variable | Unit | Explanation |
|---|---|---|
| ASYLUM | Applications per year | The number of asylum application cases each select EU country receives per year |
| EUGDPG | Percentage | The growth rate of a select EU country's GDP per year |
| NATIVUNEM | Percentage | The unemployment rate for the native-born population per select EU country |
| DEMOEU14 | Percentage | The percent of the select EU country's total population between 0 and 14 years old. |
| DEMOEU64 | Percentage | The percent of the select EU country's total population between 15 and 64 years old. |
| DEMOEU65 | Percentage | The percent of the select EU country's total population above 65 years old. |
| FRNUNEM | Percentage | The unemployment rate for the foreign-born population per select EU country |
| GDPORGN | Current USD $ | Each select EU country's average GDP per capita between 2000-2017 |
| LIT | Percentage | Literacy rate per select non-EU country averaged over 2000-2017 |
| ORDESKM | Kilometers | Physical distances between select non-EU countries and select EU countries |
| FAMT | Euros at 2010 price level | The agglomeration of family social spending, health care social spending, and housing social spending per inhabitant per select EU country |
| EPT | Euros at 2010 price level | The unemployment social spending per inhabitant per select EU country |

**Appendix E: Summary Statistics**

Table 1: Summary statistics for independent variables of interest.

| Variable | Observations | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| ASYLUM | 13,498 | 272.6807 | 2001.89 | 1 | 126522 |
| LIT | 13,498 | 74.37249 | 23.25387 | 24.53628 | 99.7758 |
| GDPORGN | 13,498 | 4627.125 | 8002.522 | 111.9272 | 102913.4 |
| ORDESKM | 13,498 | 5433.422 | 2696.029 | 394.7473 | 19147.14 |

Table 2: Summary statistics for dependent variables.

| Variable | Observations | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| FAMT | 13,498 | 3237.564 | 1512.567 | 340.42 | 7831.94 |
| EPT | 13,498 | 508.9922 | 325.6075 | 10.93 | 1344.87 |

Table 3: Summary statistics for native-born and foreign-born unemployment variables.

| Variable | Observations | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| NATIVUNEM | 13,498 | 7.878952 | 4.70786 | 1.8 | 26.5 |
| FRNUNEM | 13,498 | 12.74464 | 6.211466 | 3 | 38 |

Table 4: Summary statistics for control variables.

| Variable | Observations | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| DEMOEU14 | 13,498 | 16.37096 | 2.022191 | 13.21694 | 21.8727 |
| DEMOEU64 | 13,498 | 66.40904 | 2.030212 | 62.22118 | 72.00166 |
| DEMOEU65 | 13,498 | 17.21846 | 2.751203 | 10.48309 | 22.49969 |
| EUGDPG | 13,498 | 1.926902 | 3.086466 | -14.43387 | 25.16253 |

Works Cited

Adema, W., P. Fron and M. Ladaique (2011), "Is the European Welfare State Really More
Expensive?: Indicators on Social Spending, 1980-2012; and a Manual to the OECD
Social Expenditure Database (SOCX)", *OECD Social, Employment and Migration
Working Papers*, No. 124, OECD Publishing. http://dx.doi.org/10.1787/5kg2d2d4pbf0-
en.

*Asylum-Seekers (Monthly Data)*, electronic dataset, the United Nations High Commissioner for
Refugees Agency, http://popstats.unhcr.org/en/asylum_seekers_monthly.

Bacci, Massimo Livi. "Does Europe need mass immigration?," *Journal of Economic Geography*,
Volume 18, Issue 4, July 2018, Pages 695–703, https://doi.org/10.1093/jeg/lbx029.

Chase, Jefferson, and Rina Goldenberg. "AfD: What You Need to Know about Germany's Far-
Right Party", *Deutsche Welle*, Deutsche Welle, 28 Oct. 2019, www.dw.com/en/afd-what-
you-need-to-know-about-germanys-far-right-party/a-37208199.

Cim, Merve, Michael Kind & Jan Kleibrink. Occupational mismatch of immigrants in Europe:
the role of education and cognitive skills, *Education Economics*, 28:1, 96-112,
2020. DOI: 10.1080/09645292.2019.1677558.

*Expenditure: main results*, electronic dataset, Eurostat,
https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=spr_exp_sum&lang=en.

*Foreign-born unemployment*, electronic dataset, OECD, 2019,
https://data.oecd.org/migration/foreign-born-unemployment.htm.

*GDP growth (annual %)*, electronic dataset, The World Bank,
https://data.worldbank.org/indicator/ny.gdp.mktp.kd.zg.

*GDP per capita (current US$)*, electronic dataset, The World Bank,
https://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

Geis, Wido, et al. "Why Go to France or Germany, If You Could as Well Go to the UK or the
US? Selective Features of Immigration to the EU 'Big Three' and the United States."
*Journal of Common Market Studies*, vol. 49, no. 4, July 2011, pp. 767–796. EBSCOhost,
http://onlinelibrary.wiley.com.ccl.idm.oclc.org/journal/10.1111/%28ISSN%291468-
5965/issues.

Hatton, Timothy J. "Immigration, Public Opinion and the Recession in Europe." *Economic
Policy*, no. 86, Apr. 2016, pp. 205–236. EBSCOhost, DOI: https://academic-oup-
com.ccl.idm.oclc.org/economicpolicy/issue.

Jaime-Castillo, A.M., Marqués-Perales, I. & Álvarez-Gálvez, J. "The Impact of Social Expenditure on Attitudes Towards Immigration in Europe", *Soc Indic Res* 126, 1089–1108 (2016). https://doi.org/10.1007/s11205-015-0939-0.

Lazear, Edward. "Why are some immigrant groups more successful than others?" *National Bureau of Economic Research*, Nov. 2018. DOI: 10.3386/w23548.

*Literacy rate, adult total (% of people ages 15 and above)*, electronic dataset, UNESCO Institute for Statistics, https://data.worldbank.org/indicator/se.adt.litr.zs.

Mauldin, John. "3 Reasons Brits Voted for Brexit." *Forbes*, Forbes Magazine, 5 July 2016, www.forbes.com/sites/johnmauldin/2016/07/05/3-reasons-brits-voted-for-brexit/#253f41421f9d.

Mayer, Thierry, *GeoDist*, electronic dataset, Centre d'Études Prospectives et d'Informations Internationales, 2011, http://www.cepii.fr/cepii/en/bdd_modele/presentation.asp?id=6.

*Native-born unemployment*, electronic dataset, OECD, 2019, https://data.oecd.org/migration/native-born-unemployment.htm.

Pianta, M. Italy's Political Upheaval and the Consequences of Inequality. *Intereconomics* 55, 13–17 (2020). https://doi-org.ccl.idm.oclc.org/10.1007/s10272-020-0862-8.

*Population ages 0-14 (% of total population)*, electronic dataset, The World Bank, 2019, https://data.worldbank.org/indicator/sp.pop.0014.to.zs.

*Population ages 15-64 (% of total population)*, electronic dataset, The World Bank, 2019, https://data.worldbank.org/indicator/sp.pop.1564.to.zs.

*Population ages 65 and above (% of total population)*, electronic dataset, The World Bank, 2019, https://data.worldbank.org/indicator/sp.pop.65up.to.zs.