

Using the “Green Card Marriage” to Model Demand for United States Immigrant Visas

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Abstract: In this paper, I investigate demand for United States immigrant visas. I use the “Green Card Marriage” as my measure of demand for immigrant visas. Using the American Community Survey, I identify individuals who marry in the same year that they immigrate to the United States as Green Card marriage participants. I find that demand for spousal immigrant visas is significantly associated with economic conditions, indicating that marriage decisions between foreign-born individuals and United States citizens are often influenced by desire to immigrate to the United States on the part of the foreign-born spouse. I find evidence that wage and unemployment rate are central determinants of the demand for spousal immigrant visas from a country. Curiously, it seems that individuals are more likely to immigrate on a spousal visa if the wage in their country is higher and unemployment is higher, while also being more inclined to immigrate if the wage in the United States is higher and unemployment is lower. The increased rate of immigration may be indicative of cost barriers to migration. In addition to the effects of economic conditions on immigration to the United States, I find that countries with qualities that facilitate either contact or cultural compatibility with the United States are likely to send more spousal visa immigrants. Together, the results of this paper indicate that spousal visas are currently used as a vehicle for economically motivated immigration to the United States.

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I. Introduction

United States immigrant visas are a coveted legal right, for which there is extremely high demand compared to supply and intense competition. Immigration policy is also a central issue in contemporary American politics and took a central role in the 2016 presidential elections. As of the 2010 census, the foreign-born population made up approximately 13% of the United States population, totaling approximately 40 million people. (U.S. Census Bureau, *The Foreign Born Population in the United States*, 2010) This represents a century-long high in both the absolute quantity of immigrants residing in the United States and the proportion of the overall population that this cohort represents. (U.S. Census Bureau, *The Foreign Born Population in the United States*, 2010) For these reasons, it is important to fully understand demand for the right to immigrate and all flows of immigrants to the United States.

My project aims to provide insight into the determinants of demand for permanent immigrant visas by examining spousal visas. Recipients of spousal visas represent a flow of immigrants that exists outside of the quantity allocation ceilings of the preference-based system. Therefore, investigating variation in the quantity of spousal visas issued in a given year will provide insight into demand for immigration to the United States and its determinants. I also examine demographic characteristics of this immigrant population in order to understand the composition of the cohort of individuals who bypass the preference-based system in seeking admission to the United States.

In this paper, I create a model to predict changes in the level of demand for United States spousal immigrant visas. I test this model in its basic form, along with several robustness tests. I also examine whether demand for immigrant visas differs across gender and levels of educational attainment. The remainder of this paper is organized as follows: In section II, I first justify the choice of spousal visas to investigate demand for immigration rights as a whole. I also briefly summarize United States immigration policy and excess demand for immigrant visas. I then discuss applications of these topics in the context of using spousal visas as the variable of interest. Then, in Section III, I discuss the

microeconomic foundations for understanding the choice to immigrate and demand for spousal visa. With this framework is established, I use Section IV to provide detail on my identification strategy and dataset. I also address a sampling bias issue in this section. In Section V, I discuss my basic regression model and robustness tests. I also discuss models considering gender the educational attainment of spousal visa immigrants. In Section VI, I report my regression results. Section VII is discussion and I conclude in Section VI.

II. Using Spousal Visas to Better Understand Demand for Immigration

II.i. Debate on the Net Impact of Immigration

The net societal impact of immigration in the United States remains a widely debated question. Some scholars note the negative impact of potential wage depreciation and job losses caused by an influx in the population of lower-wage immigrant workers. Other scholars cite the beneficial effects of immigration, such as the added value brought by highly skilled immigrant workers. Many scholars also argue that immigrants will help to fill out the labor force in the face of demographic shifts and an ageing population in the United States. (Ortman et al., 2014) To be able to fully address these issues, we must understand current immigration policy and the determinants of demand for United States immigrant visas.

The United States immigration system is designed with two goals: [1] To prioritize familial reunification and [2] To attract highly skilled workers to the United States. Spousal visa recipients receive admission to the United States as permanent immigrants as part of the familial reunification goal, but they bypass the selection process associated with the preference-based system because immediate relatives of United States citizens are given special priority in the visa allocation process. Therefore, it is reasonable to believe that a portion of the pool of spousal visa applicants has sought the so-called “Green Card Marriage” in order to gain entry into the United States.² Thus, the cohort of spousal visa immigrants represents a population that exists on the margin of the legal immigrant

² The term “Green Card” refers to the legal documentation for permanent residency and is synonymous with “permanent immigrant visa.”

admission system. This population is of particular interest when considering the determinants of demand for immigration because of the freedom of variation allowed in spousal visa allocation.

Without study of the modes by which demand for immigration is currently met, we cannot fully address questions such as the net societal impact of immigration. This sort of study will give us greater insight into demand for visas. It will also provide an enhanced understanding of the characteristics of those demanding visas. By examining the spousal visas, I provide insight into demand for a relatively flexible mode of entry into the United States that may be attractive to many aspiring immigrants.

II.ii. United States Immigration Policy in Brief

This section briefly summarizes the major modes of entry into the United States for permanent immigrants. However, it must be acknowledged that United States immigration policy is extremely complicated and that this paper takes a simplified approach to a complex issue. This will result in certain generalizations with regards to policy and immigration decisions but with the overall goal of understanding the range of choices available to an aspiring United States immigrant and the limitations associated with each choice.

To be eligible for admission into the United States as a legal permanent resident, an individual must be [1] Sponsored by a family member; [2] Sponsored by an employer, or [3] Recognized as a refugee or asylee under United States law. With the exception of refugees, nearly all legal immigrants to the United States must have an individual United States citizen or permanent resident, or American domiciled company, who desires their admission to the United States as a Green Card holder. This individual within the United States must file a petition on behalf of the visa applicant.

Immigrants who are eligible to receive visas through familial connections can seek either a Green Card for immediate relatives of United States citizens or through the preference system if they are

not qualifying immediate relatives. Qualifying immediate relatives include spouses, unmarried children under age 21, and parents of citizens over age 21.³

Employment-based immigrant visas issued through a preference system similar to the family-based preference system. All employment-based immigrant visas are conditional on an offer of permanent employment from an employer in the United States. (U.S. Citizenship and Immigration Services, *Green Card Through Job*, 2013) Refugees and asylees can apply for a Green Card as a permanent immigrant one year after being admitted into the United States based on the governmental criteria for refugees and asylees. (U.S. Citizenship and Immigration Services, *Green Card Through Refugee or Asylee Status*, 2015)

Historically, ceilings are placed on the quantity of Green Cards allocated through the preference systems and refugee programs, both by category of admission and country of origin. The total worldwide family-based preference visa allotment in 2017 will be 226,000 visas, divided across preference categories within family preferences. (U.S. Department of State, *Annual Numerical Limits FY-2017*, 2017) The total worldwide employment-based preference visa allotment for 2017 will be 140,000, divided across various preference categories within employment. (U.S. Department of State, *Annual Numerical Limits FY-2017*, 2017) Historically, the United States has held a limit of 80,000 on Green Cards issued to refugees and asylees. (Zong and Batalova, 2015) In addition to these category ceilings, no more than 7% of visas issued in a given year may be issued to natives of any one independent country. (U.S. Citizenship and Immigration Services, *Per Country Limit*, n.d) Beyond the aforementioned systems of Green Card allocation, the United States also maintains a diversity visa program, by which it allocates up to 50,000 visas annually to individuals from countries with historically low rates of immigration to the United States. (U.S. Department of State, *Instructions for the 2018 Diversity Immigrant Program*, 2017) Eligible applicants must meet certain educational and

³ The category of “non-immediate” family members includes unmarried children over the age of 21, married children of any age, and siblings of United States citizens. Relatives of permanent resident, non-citizens are also permitted to participate in the preference-based system for United States immigrant visas through a lower-preference category.

employment experience requirements and are granted visas through a lottery system. (U.S. Citizenship and Immigration Services, *Green Card Through the Diversity Immigrant Visa Program*, 2014)

In terms of composition, family sponsored preference visas represent, on average, 25% of total visas issued annually. Employment-based preference visas represent 15% of total visas allocated. Visas issued to immediate relatives make up 44% of the total, with spousal visas equal to 57% of that cohort and 25% of the total. Refugees and asylees make up 11% of total visa recipients. Finally, diversity visas comprise the final 5% of total visas issued. Figure 1 plots visa allocation by class of admission for the 1992 to 2007 time period.

II.iii. Excess Demand for Immigrant Visas

Annual demand for U.S. immigrant visas far exceeds the number of visas allotted. For example, as of November of 2016, there were 4.3 million people on the family-sponsored preference category waiting list. There were 4.4 million people on the employment-based preference list. (U.S. Department of States, *Annual Report of Immigrant Visa Applicants in the Family-Sponsored and Employment-based preferences Registered at the National Visa Center as of November 1, 2016*, 2016) In 2015, approximately 10 million entered the diversity lottery for 50,000 immigrant visas. (U.S. Department of States, *DV 2015 – Selected Entrants*, n.d) Because of the very high demand as compared to availability of visas, eligible visa applicants often wait years before receiving a visa number through the preference system or winning admission through the diversity lottery, depending on their personal characteristics and demand for visas from their country of origin.

Because United States immigration policy prioritizes family reunification as one of its primary goals, immigrants who are immediate relatives of United States citizens receive special priority in the immigrant visa allocation process.⁴ There is no ceiling on the quantity of visas issued to immediate relatives of U.S. citizens. Therefore, qualified individuals do not have to wait in line for an available

⁴ Historically, there has never been a ceiling on visas issued to wives of United States citizens. Since 1952, this policy has also extended to husbands of United States citizens. (Jasso and Rosenzweig, 1990, p. 153-154) As of July 1, 2013, the United States began to consider the spouses in same-sex marriages in this category as well. (Napolitano, 2013)

visa number. (U.S. Citizenship and Immigration Services, *Green Card for an Immediate Relative of a U.S. Citizen*, 2016) This results in a relatively straightforward policy with a much faster application process, usually lasting between three and six months. (Bray, 2017)

II.iv. Application to Project

This project focuses particularly on the spousal visa system. This is because, in addition to the uncapped nature of immediate family visas, spousal visas present an opportunity to observe individual choice. It is much more difficult, if not impossible, to choose to be the parent or child of a United States citizen than to choose to marry one. Furthermore, it is much more difficult to observe individual-level characteristics of other categories of immigrants using publicly available data. The Department of Homeland Security provides summary statistics about the immigrant population, but there is no direct resource for examining immigrants on a micro level. My identification strategy works around this problem by using reported year of immigration and reported year of marriage in American Community Survey (ACS) data to identify individual spousal visa immigrants and their individual characteristics. I cannot use a similar strategy to identify other visa recipient categories because the survey does not include any direct question about visa category and marriage is the only visa category related to a life event that is reported on by the ACS. I discuss my identification strategy further in Section IV.

III. Microeconomic Foundations

III.i. Microeconomic Foundations of the Immigration Decision

In my project, I follow the microeconomic framework established by Jasso and Rosenzweig (1990) in *The New Chosen People* for considering United States immigrant visas as a scarce resource and the individual decision to immigrate in terms of preferences. (Jasso & Rosenzweig, 1990) According to this framework, an individual's decision to emigrate from his/her country to the United States is a function of his/her expected well-being in the source country and expected well-being at the destination, both of which are weighed alongside the cost of migrating. Well-being is a multi-dimensional factor dependent on country- and time-specific characteristics including economic, social,

and political conditions in both the source country and the destination country, as well as the filter through which the individual experiences these conditions. (Jasso & Rosenzweig, 1990, p. 62) An individual's personal endowment, including skills and pre-existing socio-economic status, will affect his/her ability to access potential improvements in well-being through migration. For simplicity, well-being can be considered as the product of an individual's skillset and the country-/time-specific return to skill, (Jasso & Rosenzweig, 1990, p. 63) or the product of an individual's endowment and the country-/time-specific return to endowment.

An individual will decide to immigrate to the United States if his/her expected well-being in the United States exceeds well-being in the home country less all costs associated with migration, provided that the individual is capable of correctly predicting well-being in both places over time. (Jasso & Rosenzweig, 1990, p. 62) Thus, assuming constant costs of migration across individuals, and that returns to skill are higher in the United States than in the source country, the most highly skilled individuals will be the most motivated to immigrate, as they receive the greatest returns to the decision. Therefore, as the costs of migration decrease, immigrating to the United States becomes an increasingly attractive option to individuals of lower skill sets who can now afford the cost of migration and access improved returns to skill. Thus, as immigration costs decrease, the pool of immigrants deciding to immigrate increases in size while the average skill level of the pool decreases. (Jasso & Rosenzweig, 1990, p. 63) However, "deciding to immigrate" represents only the decision to join the pool of *aspiring* immigrants, rather than *actual* immigrants, because demand for United States immigrant visas exceeds available spots.

III.ii. Determination of the Immigrant Pool

According to Jasso and Rosenzweig, the pool of immigrants who legally enter the United States is determined by two components: [1] a "self-selection" component, determined by individual-level decisions to immigrate based on expected benefit to well-being, and [2] an "eligibility-conferring" component, determined by decisions by United States citizens and residents to sponsor prospective

immigrants and the United States government on whether to admit these individuals. (Jasso & Rosenzweig, 1990, p. 6-7) The aspiring population of immigrants, determined by the self-selection criteria, and the eligible population, constitute two intersecting but not identical sets. The intersection of the aspiring immigrant and eligible-to-immigrate populations creates the set of eligible visa applicants: individuals who wish to immigrate and are qualified to do so. (Jasso & Rosenzweig, p. 6-7) The size of the population of eligible applicants depends on the stringency of the criteria for eligibility. Each category of admission with its associated rules creates its own set of eligible applicants. The union of all the sets of eligible applicants represents the total population of eligible United States visa applicants across visa types.

If eligibility is limited, either by decisions made by the United States government or individuals residing within the United States and self-selection remains constant or increases, competition for visas increases. If certain categories of admission have stricter eligibility-conferring criteria than others, aspiring immigrants may attempt entry through a more lenient admission category to meet their demand for immigration. Therefore, changes in the criteria of one category of admission may increase the population of eligible applicants through another category.

The set of individuals who immigrate using immediate relative visas can be viewed through the same lens. Specifically, the population of individuals seeking spousal visas in a given year would be composed of individuals who would be eligible to receive a visa through the other preference categories and individuals who would not otherwise be qualified for permanent immigrant visas. Otherwise eligible applicants may opt to enter through the spousal visa system because of its lower relative cost. Aspiring immigrants who would not otherwise be eligible for entry into the United States as a permanent resident may seek a spousal visa as their only possible legal mode of entry into the United States. It is important to note that both pools will include individuals who would marry United States citizens independent of the inferred immigration rights, but who apply for a spousal visa because of the relative ease associated with the application and allocation process compared to the preference-based system. These individuals

made their marriage decisions independently of immigration plans, and could be called the “love” cohort. This is the cohort for whom the marriage visa allocation system is intended. However, both the otherwise eligible and otherwise ineligible pools of spousal visa applicants will also include individuals who sought marriage to a United States citizen at least in part *because* of the inferred immigration rights.

The set of individuals who would otherwise be eligible for preference-based visas but seek entry through the marriage visa system are different from the pool of eligible visa applicants in the preference system because, to them, marriage represents a lower cost to migration than does waiting. Whether an individual views marriage as the lowest-cost mode of immigration depends on individual characteristics as well as access to the international marriage market within the home country. As the opportunity cost of staying in the source country increases, i.e., as returns to skill in the United States increase as compared to returns to skill in the source country, overall demand for United States immigrant visas will increase, and it will become more competitive to obtain a Green Cards through the preference-based system. Therefore, the cost of waiting will increase, and marriage will become an increasingly viable option in the eyes of aspiring immigrants as its relative costliness decreases.

Accordingly, the quantity of applicants for spousal visas in a given year will be positively correlated with overall demand for United States immigrant visas. Of the various categories of admission for permanent immigrants to the United States, it represents the category with the greatest flexibility in quantity issued. Therefore, it is an obvious choice for aspiring immigrants either unwilling or unable to immigrate through the preference system and who prefer marriage to a United States citizen to staying in their home country or immigrating illegally. Therefore, demand for marriage visas will be positively correlated with demand for visas overall.

IV. Description of Identification Strategy and the Dataset

IV.i. Identification Strategy

My primary strategy of identifying “Green Card marriage” participants and their associated characteristics relies on American Community Survey (ACS) microdata retrieved from IPUMS USA. I used the ACS samples from 2008 to 2015 to measure immigration levels for the time period from 1992 to 2007. I selected these years because of the relative consistency of country borders and sovereignty, as well as data availability for the countries of origin. Compiling data from all of the surveys allows me to access a larger overall sample size than I could access by using only one sample. By limiting the final year to 2007, I am able to use the 2008-2015 ACS samples without fear of unevenly sampling the various immigrant populations by counting one year of arrival more than others.⁵

I identify spousal visa immigrants as those whose reported year of marriage is equal to reported year of immigration, and whose spouse is either a native-born or naturalized United States citizen.⁶ Since the ACS is a 1-in-100 sample of the United States population, I obtain my estimate by multiplying the observed number of immigrants by 100 and dividing by 8 to account for the repeated sampling. This provides a roughly adjusted measure of the number of immigrants received by country by year.

This methodology has limitations. It will not identify individuals who married a U.S. citizen in any preceding year to the year of immigration but still entered the United States on a spousal visa. It will not identify spouses who married and immigrated on a spousal visa and then divorced and remarried, because the questionnaire text only asks for the year of most recent marriage. In addition, it will not capture individuals who immigrated illegally into the United States and married in order to receive permanent residency. It also has the potential to include spouses of United States citizens who are legally residing in the United States, who married in the year of entry, but who possess a non-immigrant visa (type K-3), rather than an immigrant visa (type IR-1 or CR-1). It will also fail to identify individuals who immigrated to the United States legally using some other visa and married in the same

⁵ For example, including the year 2008 while also considering immigrants who arrived in 2008 would sample the population that arrived in 2008 only once, while sampling the populations arriving from 1992-2007 eight times. Thus, I would systematically undercount the immigrants arriving in the years of the surveys I used.

⁶ Conditional on naturalization of the spouse occurring before immigration of the individual.

year, but after entry. However, given the difficulty of securing an immigrant visa, this cohort is likely to be small.

Despite the limitations of this identification strategy, the estimate it produces will likely be proportional to overall demand for immigrant visas. It identifies the cohort of individuals whose immigration and marriage decisions are the most temporally tied. Therefore the cohort that I identify may be of specific interest to policy makers concerned with the prototypical “Green Card marriage.” Because it identifies this subset of marriage visa recipients whose marriage and immigration decisions are the most temporally tied of the spousal visa cohort, this identification strategy may show a stronger observed effect on marriage visa immigration and marriage visa demographics of socioeconomic conditions than on the population of individuals immigrating to the United States using spousal visas as a whole. While my identification strategy does not capture the spousal visa population as a whole, this smaller cohort may also be of specific interest to policy makers interested in understanding the economic motivations and modes for entry into the United States. In addition, the advantage of using ACS data is that it provides the opportunity to examine the individual characteristics of immigrants. I specifically examine gender composition and education level of immigrants in my investigation.

When considering demand for immigrant visas overall, it is important to note that there are barriers to entry in this marriage market. To access the market for marriage to United States citizens, one must have sufficient knowledge of a language spoken by those citizens, some way to facilitate contact with them, and some other immeasurable degree of common ground. Measuring marriage visas will never capture demand that was held by people who did not have the appropriate resources or willingness-to-pay to access this mode of entry into the United States or individuals who did have “demand for the right to immigrate” but preferred or were able to meet this demand through other immigration avenues.

To address some of the limitations in my identification strategy, I also construct a dataset of entries by country of origin and by year using the *Yearbook of Immigration Statistics* published annually

by the Department of Homeland Security, which list permanent immigrant visa entrants issued in a given year, delineated by class of admission and region of last residence. I perform the same basic regression on this data in order to determine the strength of my model in predicting overall demand for spousal visas.⁷

I plot my estimate of same year marriage/immigration spousal visa recipients along with the officially reported numbers of total spousal visas issued in Figure 2. The correlation between my estimate of same year marriage/immigration individuals and the officially reported number is 51%, indicating that, on average, 51% of individuals entering the United States in a given year on a spousal visa married within the same year. My estimate does not pick up on an increasing trend in spousal visa issuance overall, as reported in the *Yearbook*, either because the level of same year married same year immigration individuals has stayed constant, while demand from individuals who have been married longer has increased or because of sampling/identification error. I further discuss issues with sampling error below. In addition, there is a notable increase in my estimate at the year 2000. This is inconsistent with the reported number and may appear simply because survey respondents round to 2000 when reporting their year of marriage and entry.

IV.ii. Note on Emigration and the Use of ACS Sample

In a given year, a number of former immigrants to the United States will emigrate. Consequently, each subsequent year of sampling, the ACS will observe a smaller population for groups that immigrated in a prior year, despite the fact that the number of people who immigrated in that year did not actually change.⁸ This phenomenon will cause a systematic underestimation of immigrants in a given year that will increase as the time between the year of immigration and the year of sampling

⁷ The *Yearbook of Immigration Statistics* does not consistently publish class of admission by country of last residence. I construct a dataset for the years for which data on all countries of origin is available (1998-2003).

⁸ For example, using the 2008 ACS and the 2015 ACS will result in two different estimates of the population that immigrated to the United States in 2007. Due to emigration, the estimate produced by the 2015 ACS will be systematically smaller than the estimate produced by the 2008 ACS because it will not capture those individuals who immigrated in 2007 but subsequently emigrated between 2008 and 2015.

increases. In Figure 3, I plot the difference between the number of immigrants observed in each year of entry as observed by the 2015 ACS and the number of immigrants as observed by each preceding sample. The 2015 ACS nearly always produces a lower estimate of the number of immigrants received in a given year than the preceding surveys. This differential grows throughout the period of observation, indicating that emigration occurs at an increasing rate over time. However, the fact that the gap between the 2008 and 2015 estimates is relatively small in 1992 indicates that the rate of emigration may increase and then decrease over time as immigrants become increasingly integrated into the United States.

In addition to the emigration phenomenon, the population of the United States simultaneously increases at approximately 1% per year. As a result, my method of combining the ACS samples and dividing by 8 will not create an accurate and precise measure of immigrants received in a given year. The later ACS Samples will systematically underestimate the number of immigrants received and will also be underweighted, exacerbating the problem. This may be the reason that my estimate does not pick up on the increasing trend in spousal visa issuance as reported in the *Yearbook* data.

Therefore, as a robustness test, I later incorporate variables to my regression that indicate the percent of observed immigrants from a given country in a given year that are observed by each ACS. Because the rate of emigration is likely to change over time, I do not attempt to weight my samples by the expected number of emigrants. I also perform regressions using the *Yearbook of Immigration Statistics* data to affirm that my estimates do not result in excessively different results than the official numbers due to emigration-derived sampling error. It is important to note that my regressions on education and gender should be considered with a degree of caution because there may be an endogeneity issue wherein education level or gender may be correlated with propensity to emigrate.

IV.iii. Description of the dataset

In addition to data from the ACS, I obtain yearly aggregate data on immigrants and refugees accepted into the United States from the Department of Homeland Security's annual *Yearbook of*

Immigration Statistics. As previously stated, I consider the period from 1992 to 2007. I use 1992 as the first year because it follows the 1991 breakup of the Soviet Union and Yugoslavia and simplifies consideration of immigrants from this region.⁹ I limit the universe of considered source countries to nations that are recognized as Independent States by the United States Department of State.¹⁰ I use the CIA World Factbook to identify inconsistencies in country definition and potential sources of confusion in the identification of country of origin over time. I exclude Czechoslovakia completely and consider the Czech Republic and Slovakia only from 1993 onward. I do not consider countries/regions for which the immigrants are reported jointly in the ACS data.¹¹ I also consider Montenegro as part of Serbia until 2002 and consider them as separate entities thereafter. I do not consider countries for which descriptive data is consistently unavailable. For a full list of countries considered, as well as further detail on decisions to exclude countries from my analysis, see Appendix Table 1.

I retrieve descriptive data on the countries of origin and the United States from a variety of sources. For data on GDP, labor force size, unemployment, education expenditure as a percentage of GDP, population, and age distribution of population, I rely primarily on the World Bank World Development Indicators datasets. To ensure consistency in measure, I use GDP at purchasing power parity, expressed in 2011 international dollars.¹² I calculate an estimate of wage in a country by dividing the GDP by an age-eligible estimate of the labor force. Where necessary, I supplement the yearly World Bank data for education expenditure as a percentage of GDP and age distribution with static figures provided by the CIA World Factbook. For years where GDP or labor force is missing, I use the average growth rate in that country to extrapolate.¹³ Since data on education expenditure is less frequently

⁹ Reporting on country of origin for immigrants from this region before 1992 does not consistently and clearly distinguish between the member states.

¹⁰ I also include Hong Kong as well because there is consistently available data on the region as well as a relatively clear “country” definition.

¹¹ This includes immigrants from Israel and Palestine and the Republic of the Congo and the Democratic Republic of the Congo, as well as from the Yugoslavia and Czechoslovakia member states before their respective years of dissolution.

¹² I use 2011 international dollars because that is the year that the World Bank selected as the base year.

¹³ Countries for which the whole range of GDP or unemployment figures is missing are excluded entirely.

available but has lower variance by year, I use available years to construct an estimate of average education expenditure as a percentage of GDP in each country. I then multiply this figure by the annual reported GDP at PPP and divide by the yearly student-aged population (aged 0-14) to get an estimate of education expenditure per student.

To generate a variable expressing distance between each country and the United States, I use a dataset of the world's airports created by Jano Patokallio through OpenFlights.org. I use GoogleMaps to confirm the latitude and longitude of each airport and to supplement when the airport data was missing. I then identify the top twenty gateway airports for international travel in the continental United States, using the list provided in the Census Bureau's *2012 Statistical Abstract of the United States*.¹⁴ Next, I calculate the distance between each airport in the world dataset and each of the top twenty international airports in the United States.¹⁵ I take the minimum distance (i.e. the distance between the closest continental United States airport and in-country pair) as the distance between countries.¹⁶ In my regressions, I discuss the effect of distance in units of 1000 miles. This measure of distance is intended to provide an approximation of the distance an individual must travel in order to reach the United States. It does not consider issues such as flight patterns or direct flights, merely the distance between the starting and ending point of a journey to the United States. This measure does not adequately treat the adjacency of Mexico and Canada to the United States and upward biases the distance between those countries and the United States. To account for this issue, I also create an indicator variable equal to one for Mexico and Canada, indicating adjacency to the United States. These combined variables provide a

¹⁴ I exclude Honolulu International Airport because it is not in the continental United States and would downward bias distance from Asian countries. I use the *2012 Statistical Abstract* rather than a more recent one simply because the top gateway airports are not identified in every year's report and it was reported in the *2012 Abstract*. I expect that the top gateway airports will be relatively consistent throughout the period of interest and until 2012.

¹⁵ I use Stata "geodist" and "geonear" functions to calculate the geodetic distance between airports. Geodetic distance calculates the length of the shortest curve between two points along the surface of the earth using a mathematical model of the surface of the earth.

¹⁶ I also limited Russian airports to the major international airports in Moscow and Saint Petersburg, so as not to downward bias the distance with small airports in the far east of the country which seem relatively close to the United States' west coast but do not represent actual points for departure on a journey to the United States.

superior measure of country-to-country distance than border-to-border or capital-to-capital distance because they consider multiple possible points of departure and arrival.

In addition to these measures of distance, I recognize that certain regions may have different intrinsic characteristics due to culture and other geographic factors. And so, I consider regional effects in my model. I define regions based on the world subregion definitions used by the United Nations Department of Statistics. While this system of regional division is certainly not the only legitimate organizational scheme, I use it because it represents a commonly used system from a respected producer of research on global development.

In addition, I construct indicator variables for whether nations are members of the British Commonwealth or the *Organisation Internationale de la Francophonie* (OIF, the International Organization of French-speaking Nations), using the lists of members provided on their respective websites. I obtain data on members of the European Union and the Schengen Area and their respective years of entry from the official website of the European Union.

I also use data on United States outbound travel and military bases. I obtain data on top United States outbound travel destinations from the annual *Profile of U.S. Resident Travelers Visiting Overseas Destinations* published by the Office of Travel and Tourism Industries. These figures include both business and leisure travel. I consider a country to be a top outbound travel destination if it is reported as a top outbound travel destination in a profile in any year during 1992-2007 period. Using this information, I construct an indicator variable for top US outbound travel destinations.

I also retrieve data on the number and locations of military personnel stationed abroad from Tim Kane's "Troops Abroad" dataset, provided by the Heritage Foundation. I express military presence in units of 100 individual personnel stationed in the country. I also construct an indicator variable for whether English is listed as a widely spoken language in each country, based on the languages listed by the CIA World Factbook.

V. Models Considered

I test several models in this paper. The basic regression is described in Section V.i. The subsequent regressions build off of this basic model to provide robustness checks of the results, described in Section V.ii. I then examine gender differences in the determinants of immigration and posit a model to predict the education level of immigrants, described in Sections V.iii. and V.iv., respectively.

V.i. Basic Model

Equation 1 describes the first regression model I test in my investigation. I regress demand for immigrant visas from country c in year t on wage in country c in year t , wage in the United States in year t , unemployment in country c and in the United States in year t , indicator variables for country c 's membership status in the OIF and in the Commonwealth, membership status in the European Union and Schengen Area of country c in year t , whether country c adjacent to the United States, the distance between the United States and country c , expressed in 1000s of miles, whether English is a widely spoken language in country c , the natural log of education expenditure per student in country c in year t , whether country c is a top destination for United States outbound travel, the number of troops stationed in country c in year t , and regional fixed effects.

$$\begin{aligned}
 (1) \quad \ln imm_{c,t} &= \alpha + \beta_1 \ln wage_{c,t} + \beta_2 \ln US wage_t + \beta_3 unemployment_{c,t} + \beta_4 US unemployment_t \\
 &+ \beta_5 OIF_c + \beta_6 Commonwealth_c + \beta_7 EU_{c,t} + \beta_8 Schengen_{c,t} + \beta_9 adjacent_c \\
 &+ \beta_{10} distance_c + \beta_{11} English_c + \beta_{12} \ln education_{c,t} + \beta_{13} top\ destination_c \\
 &+ \beta_{14} troops_{c,t} + \beta_{15} subregion_c + \varepsilon_{c,t}
 \end{aligned}$$

The dependent variable, $\ln imm_{c,t}$, represents the natural log of immigrants from country c in year t per 100,000 in the population of country c . I adjust by the population of the source country in the year of immigration because countries with larger populations may be more likely to send more immigrants than countries with smaller populations simply because the potential pool of immigrants is larger. I am interested in understanding the determinants of the immigration decisions made within the

populations of the source countries, rather than the magnitude of their populations. Therefore, adjusting by population size makes my regression more informative. I adjust by the population in 100,000s because the flow of immigrants to the United States is small relative to the overall population size for many countries. In addition, I consider only the “age-eligible” population because some populations are heavily skewed toward age groups either too young or too old to be realistic candidates for marriage-based emigration to the United States. I calculate the age eligible population by multiplying the fraction of the population in the source country aged 15-64 by the total population, generating a yearly estimate of the (roughly) age-eligible potential immigrant population. I consider the natural log in order to observe level changes in immigration rather than absolute numbers. This dependent variable is intended to represent level changes in demand for United States immigration visa. I refer to the immigration adjusted to age-eligible population throughout the paper as “immigration per capita” or “immigration” throughout the discussion of results.

The first explanatory variables I consider are the wage in the source country and the wage in the United States. As described in section IV, to calculate wage, I use the GDP at PPP and divide by the working-aged population. I calculate the working aged population by multiplying the population by the percentage of the population aged 15-64. This does not account for labor force participation but provides a rough estimate of the wage in the country. I consider the natural log transformation of the wage because it has a positively skewed distribution and I believe that wage is likely to have a non-linear effect on propensity to immigrate. Wage is intended to represent the potential returns to skill. I hypothesize that a higher wage in the source country will decrease immigration because it makes the differential of returns to skill between the United States and the source country smaller. Conversely, I expect higher wage in the United States to increase immigration because it will increase the United States to source country differential of returns to skill.

The next variables I consider are the unemployment rates in the source country and the United States. I hypothesize that an increased unemployment rate in the source country will have a positive

effect on immigration to the United States while increased unemployment in the United States will have a negative effect on immigration. I expect this because higher unemployment reflects greater difficulty in finding work, effectively reducing expected returns to skill.

I also include indicators for membership in the British Commonwealth, the OIF, the European Union, and the Schengen Area.¹⁷ I hypothesize that membership in the British Commonwealth or the OIF represents an established political and linguistic link between the source country and an alternative destination country (England or France, respectively). This may reduce the cost of immigration to the alternative destination country and increase its attractiveness relative to the United States. Therefore, I expect membership in either organization to have a negative effect on the number of immigrants received from a country.

Similarly, I view membership in the European Union and particularly the Schengen Area as providing strong potential alternative destinations to the United States with lower cost to migration, because of reduced physical distance, more flexible criteria for immigration within the regions, and the avoidance of personal costs associated with leaving one's region of origin. Therefore I expect membership in the European Union and/or the Schengen Area of free movement within the European Union to have negative effects on the number of immigrants sent to the United States. I allow these variables to vary over time because membership status in both organizations was changing during the time period of interest.

I include my constructed measure of travel distance between countries and the indicator variable for adjacency because I believe that distance represents an increased cost to migration, not only in terms of the initial cost of the journey to the United States, but also in the continued experience of distance from the country of origin. Increased distance will also result in a greater cost to connecting with a United States citizen because of the lower quantity of visitors that would visit the source country, all

¹⁷ The Schengen Area is the zone within the European Union composed of 26 nations where international borders with other member nations are abolished for the free and unrestricted movement of people, goods, services, and capital. (Schengen Visa Info, 2017).

else equal. I therefore hypothesize that increased distance will reduce the number of immigrants received in a given year from a source country while adjacency will have a positive effect. I express my measure of distance in units of 1000 miles.

I consider whether English is widely spoken in the potential country of origin because I believe that immigrants with higher probability of speaking English will have both higher expected returns to skill in the United States due to the absence of a language barrier and lower costs associated with migration via spousal visa because of the greater ease with which the aspiring immigrant will be able to find a potential American spouse. Therefore, I expect English to have a positive effect on the number of immigrants received from a source country in a given year.

I also include a variable for education expenditure per student as a measure of educational opportunity experienced by the individual making the immigration decision. I expect education to have a positive effect on immigration per capita because it is indicative of higher skill and more highly skilled individuals have higher incentive to immigrate, as discussed in the introduction. I consider the natural log transformation of education expenditure per student because I expect the effect of education expenditure to be better captured by level changes in expenditure, rather than linearly with dollar-per-student-spent.

I consider an indicator variable for whether the source country is a top outbound travel destination for United States outbound travel because aspiring immigrants in those countries have a greater possibility of contact with marriage-eligible U.S. citizens. I also consider the number of United States troops stationed within the country for the same reason. I predict that by increasing the ease of making contact with a U.S. citizen, thereby lowering the search-cost associated with migration, these variables will have a positive effect on the number of immigrants received by a source country. I express the number of United States military personnel in units of 100 people stationed in the country.

Finally, I include regional fixed effects, using the regions as defined by the United Nations Statistical subregions, in recognition that there may be regional characteristics that may affect immigration to the United States that are not captured in this model.

V.ii. Robustness tests:

Because of the sampling bias caused by emigration, I next consider an adjusted version of the first model but with sample effects. This model includes variables that indicate the percentage of observed immigrants from a country c in year t that were observed by sample s . I consider yearly samples from 2008-2015, so I add 8 sample effect variables.

In my third regression, I consider country fixed effects in addition to the existing regional fixed effects. This is in recognition of the fact that even within regions, countries differ culturally, economically, and politically in ways that are not captured by my model.

In my fourth regression, I consider year fixed effects in addition to the existing regional fixed effects. I consider year fixed effects in recognition of the fact that during certain years, there may be a global event that affects propensity to migrate overall or affects the desirability of immigration to the United States specifically. For example, there may be a political or economic crisis in the United States that does not affect other comparable potential destinations as strongly, such as Australia or Canada will lower the total number of spousal immigrants received in that year.¹⁸

I also consider a model that includes country and year fixed effects, in addition to the regional effects but I do not report it here because all coefficients lose significance. Additionally, attempting to address the intertemporal nature of immigration decisions, I consider a model incorporated lags on GDP and unemployment in the source country and the United States but do not find significant results.

V.iii. Gender

¹⁸ I also considered including a variable that was the average of the wage in Australia and Canada in my regressions, but found that wage in those countries was extremely correlated with the United States wage and therefore its inclusion did not produce significant a significant explanatory effect.

The composition of the spousal immigrant pool is heavily skewed toward women. On average, 70% of spousal immigrants received by the United States in a given year are female. Therefore, it is worthwhile to consider how the determinants of spousal visa demand differ by gender. I perform the same regression as listed above, but I separate the pool by gender. Figure 4 shows the overall gender composition of immigrants to the United States by year. I perform the same regression as described in Equation 1, but I separate the sample by gender. I consider the natural log of female/male immigrants over the population of the source country expressed in units of 100,000 people as my dependent variable.

I hypothesize that outbound travel and military personnel will disproportionately affect women. I expect United States Outbound Travel and military personnel to have significantly stronger effects on the number of women immigrating from a country than they do men because of the skew toward men in both the cohort of United States international travel and military personnel. I expect the effect of wage to differ depending on country and their level of gender equality in pay as compared to the United States. I predict that higher wage countries will generally have a lower wage differential across gender. Therefore, I hypothesize that wage will have a negative effect on the number of female immigrants entering the United States in a given year.

V.iv. Education

Next, I posit a model to examine the education composition of immigrants. The ACS provides data on the highest level of schooling achieved by each immigrant. I use this data to divide the immigrants into four categories of highest level of education completed: [1] Elementary school, [2] Middle school, [3] High school, and [4] College. I create four dependent variables corresponding to these educational level categories. I consider the quantity of immigrants with each level of education adjusted by the population in 100,000s of country c . To arrive at the dependent variable, I take the natural log of this population-adjusted quantity of immigrants. This will express level changes in immigration by educational classification, adjusted by source country population.

I regress the quantity of immigrants possessing each of the four categories of educational attainment on the natural log of wage in country c in year t , the natural log of wage in the United States in year t , unemployment in country c in year t , the number of United States military personnel stationed in country c in year t , expressed in 100s, whether country c is a top outbound travel destination for United States residents, whether country c is adjacent to the United States, the distance between country c and the United States, expressed in thousands of miles, whether English is a widely spoken language in country c , and the natural log of education expenditure per student in country c in year t . This regression is summarized in Equation 2.

$$\begin{aligned}
 (2) \ln Education_{imm_{c,t}} &= \alpha + \beta_1 \ln wage_{c,t} + \beta_2 \ln US wage_t + \beta_3 unemployment_{c,t} + \beta_4 troops_{c,t} \\
 &+ \beta_5 top\ destination_c + \beta_6 adjacent_c + \beta_7 distance_c + \beta_8 English_c \\
 &+ \beta_9 \ln Education_{c,t} + \varepsilon_{c,t}
 \end{aligned}$$

I expect that an increased military presence will lower number of college educated immigrants because of the lower education level of military personnel. However, I think a base will raise the number of high school educated immigrants because it will be necessary to have a certain degree of schooling in order to communicate with the soldiers. I predict that being a top outbound travel destination will raise the education level of immigrants because business travelers and international leisure travelers are likely to be more highly educated. I predict that if English is a widely spoken language in the country, it will reduce the “educational cost” of becoming qualified to marry a U.S. citizen, which likely will require mastery of English unless the American spouse is fluent in the dominant language of the aspiring immigrant. Therefore, I expect that English being widely spoken to have a negative effect on the number of college educated and high school educated immigrants. I expect that individuals from countries with higher levels of education expenditure will be more educated because the government has a greater focus on education.

As discussed in the introduction, I predict that education level of spousal immigrants as a whole will decrease as wage in the United States increases because the opportunity cost of not immigrating becomes higher and the lower skill individuals will be more able to surmount the costs of migration. The same effect should indicate that a lower wage in the source country would increase the differential between the expected well-being in the United States versus the source country, but a lower wage might mean that the prospective immigrant does not have the economic means to surmount the cost of migration to access the improved well-being. Therefore I do not have a clear expectation for sign on wage in the source country.

VI. Results

In this section, I discuss my results. In Section VI.i., I discuss my basic regression results. In VI.ii., I address the results of the regression with sample fixed effects. Then, in Section VI.iii., I examine results from the inclusion of country fixed effects. In VI.iv., I discuss the inclusion of year fixed effects. I address the results from running the basic regression using data from the *Yearbook of Immigration Statistics* in Section VI.v. In VI.vi., I discuss the results for the regressions on the sample divided by gender. Finally, I report results from the regressions explaining educational attainment in Section VI.vii.

VI.i. Basic Regression Results

The results from my basic regression are displayed in Table 1. The R-squared value is 0.58, indicating that my model explains a majority of the observed variation but that there remains room for improvement in specification. I find that a 1% increase in the wage in a potential source country is associated with a 13% increase in immigration per (with 95% confidence interval between a 7% and 20% increase in the immigration rate per capita). A 1% increase in the wage in the United States is associated with a 102% increase in the immigration per capita from a potential source country (95% confidence interval of 50% to 153%). The positive effect of wage in the source country is surprising,

especially in the context of the observed responsiveness to increased wages in the United States as motivating immigration.

Higher unemployment in the source country has a small but significant effect on the per capita rate of immigration. A 1% increase in unemployment is associated with a 1% increase in immigration from the source country (with 95% confidence interval from 0.1% to 2%). Conversely, a 1% increase in the United States unemployment rate results in a 10% decrease in immigration per capita from the source country (95% confidence interval between a 5% and a 16% decrease). Taken together these results are consistent with my hypothesis that individuals are more likely to immigrate to the United States as the gap in expected return to skill between the home country and the United States widens. In this case expected return to skill is affected by expected ease of finding employment.

In contrast to my expectations, membership in the OIF increases immigration per capita by 90% (95% confidence interval 78% to 102%) and membership in the British Commonwealth increases immigration per capita by 36% (95% confidence interval 23% to 49%). These results are contrary to my hypothesis. They may indicate that political ties between members of the OIF and the Commonwealth and France or the United Kingdom, respectively, are not strong enough to facilitate easier immigration to these alternative destinations. However, it might be the case that membership is indicative of other country qualities that might increase the likelihood of immigrating to the United States, which would explain the positive effect on immigration. For example, membership in the OIF or Commonwealth might indicate a degree of exposure to cultures similar to the United States that makes emigration more attractive or facilitate greater comfort with foreign languages even if widely spoken languages remain constant. It is also important to note that two of the largest source countries are included in OIF (Canada) and the Commonwealth (Australia), which may be the cause of the results. Consistent with my hypothesis, membership in the European Union and the Schengen Area associated with negative effects on immigration. However, these effects are not significant.

Distance has a negative and significant effect on immigration per capita, but its effect is not significant. Conversely, adjacency in the United States increases immigration per capita by 152% (95% confidence interval between 117% and 188%). These results are consistent with my hypothesis that distance is an important determinant of immigration because increased distance represents an increased cost to immigration.

If English is widely spoken in the source country, it results in a 57% increase in immigration per source country capita (95% confidence interval 47% to 67%). This is consistent with my hypothesis that English being widely spoken will increase immigration per capita by lowering the cost to immigration.

Education expenditure has a small but significant effect on immigration, a 1% increase in education expenditure resulting in a 7% decrease in immigration per capita (95% confidence interval 6% to 8% decrease). This is in contrast to my hypothesis, because I thought educational expenditure would be indicative of higher skills and that higher skills would increase motivation to immigrate. However, due to the fact that I used current education expenditure rather than lagged, these results may indicate that education expenditure increases opportunity as well as prospective opportunity for future children within countries and decreases motivation to emigrate.

Being a top outbound travel destination does not appear to have a significant effect on the number of immigrants from a given country. Finally, an increase of 100 troops in a country is associated with a 0.1% increase in immigration per capita (95% confidence interval of (0.1% to 0.2%). This is a very small positive effect, however, it indicates that 1 in every 1000 United States military personnel is bringing back a spouse after being stationed abroad, which is actually a rather large real effect when considering the size of the United States military. This is consistent with my hypothesis that increased military presence increases access to marriage-eligible United States citizens and reduces the search costs to marriage. Regional fixed effects are included in the regression but coefficients are not reported.

VI.ii. Regression with Sample Fixed Effects

The addition of sample fixed effects raises the R-squared value to 0.68, indicating an improvement in the explanatory power of the model.

However, wage in the host country maintains its positive, significant effect with the addition of sample effects. A 1% increase in the wage of the host country associated with a 27% increase in the number of immigrants per capita sent by a source country (95% confidence interval from 15% to 39%). A possible motivation for the positive effect on wage may be that higher-wage countries are more similar to the United States and have similar economies, such that individuals feel more comfortable immigrating. This would indicate that the effect of wage is more driven by cost to migration than it is by the differential in return to earnings.

The natural log of wage in the United States has a very strong effect in this regression with a 1% increase in the wage of the source country associated with a 104% increase in the number of immigrants sent. (95% confidence interval from 26% to 182%). This indicates that even if individuals are less sensitive to the wage in the home country, they are responsive to increased returns to skill in the United States.

A 1% increase in unemployment is still associated 1% increase in immigration per capita, but is no longer significant (95% confidence interval between a decrease of 6.8% and an increase of 2.5%), while a 1% increase in the United States unemployment is associated with a 6% decrease in immigration per capita. Membership in the OIF and membership in the Commonwealth maintain their strong positive effects on immigration per capita with membership in each associated with a 52% (95% confidence interval 29% to 76%) and a 79% (95% confidence interval 56% to 101%) increase in immigration per capita, respectively. However, the effect of membership in the European Union and the Schengen Area change sign and are insignificant with the inclusion of sample effects.

Adjacency maintains its positive effect but the effect loses significance. The effect of distance changes sign and is positive, indicating that an increase in distance of 1000 miles is associated with a 7% increase in immigration per capita (95% confidence interval 4% to 11%). The effect of being a top

outbound travel destination is negative and significant, with being a top outbound travel destination associated with a 50% decrease in immigration per capita (95% confidence interval from a 28% to a 71% decrease). The number of troops maintains the same small positive effect of a 0.1% increase in immigration associated with an increase of 100 troops in the country (95% confidence interval 0% to 0.2%).

Together, these results call into question the validity of my model and the identification strategy. It is unclear whether the changes in sign and significance of many of the variables are reflective of overspecification, misspecification in terms of the use of the ACS data, or fundamental problems with the model itself.

VI.iii. Country fixed effects

I next test country fixed effects. With the inclusion of country and regional fixed effects, the R-squared value increases to 0.89, indicating that the model is highly predictive of variation in data. Including both country fixed effects along with regional fixed effects causes the effect of wage in the source country to become positive and lose its significance. Wage in the United States maintains a very strong positive effect, with a 1% increase in the wage in the United States associated with a 96% increase in immigration per capita (95% confidence interval 63% to 129%). A 1% increase in unemployment is associated with a 1% increase in immigration per capita (95% confidence interval from 0.2% to 2%). A 1% increase in unemployment in the United States is associated with a 10% decrease in immigration per source country capita (95% confidence interval from a decrease of 7% to a 13% decrease). These results are generally directionally consistent with the results from my basic model.

The effects of membership in the OIF and of membership in the Commonwealth lose their significance. Membership in the European Union is also not significant. However, membership in the Schengen Area has negative and significant effect, with membership associated with a 19% decrease in immigration per capita (95% confidence interval from a decrease of 2% to decrease of 35%).

Adjacency to the United States has a strong positive effect, representing a 485% increase in immigration per capita (95% confidence interval from 190% to 780% increase). Distance does not have a significant effect. Nor do the effect of being an English speaking country, expenditure on education, being a top tourist destination, and military presence in the country.

VI.iv. Year Fixed Effects

I next regress the natural log of adjusted immigrants per capita on the same regression, but including year fixed effects along with the regional fixed effects. The results for this regression are displayed in Table 1, Column E. The inclusion of year-of-immigration fixed effects only slightly increases the R-squared value over the basic model, to 0.59, indicating that general world conditions that vary by year are not particularly important in determining the immigrant pool relative to country effects. In this regression, the effect of wage in the source country is positive, with a 1% increase in wage associated with a 14% increase in immigration per capita (95% confidence interval 7% to 21%). The effect of wage in the United States loses its significance with the inclusion of yearly fixed effects which is logical because it only varies over time and not over country.

Consistent with my basic model, a 1% increase in unemployment in the source country is associated with a 1% increase in immigration per capita (95% confidence interval 0% to 2%). The effect of United States unemployment loses its significance.

Memberships in the OIF and in the Commonwealth maintain their positive and strong effects of 90% (95% confidence interval 78% to 101%) and 36% (28% to 49%) in immigration per capita, respectively. Membership in the European Union and membership in the Schengen Area are not significant. Adjacency to the United States maintains its strong positive effect and increases immigration per capita by 198% (95% confidence interval 152% to 244%). Distance has a negative but insignificant effect. English being a widely spoken language maintains its positive effect and increases immigration per capita by 57% (95% confidence interval 46% to 67%). Also consistent with my basic regression results, a 1% increase in education expenditure is associated with a 7% decrease in immigration per

capita (95% confidence interval 6% to 8% decrease). Being a top travel destination has an insignificant effect, while an increase of 100 troops stationed in the source country maintains a small significant effect of 0.1% on immigration per capita (95% confidence interval 0 to 0.2%).

VI.v. *Yearbook of Immigration Statistics* regression

In order to further test the validity of my identification strategy, I next employ data from the *Yearbook of Immigration Statistics* from the Department of Homeland Security to test the same model. This data is only available for all countries from 1998-2003, so I test it on those years. I adjust the count of spousal visa immigrants in a given year to reflect the immigrants adjusted by the population of the source country in the year of immigration in 100,000s. The R-squared value for my regression is 0.585, similar to that obtained using the data I obtained from the ACS.

Wage in the source country has a significant and negative effect on immigration when using the *Yearbook* data. A 1% increase in wage is associated with a 50% decrease in immigration (95% confidence interval 39% to 61% decrease). Wage in the United States has a large and significant positive effect on the number of immigrants per capita received. A 1% increase in wage in the U.S. is associated with a 576% increase in quantity of immigrants from a country received (95% confidence interval from 166% to 999%). This is consistent with the results from my basic regression. Unemployment in the source country and unemployment in the United States do not have significant effects in the *Yearbook* regressions. Membership in the OIF and membership in the Commonwealth both maintain their positive effects, with membership in the OIF related to a 58% increase in the number of immigrants per capita (95% confidence interval from 41% to 74%) and membership in the Commonwealth associated with a 72% increase in the number of immigrants per capita (95% confidence interval 41% to 74%). Membership in the European Union and membership in the Schengen are not significant when using the *Yearbook* data.

Adjacency to the United States has a strongly positive effect on the number of immigrants per capita. Adjacency is associated with a 343% increase in immigrants received (95% confidence interval

217% to 469%). Every thousand miles of distance are associated with a 15% decrease in immigrants received (95% confidence interval of 11% to 19% decrease). This is consistent with the results from my basic regression. Also consistent with my basic regression results, if English is a widely spoken language in the country, it increases the immigration per capita from that country by 42% (95% confidence interval 18% to 66%). Education expenditure does not have a significant effect. If a country is a top travel destination for United States citizens, it increases immigration per capita by 205% (95% confidence interval 179% to 231%). An increase of 100 military personnel is associated with a 0.3% increase in immigration, according to the *Yearbook* data (95% confidence interval 0.1% to 0.5%).

VI.vi. Gender Regressions

Performing the basic regression on two samples divided by gender reduces the R-squared value to 0.437 for women and 0.454 for men. This indicates that a majority of the observed variation is not explained by the model. Results for the regressions on the cohorts divided by gender are included in Table 2.

For women, the effect of wage in the source country is associated with an 11% decrease in female immigration per capita (95% confidence interval from an 8% to a 14% decrease). This is consistent with my hypothesis. In comparison, a 1% increase in the wage in the source country results in an 8% decrease in the per capita number of men who immigrate (95% confidence interval from a 5% to an 11% decrease).

Conversely, a 1% increase in the wage in the United States is associated with a 57% increase in female immigration per capita (95% confidence interval from 18% to 97%). For men, 1% increase in wage in the United States is associated with a 55% increase in the number of immigrants per capita (95% confidence interval from 22% to 89%).

A 1% increase in unemployment in the source country is associated with a 1% increase in female immigration per capita (95% confidence interval 1% to 2%). In contrast, 1% increase in United States unemployment is associated with a 6% decrease in female immigration per capita (95%

confidence interval of a 2% to a 10% decrease). Comparatively, 1% increase in the unemployment rate is associated with a 1% increase in male immigration (95% confidence interval of 0% to 1%), while a 1% increase in unemployment in the United States is associated with a 6% decrease in male immigrants (95% confidence interval from a 2% to a 9% decrease). Together, the results for wage and unemployment for both men and women are consistent with my hypothesis that the higher the positive differential between returns to skill in the United States versus the home country, the higher immigration will be.

Membership in the OIF and membership in the British Commonwealth are associated with a 36% (95% confidence interval 27% to 45%) and a 22% (95% confidence interval 13% to 32%) increase in female immigration per capita. Memberships in the OIF and in the Commonwealth also have positive, significant effects on male immigration, increasing male immigration by 25% (95% confidence interval 17% to 32%) and 46% (95% confidence interval 38% to 54%), respectively.

Membership in the European Union results in a 30% decrease in female immigration per capita (95% confidence interval from a 12% to a 48% decrease), while membership in the Schengen Area has a negative but insignificant effect on female immigration per capita. Membership in the European Union and the Schengen Area do not have significant effects on male immigration. These results provide weak support for my hypothesis that potential immigrants from countries that are members of the European will have a wealth of other countries to which to immigrate with lower cost to migration, decreasing the relative attractiveness of immigration to the United States.

Adjacency to the United States results in an increase of 173% in the number of female immigrants per capita from a given country (95% confidence interval 131% to 318% increase). For every 1000 miles of distance between countries, female immigration per capita decreases by 3% (95% confidence interval from a 2% to 5% decrease). In comparison, adjacency to the United States increases the number of male immigrants by 135% (95% confidence interval from 99% to 170%) while for every

thousand miles of distance between the United States and source country, male immigration decreases by 4% (95% confidence interval from a decrease of 3% to a decrease of 5%).

If English is a widely spoken language in the source country, it results in a 30% increase in the number of female immigrants per capita (95% confidence interval 22% to 37%). In comparison, this characteristic is associated with a 16% increase in the number of male immigrants (95% confidence interval 9% to 13% increase).

Education expenditure does not have a significant effect on female immigration. However, for men, education expenditure has a negative effect on immigration, with a 1% increase in education expenditure per student associated with a 1% decrease in male immigration (95% confidence interval 0% to 2% decrease).

If the country is a top outbound travel destination, it results in a 32% increase in the number of female immigrants per capita (95% confidence interval 23% to 40%). This characteristic is associated with a 22% increase in male immigration (95% confidence interval 15% to 29%).

Finally, for every 100 troops stationed in the country, there is an associated 0.1% increase in female population per capita immigrating into the United States (95% confidence interval from 0% to 0.1%), while American troops stationed in the source country do not have a significant effect on male immigration per capita.

VI.vii. Education Regression Results

For the education regressions, I regress the different quantity of individuals possessing each level of education adjusted by the source country population in 100,000s on the explanatory variables listed in the model described in Section V.iv. The results for the college-educated cohort are described in VI.vii.a. The results for the high school-educated cohort are reported in VI.vii.b. Then, I discuss the results for the middle school and elementary school-educated cohorts in Sections VI.vii.c. and VI.vii.d., respectively.

VI.vii.a. Results for the College-Educated Cohort

I perform the regression of the natural log of college-educated immigrants per capita first. The results are displayed in Table 3, Column B. The R-squared value for this regression is very low at 0.14, indicating that the model does a poor job of explaining variation in the data. I find that wage in the source country does not have a significant effect on the number of college-educated immigrants per capita, but that a 1% increase in wage in the United States is associated with a 316% increase in the number of college-educated immigrants received (95% confidence interval from 176% to 455%). These results are consistent with the hypothesis that more highly educated immigrants are motivated to seek higher returns to skill in the United States, though the reason for the insignificance of wage in the source country is unclear. A 1% increase in unemployment in the source country is associated with a 4% increase in college-educated immigrants per capita (95% confidence interval of a 1% to a 7% increase). This indicates that the ease of finding work does contribute to the decision to immigrate to the United States.

The number of American troops stationed in the country does not have a significant effect on the number of college-educated immigrants. If the country is a top outbound travel destination, the number of college-educated immigrants per capita increases by 124% (95% confidence interval 89% to 159%). Adjacency and distance do not have significant effects, perhaps indicating that college-educated individuals have the necessary capital to overcome the costs to migration in order to immigrate. English being a widely spoken language does not have a significant effect on the number of college-educated immigrants. This may indicate that college-educated individuals are likely to speak English anyway, whether or not it is widely spoken in the country as a whole. A 1% increase in education expenditure is associated with a 4% increase in the number of immigrants with a college education (95% confidence interval 1% to 7%).

VI.vii.b. Results for the High School-Educated Cohort

Next, I test the model on the number of high school educated immigrants. Results are displayed in Table 3, Column C. The R-squared value is very low at 0.14. Again, wage in the source country does

not have a significant effect on the number of high school-educated immigrants, while the wage in the United States is associated with a strong positive effect. A 1% increase in wage in the United States is associated with a 158% increase in the number of high school educated students per capita (95% confidence interval from 20% to 295%). Again, these results indicate responsiveness to increased returns in the United States, but less sensitivity to conditions in the source country. The effect of unemployment is positive on the number of high school educated immigrants but not significantly different from 0.

The presence of troops does not have a significant effect on the number of immigrants with a high school education. If the country of origin is a top United States outbound travel destination, the proportion of the immigrants in a given year who have a high school education over the source country population increases by 105% (95% confidence interval 70% to 140%). This is consistent with my hypothesis that outbound United States travelers will select relatively highly educated partners.

Neither adjacency nor distance has a significant effect on the number of immigrants per capita who have a high school degree, perhaps indicating again that those with a high school degree have high enough expected returns to skill in the United States to overcome distance as a cost to migration. If English is widely spoken in the country, the number of immigrants per capita with a high school degree increases by 45% (95% confidence interval 14% to 77%). This may be indicative of the fact that while most college-educated individuals may generally speak English, high school education is less likely to teach English at a sufficient level for marriage to a United States citizen unless English is widely spoken in the country. Contrary to my expectation, educational expenditure does not have a significant effect on the number of students with a high school education.

VI.vii.c. Results for the Middle School-Educated Cohort

Next, I perform the same regression for the number of immigrants with only a middle school education. Results are displayed in Table 3, Column D. The R-squared value for this regression is 0.27, indicating slightly more explanatory power than the two previous, but still at a relatively low level.

Wage has a negative and significant effect on the number of immigrants with only a middle school education. A 1% increase in wage is associated with a 69% decline in the number of immigrants arriving with only a middle school education (95% confidence interval from a 52% decrease to an 86% decrease). In contrast, neither wage in the United States nor unemployment in the source country has a significant effect on the number of immigrants arriving with only a middle school education. This may indicate that individuals with lower skill are more responsive to conditions in the source country than conditions in the United States or that their location on the wage distribution makes it so that the differential in the expected returns to skill between the United States and the source country becomes significantly smaller when their wages increase even slightly.

Military presence does not have a significant effect on middle school educated immigrants. However the country being a top outbound travel destination results in a 147% increase in the number of middle school educated immigrants (95% confidence interval 119% to 176%). Considering that being a top United States outbound travel destination also had a strong positive effect for college educated and high school educated immigrants, it may just be that United States outbound travel facilitates enough contact between source country inhabitants and United States citizens that marriages occur across educational level.

Adjacency also has a strong positive effect. Adjacency is associated with a 390% increase in immigrants with only a middle school education (95% confidence interval 268% to 512%). For every additional 1000 miles of distance, there is an associated 6% decrease in the number of immigrants with only a middle school education (95% confidence interval between a 1% and an 11% decrease). These results are consistent with my hypotheses about reduced cost to migration adding to the quantity of low-skilled immigrants that would immigrate because their net benefit to expected well-being would increase.

If English is a widely spoken language in the source country, there is an associated decrease of 54% in the number of middle school educated immigrants (995% confidence interval between a 28%

and an 80% decrease). This, again, may be indicative of a condition where unless English is a widely spoken language in the country, a middle school education is not enough to facilitate adequate communication skills for marriage to a United States citizen. Again, contrary to my hypothesis, educational expenditure does not have a significant effect on the number of immigrants arriving with only a middle school education.

VI.vii. Results for the Elementary School-Educated Cohort

The results for immigrants arriving with only an elementary school education are very similar to the results for immigrants arriving with only a middle school education. These results are displayed in Table 3, Column E. Wage in the source country has a strong negative effect of a 1% increase in wage associated with a 31% decrease in the number of immigrants arriving with only an elementary school level education (95% confidence interval from a 19% to a 43% decrease). Wage in the United States does not have a significant effect but unemployment in the host country is also negatively and significantly associated with the arrival of elementary school educated immigrants. Again, this may indicate that individuals with lower skill are simply more responsive to conditions in the source country than conditions in the United States because of awareness. It could also mean that their location on the wage distribution makes it so that the differential in expected returns to skill between the United States and the source country becomes significantly smaller when their wages increase even slightly.

A 1% increase in unemployment is associated with a 3% decrease in the number of elementary school educated immigrants (95% confidence interval from a 1% to a 5% decrease). This indicates that elementary school educated individuals actually immigrate to the United States less often when work becomes more scarce in their home country. However, this may be tied to the available capital to overcome the cost the migration rather than a direct response to worsened labor market conditions in the source country.

Military presence does not have a significant effect on the number of elementary school educated immigrants. However, being a top outbound travel destination is associated with an 81%

increase in elementary school educated immigrants (95% confidence interval 61% to 101%). This would confirm that being a top tourist destination positively affects the number of immigrants from all education levels. Adjacency has a strong positive effect approximated as a 385% increase (95% confidence interval 301% to 468%). Every additional 1000 miles of distance is associated with a 4.3% decrease in the number of elementary school educated immigrants (95% confidence interval between a 1% and 7% decrease). These results are consistent with my hypothesis that the number of lower skill individuals immigrating will be highly responsive to reduced costs to migration. However, if English is a widely spoken language, there is an associated 63% decrease in the number of elementary school educated immigrants (95% confidence interval shows a decrease from 45% to 81%). This effect may reflect that even if English is widely spoken, individuals with very low levels of education will be the least likely to be able to speak it. However, it is unclear why it would negatively affect rather than leave unchanged the number of elementary school educated individuals. The estimated effect of education expenditure is not significantly different from 0 at the 95% confidence level.

Together, these results suggest that more highly skilled individuals respond more strongly to expected returns to skill in the United States than they do to expected returns in the source country, while lower skill individuals respond more strongly to returns to skill in the source country than in the United States. This may be indicative of wage distribution in those countries and the maximum possible return to skill experienced by individuals with different skill sets. This may be the cause of the variation in the sign and significance in the effect of wage estimated by the basic regressions and the robustness checks. The effects of distance, adjacency and being a top United States outbound travel destination were consistent with my hypothesis that smaller distance and the lower associated migration costs would particularly affect lower skill individuals.

VII. Discussion

VII.i. Joint Discussion of Basic Regression and Robustness Checks

Overall, my results indicate that wage and unemployment in the source country and the United States both play a role in determining the number of immigrants received from a given country. The fact that wage has a positive and significant in the basic regression as well as in the regressions with the addition of sample fixed effects and year fixed effect provides relatively strong evidence for a positive relationship between demand for spousal visas and wage in the source country. The estimated effect of wage with the inclusion of country fixed effects is also positive, though its 95% confidence interval indicates that it is not significantly different from 0. The positive effect of wage on immigration per capita contradicts my hypothesis that individuals would be less likely to immigrate if the real wage in their host country decreased. However, the positive effect on wage may indicate that the cost to migration and that an increased wage allows individuals to afford the cost of immigration to the United States. The fact that regressing the data from the *Yearbook of Immigration Statistics* on the same model results in a significantly negative coefficient on wage is concerning with regards to interpreting immigration results in this way. The effect obtained by regression on the officially reported number indicates that demand for spousal immigrant visas decreases as the earnings differential between the United States and the potential source country becomes smaller.

Interestingly, the effect on the wage in the United States is positive across all versions of the basic regression, with and without robustness tests. This indicates that individuals are more incentivized to immigrate to the United States if their expected returns to skill there increase, thereby increasing the wage differential between the United States and their country of origin. This is not consistent with the positive effect on the wage in the source country associated with the results from the ACS generated data. It must be noted however, that the apparent rounding-produced increase in reported immigrants in the year 2000, which coincides with a peak in the United States business cycle, may also be biasing the estimate of the effect of wage in the United States upward.

The results from the educational attainment regressions may provide a hint as to how to reconcile these contradicting results. Changes in the wage in the source country do not have a significant

effect on the number of college-educated or high school-educated immigrants received in a given year. However, the sign on college-educated immigrants is positive. In contrast, an increase in the wage in for the middle school and elementary school-educated cohorts has a negative and significant effect on the number of immigrants received of each of the those educational attainment levels. This indicates that the effect of an increased wage in the source country in deterring immigration is stronger among lower skill workers. This is consistent with the theoretical framework, which says that higher skilled individuals are more incentivized to immigrate because they will receive the highest returns to skill. Lower skilled workers are the quickest to lose their incentive to emigrate as the wage in the source country increases because they have the lowest maximum of potential returns to skill.

The fact that the *Yearbook* data picks up on this effect while the ACS data does not may indicate several things. It may be that the ACS-produced estimate is wrong due to the sampling issued discussed at the beginning of the paper. It may also be that immigrants who marry in the same year as they immigrate are more highly skilled than immigrants who marry more than a year prior to immigration. However, a third possibility, which is that marriage in the same year as immigration represents a higher cost to migration than many individuals can afford. Thus, as the wage increases, the number of immigrants arriving who married in the same year as immigration actually increases because the increased wage reflects greater ability to migrate. It may be that immigration is simply easier from higher wage countries and, thus, immigrants from those countries can facilitate the process faster and are more able to coordinate marriage and immigration both within the same year because of this accelerated process. If the ACS picks up on this type of immigrant who can overcome the associated migration cost to facilitate an accelerated immigration process, it may be that the observed positive effect on wage is indeed a real effect while the effect on wage for the overall *Yearbook*-reported population is still negative because it includes more lower-skill individuals who cannot overcome the cost to marriage and immigration within the same year but do eventually achieve spousal visa immigrant status.

The consistently positive and significant effect of higher unemployment on immigration supports this hypothesis, that although sensitivity to returns is not clearly demonstrated by the effect of wage, immigrants *are* considering expected returns in both destinations. The fact that United States unemployment has a negative effect and significant effect on immigration for the basic, sample fixed effects, and country fixed effects regressions further supports this hypothesis. However, the fact that the effect on United States unemployment is insignificant but positive for the fixed effects and *Yearbook* regressions means that the hypothesis does not have completely rigorous support.

Interestingly, both membership in the OIF and membership in the Commonwealth are generally associated with strongly positive and significant effects, with the exception of the effect of OIF when using the *Yearbook* data. This may be indicative of some kind of cultural tie to western developed economies on the part of the source country that facilitates a lower cost to migration. This would result the observed positive effect of membership on immigration to the United States. It appears that membership in the European Union does not have the same cultural effect, or that that effect takes a backseat to the choice of alternative migration destinations for members of European Union countries. The effect of alternative options is only strengthened if the country is a member of the European Union and the interior Schengen Area as well. This causes the negative effect generally observed of membership in the European Union and the Schengen Area on immigration to the United States, with the exception of the regression performed using *Yearbook* data. The fact that these effects are not significant when performed using the *Yearbook* data indicates that the same effect might not be true for all spousal visa recipients and it is not clear why the effect would be stronger for same year marriage and immigration, unless membership in the European Union and/or the Schengen Area was actually more indicative of bureaucratic burden preventing swift marriage and emigration, rather than ample choice of destinations.

As predicted, the effect of distance is generally strongly negative, with the exception of the results including sample effects and country fixed effects. Adjacency has a consistently positive effect.

Together, these results tentatively confirm my hypothesis that distance increases cost to migration, thereby decreases the number of immigrants that will be received from a country at a greater distance. Also consistent with my hypothesis is the positive effect of English on immigration to the United States, which is reported across the board. Having English as a widely spoken language in the source country is associated with decreased cost to migration in terms of learning English, and higher expected returns in the destination country because of the absence of a language barrier.

While for ACS-generated estimate indicates that increased education expenditure in the source country decreases the number of spousal immigrants received, the effect is not consistently significantly different from 0 across regressions at the 95% confidence level. Using the data from the *Yearbook* results in a positive effect of increased education expenditure on education. Therefore, I cannot make a statement with regards to the effect of education expenditure per student on the number of immigrants received from a given country.

Similarly, the effect of being top United States outbound travel destination is not clear. The effect changes sign across the basic regressions and checks for robustness, not revealing a particular trend. When the basic regression is performed using *Yearbook* data, the effect of being a top destination is strongly positive and significant. Therefore it is difficult to make any statement as to the conclusive effect of being a top United States outbound travel destination on same year marriage and spousal visa immigration decisions within a country, but we could say that it increases spousal visa immigrants as a whole.

Increased United States military presence has a consistent small but significant effect on the number of spousal immigrants received by a country, both with the ACS estimate of the same year marriage and immigration cohort and spousal visa recipients as a whole. This is consistent with my hypothesis that the presence of United States military personnel decrease the difficulty of finding an American Spouse, thereby reducing the search costs migration and increasing the number of immigrants received.

VII.ii. Discussion of Gender Regression Results

Without performing additional hypothesis testing, it is not possible to make definitive conclusions about gender differences simply by running regressions on the separate cohort. However, it is possible to gain intuition by observing differences in significance and sign across cohort. One notable result is that performing the basic regression on the separate male and female cohorts results in a negative and significant effect of wage on immigration whereas performing the same regression on the non-gender separated sample results in the estimation of a significant positive effect. In terms of difference across gender, the only notable real difference is that United States military presence has a stronger effect for women than it does for men. However, both cohorts experience strongly positive and significant increases in immigration with an increase in the United States military presence in the country. Therefore, I cannot make any conclusive statements regarding the effect of gender differences in determining by-country patterns of immigration from these results.

VII.iii. Discussion of Education Regression Results

As stated in Section VII.i, the results from regression educational attainment on the variables specified by Equation 2 may indicate that individuals with lower skills are more responsive to returns to skill in the source country while individuals with higher skills are more responsive to returns to skill in the United States when making their immigration decision. This would be a result of the variation allowed in maximum expected return to skill by different skill levels and is a could help to explain some of the sign changes observed in the effect of wage on the overall immigrants received from a country. The effects of unemployment are also different across skill level. For the college-educated and high school educated cohorts, an increase in unemployment in the source country is associated with a significant increase in immigration to the United States, while the opposite is true for middle school and elementary school-educated cohorts, though the effect is not significant for them. This may indicate that although low skill individuals would prefer to immigrate as unemployment increases, they may not have

the capital necessary to be able to afford the migration costs and thus will be less likely to immigrate to the United States than their higher skilled peers.

The effect of United States military presence is not significant for any cohort. However, being a top tourist destination has a positive effect on the number of immigrants received from every educational attainment cohort. This indicates that United States outbound travel has a strong positive effect on immigration; regardless of educational attainment, it will be relatively easy to find a potential spouse.

In keeping with expectations, adjacency does not have a significant effect on immigration by the more highly educated cohort, but if a country is adjacent it has a strongly positive and significant effect on the number of immigrants from the two lower educational attainment categories. This is consistent with the hypothesis that lower skill workers will be less able to afford expensive costs to migration, so a decrease in effective cost, such as by close proximity, will result in an increase in the number of low skill immigrants received. Distance has a significant and negative effect across level of educational attainment.

Curiously, if English is widely spoken in the country, it has a significant and positive effect on the number of highly educated immigrants but a significant and negative effect on the number of lower educated immigrants. This may be indicative of an endogeneity issue, wherein higher education levels on average may be generally associated with countries where English is widely spoken but not the dominant language.

The college-educated cohort is the only cohort that sees a significant increase in immigrants received as a result of increased educational spending. This is logical, as it represents the highest level of educational attainment receiving a boost from increased educational opportunity.

Together the results from the educational cohorts indicate that immigration behaviors different across skill level, likely due to the ability to absorb costs associated with migration and also the distribution of the maximum returns to skill an individual might access through immigration.

VIII. Conclusions

The primary takeaway from this investigation is that economic conditions *do* matter in determining demand for spousal visas for permanent immigration to the United States. Further investigation must be made into the differing effect of wage on immigration from highly skilled and lower skilled workers, but it is clear that spousal visa immigrants come to the United States not solely for love, but also in search of economic opportunity. Demand for spousal immigrant visas from a country will be determined by economic conditions in that country, as well as by factors that facilitate contact with American citizens and cultural common ground. These takeaways, along with the specific level changes associated with each explanatory variable, are valuable in determining the net societal value of spousal visa immigrants. The observed effects from the ACS estimate of “Green Card marriages” participants marrying in the same year of entry is somewhat different from the estimate generated by using official data on total spousal visas as a whole, but that difference may be indicative of a different type of spousal visa applicant who is more directly and obviously motivated by economic conditions than is the general spousal visa applicant.

VIII. Tables and Figures

Figure 1: Visas Issued by Class of Admission

Figure 1 plots the total annual quantity of visas issued by class of admission and the proportion of total visas that each category represents during the 1992-2007 period. On average, family sponsored preference visas represent on average 25% of total visas issued annually. Employment-based preference visas represent 15% of allocated visas. Visas issued to immediate relatives make up 44% of the total, with spousal visas equal to 57% of that cohort and 25% of the total. Refugees and asylees make up 11% of total visa recipients. Diversity visas comprise the final 5% of total visas issued.

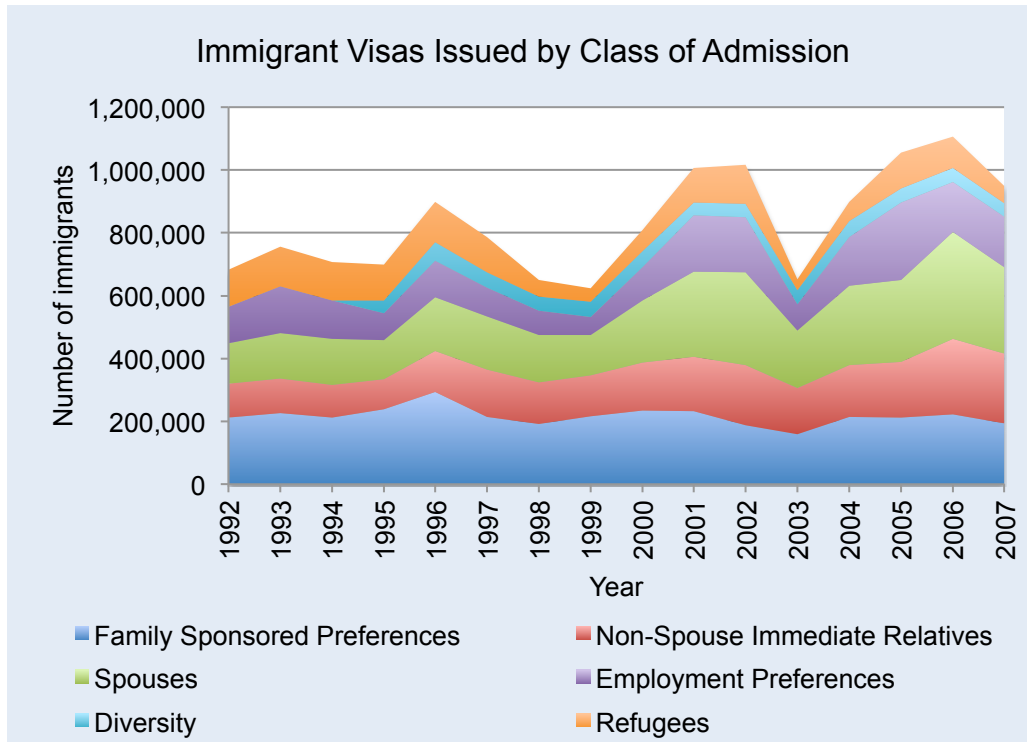


Figure 2: Comparing ACS Estimate with *Yearbook Data*

Figure 2 shows the ACS generated estimate of spousal visas, along with the official Yearbook of Immigration Statistics reported number of spousal visas issued, and the sum of the reported employment-based and family-based preference system visas issued. The ACS estimate has a correlation of 51% with the official number of spousal visas allocated. The ACS estimate picks up only a subset of spousal visas because it identifies only individuals who marry in their year of entry. The ACS estimate also does not pick up in the increasing trend in visa issuance as reported by the ACS. There is also a spike in the ACS estimate at 2000, which may be indicative of rounding on the part of survey participants.

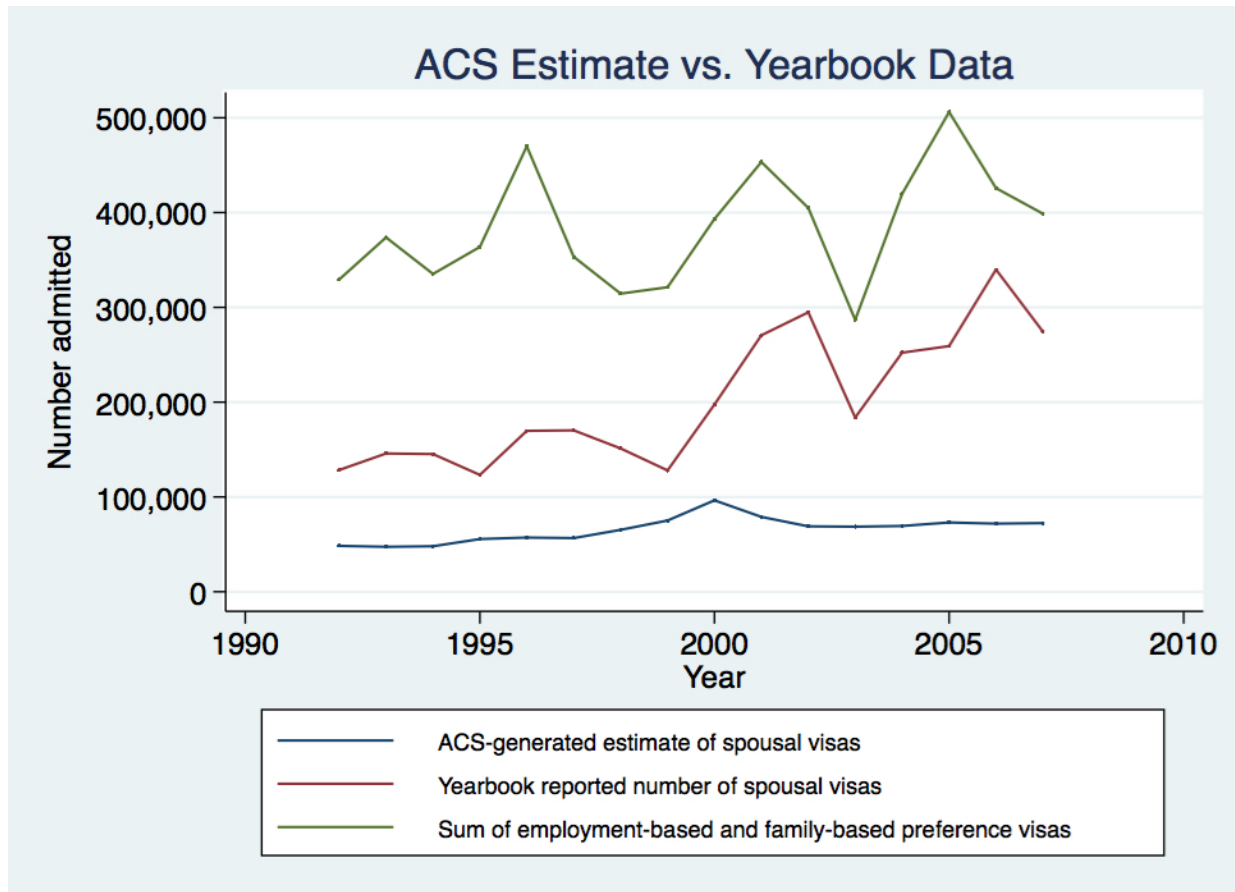


Figure 3: Sampling Differences

Figure 3 shows the difference calculated between the number of immigrants arriving in year t as reported by the 2015 ACS and the number of immigrants arriving in year t as reported by each preceding ACS. Each line denotes a different preceding ACS, from 2008-2014. The 2015 ACS generally provides a lower estimate than the preceding ACS-produced estimates. In addition, the difference between the 2015 ACS and the preceding ACS generally increases over the period of observation and the period of sampling, indicating that emigration occurs at different rates throughout time. *Note:* The y-axis denotes the difference in 100s between the numbers of immigrants observed by each sample.

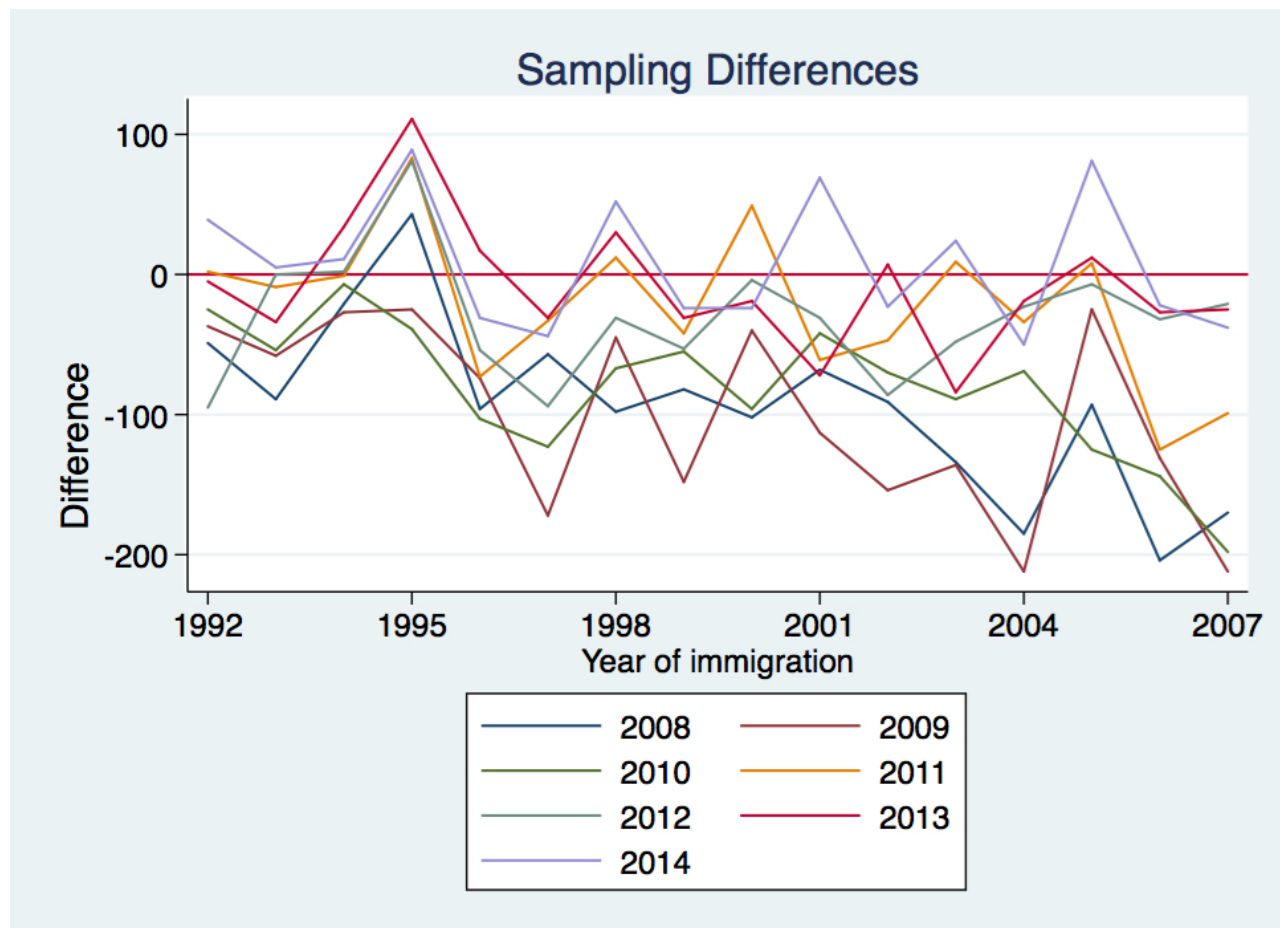


Figure 4: Immigration by Gender

Figure 4 plots the number of immigrants received across the time period divided by gender based on my estimation. On average, the spousal immigrant cohort is 70% female.

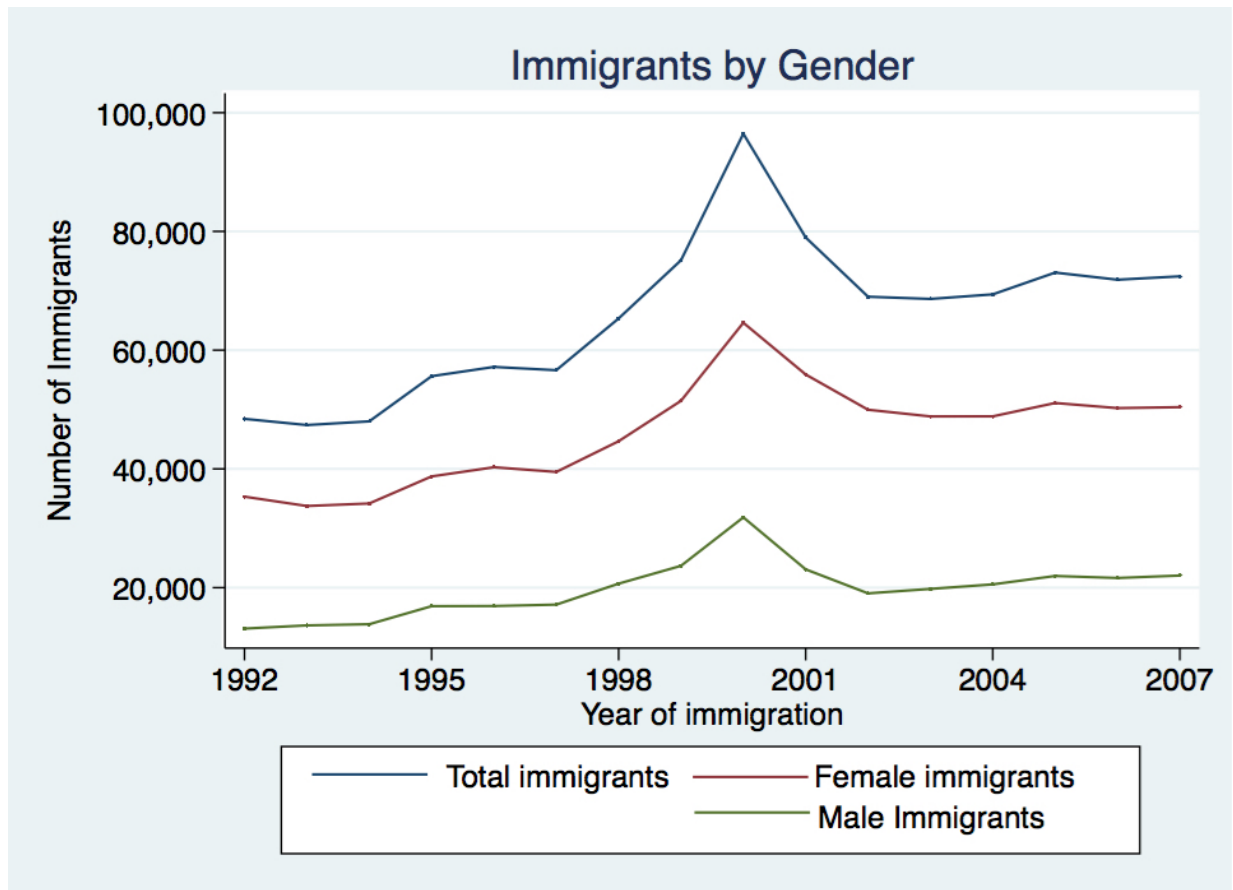


Table 1: Basic Regression Results with Robustness Tests

Table 1 displays the results from the basic regression and the corresponding robustness check regressions. Column A lists the explanatory variable of interest, while Column B lists the estimated coefficients from the basic regression (as described by Equation 1 in Section V). Column C lists the results when sample fixed effects are added. Column D lists the results from the regression including country fixed effects. Column E lists the year fixed effects results. Finally, Column F lists the results obtained by using data from the *Yearbook of Immigration Statistics* to perform the basic regression model (as described by Equation 1 in Section V). The last row reports the R-squared value for each regression.

A	B	C	D	E	F
	Basic	With sample fixed effects	With country fixed effects	With year fixed effects	Yearbook Of Immigration Statistics
<i>lnWage</i>	0.138 (0.034)	0.274 (0.061)	0.054 (0.053)	0.146 (0.034)	-0.504 (0.055)
<i>lnUSwage</i>	1.020 (0.265)	1.041 (0.394)	0.968 (0.171)	3.479 (11.117)	5.775 (2.061)
<i>Unemployment</i>	0.009 (0.061)	0.008 (0.009)	0.014 (0.006)	0.009 (0.004)	0.016 (0.009)
<i>US unemployment</i>	-0.102 (0.027)	-0.059 (0.040)	-0.099 (0.015)	0.210 (1.137)	0.003 (0.084)
<i>OIF</i>	0.901 (0.066)	0.524 (0.122)	15.226 (8.710)	0.904 (0.061)	0.017 (0.137)
<i>Commonwealth</i>	0.363 (0.066)	0.786 (0.114)	16.029 (10.629)	0.369 (0.066)	0.444 (0.142)
<i>European Union</i>	-0.110 (0.110)	0.351 (0.326)	-0.075 (0.096)	-0.085 (0.112)	0.331 (0.353)
<i>Schengen Area</i>	-0.205 (0.125)	0.194 (0.288)	-0.183 (0.087)	-0.263 (0.129)	0.040 (0.378)
<i>Adjacent</i>	1.982 (0.233)	0.229 (0.537)	4.853 (1.519)	1.965 (0.235)	3.434 (0.633)
<i>Distance (in 1000s of miles)</i>	-0.015 (0.009)	0.075 (0.019)	1.431 (0.897)	-0.146 (0.010)	-0.147 (0.020)
<i>English</i>	0.570 (0.053)	0.117 (0.883)	8.969 (5.058)	0.547 (0.054)	0.201 (0.118)
<i>lnEducation</i>	-0.070 (0.006)	-0.122 (0.011)	-0.024 (0.018)	-0.070 (0.006)	0.042 (0.012)
<i>Top destination</i>	-0.043 (0.057)	-0.496 (0.111)	6.832 (4.363)	-0.045 (0.057)	2.047 (0.132)
<i>Troops (in 100s)</i>	0.001 (0.000)	0.001 (0.000)	0.290 (0.118)	0.188 (0.184)	0.003 (0.001)
<i>Constant</i>	-10.472 (3.065)	-11.258 (4.531)	-55.661 (29.156)	-40.356 (131.806)	-55.598 (23.191)
<i>Includes Regional Fixed Effects</i>	X	X	X	X	X
<i>Includes Sample Fixed Effects</i>		X			
<i>Includes Country Fixed Effects</i>			X		
<i>Includes Year Fixed Effects</i>				X	
<i>R-squared</i>	0.582	0.675	0.891	0.586	0.5682

Table 2: Gender Regressions

Table 2 shows the results for the basic regression performed on the sample divided by gender cohort. Column A lists explanatory variables tested by the model. Column B lists the results for the male cohort and Column C lists the results for the female cohort. The R-squared value is reported in the bottom row.

A	B	C
	Male	Female
<i>lnWage</i>	-0.079 (0.015)	-0.110 (0.017)
<i>lnUSwage</i>	0.564 (0.174)	0.598 (0.203)
<i>Unemployment</i>	0.007 (0.002)	0.013 (0.003)
<i>US unemployment</i>	-0.056 (0.018)	-0.060 (0.021)
<i>OIF</i>	0.244 (0.390)	0.356 (0.046)
<i>Commonwealth</i>	0.466 (0.041)	0.234 (0.48)
<i>European Union</i>	-0.023 (0.080)	-0.298 (0.093)
<i>Schengen Area</i>	-0.173 (0.951)	-0.196 (0.111)
<i>Adjacent</i>	1.344 (0.182)	1.726 (0.212)
<i>Distance</i> (in 1000s of miles)	-0.039 (0.006)	-0.033 (0.007)
<i>English</i>	0.159 (0.034)	0.279 (0.040)
<i>lnEducation</i>	-0.010 (0.003)	-0.007 (0.004)
<i>Top destination</i>	0.217 (0.037)	0.315 (0.043)
<i>Troops</i> (in 100s)	0.185 (0.142)	0.474 (0.165)
<i>Constant</i>	0.185 (0.141)	-4.232 (2.380)
<i>Includes Regional Fixed Effects</i>	X	X
<u>R-squared</u>	0.454	0.437

Table 3: Education regressions

Table 3 shows the results for the regressions of educational cohort on the model posited in Section V, Equation 2. Column A lists the variables of interest. Column B represents the results for the college-educated cohort. Column C represents the results for the high school-educated cohort. Column D represents the results for the middle school-educated cohort. And Column E represents the results for the elementary school-educated cohort. The last row reports the R-squared value for each regression.

A	B	C	D	E
	<u>College</u>	<u>High School</u>	<u>Middle School</u>	<u>Elementary School</u>
<i>lnWage</i>	0.083 (0.106)	-0.042 (0.105)	-0.689 (0.087)	-0.312 (0.060)
<i>lnUSWage</i>	3.155 (0.712)	1.582 (0.702)	0.008 (0.584)	0.213 (0.402)
<i>Unemployment</i>	0.038 (0.014)	0.024 (0.014)	-0.017 (0.012)	-0.030 (0.008)
<i>Troops</i> (in 100s)	0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
<i>Top</i> <i>Destination</i>	1.217 (0.179)	1.06 (0.177)	1.473 (0.146)	0.811 (0.101)
<i>Adjacent</i>	-0.064 (0.758)	0.713 (0.747)	3.902 (0.622)	3.845 (0.428)
<i>Distance</i> (in 1000s of miles)	-0.044 (0.030)	-0.044 (0.030)	-0.061 (0.025)	-0.044 (0.017)
<i>English</i>	0.266 (0.163)	0.454 (0.161)	-0.538 (0.134)	-0.630 (0.092)
<i>lnEducation</i>	0.038 (0.018)	-0.027 (0.018)	-0.019 (0.015)	-0.019 (0.010)
<i>Constant</i>	-31.190 (7.982)	-10.389 (7.872)	8.553 (6.548)	2.161 (4.505)
<i>Includes</i> <i>Regional</i> <i>Fixed Effects</i>	X	X	X	X
<i>R-squared</i>	0.136	0.138	0.273	0.214

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X. Appendix

Appendix Table 1: Potential Source Countries: List of independent states as defined by the US State Department that are considered in this project. Country names are presented with notes on modern sovereignty/border changes and sovereignty/border disputes that may lead to complications in reporting as reported by the CIA World Factbook. The regional and subregional categorizations come from the United Nations Statistical division.

<u>Country (notes)</u>	<u>Region</u>	<u>Subregion</u>
Afghanistan	Asia	Southern Asia
Albania (Independence from USSR 1991)	Europe	Southern Europe
Algeria	Africa	Northern Africa
Angola	Africa	Sub-Saharan Africa
Argentina	Americas	Latin America and the Caribbean
Armenia (Independence from USSR 1991, continued conflict with Azerbaijan)	Asia	Western Asia
Australia	Oceania	Australia and New Zealand
Austria	Europe	Western Europe
Azerbaijan (Independence from USSR 1991, continued conflict with Armenia)	Asia	Western Asia
Bahamas	Americas	Latin America and the Caribbean
Bahrain	Asia	Western Asia
Bangladesh	Asia	Southern Asia
Barbados	Americas	Latin America and the Caribbean
Belarus (Independence from USSR 1991)	Europe	Eastern Europe
Belgium	Europe	Western Europe
Belize	Americas	Latin America and the Caribbean
Benin	Africa	Sub-Saharan Africa
Bhutan	Asia	Southern Asia
Bolivia	Americas	Latin America and the Caribbean
Bosnia and Herzegovina (Declared sovereignty in 1991, independence in 1992 from Yugoslavia, continued dispute between Serbs and Bosniaks and Croats until 1995)	Europe	Southern Europe
Botswana	Africa	Sub-Saharan Africa
Brazil	Americas	Latin America and the Caribbean
Brunei	Asia	South-eastern Asia
Bulgaria (Independence from USSR sphere in 1990)	Europe	Eastern Europe
Burkina Faso	Africa	Sub-Saharan Africa
Burma (Myanmar)	Asia	South-eastern Asia

Burundi	Africa	Sub-Saharan Africa
Cabo Verde	Africa	Sub-Saharan Africa
Cambodia	Asia	South-eastern Asia
Cameroon	Africa	Sub-Saharan Africa
Canada	Americas	North America
Central African Republic	Africa	Sub-Saharan Africa
Chad	Africa	Sub-Saharan Africa
Chile	Americas	Latin America and the Caribbean
China	Asia	Eastern Asia
Colombia	Americas	Latin America and the Caribbean
Comoros	Africa	Sub-Saharan Africa
Costa Rica	Americas	Latin America and the Caribbean
Côte d'Ivoire	Africa	Sub-Saharan Africa
Croatia (Independence from Yugoslavia in 1991, continued internal territorial disputes with Serbs through 1998)	Europe	Southern Europe
Cuba	Americas	Latin America and the Caribbean
Cyprus (Since 1983, "Turkish Republic of Northern Cyprus," section of island, recognized only by Turkey)	Asia	Western Asia
Czech Republic (Following Velvet Revolution of 1989 of independence from USSR, "Velvet Divorce" from Slovakia in 1993)	Europe	Eastern Europe
Denmark	Europe	Northern Europe
Djibouti	Africa	Sub-Saharan Africa
Dominican Republic	Americas	Latin America and the Caribbean
Ecuador (Border dispute with Peru 1995-1999)	Americas	Latin America and the Caribbean
Egypt	Africa	Northern Africa
El Salvador	Americas	Latin America and the Caribbean
Eritrea (Independence from Ethiopia in 1991)	Africa	Sub-Saharan Africa
Estonia (Independence from the USSR in 1991)	Europe	Northern Europe
Ethiopia	Africa	Sub-Saharan Africa
Fiji	Oceania	Melanesia
Finland	Europe	Northern Europe
France	Europe	Western Europe
Gabon	Africa	Sub-Saharan Africa
Gambia	Africa	Sub-Saharan Africa
Germany (East and West Germany reunified in 1990)	Europe	Western Europe

Ghana	Africa	Sub-Saharan Africa
Greece	Europe	Southern Europe
Guatemala	Americas	Latin America and the Caribbean
Guinea	Africa	Sub-Saharan Africa
Guyana	Americas	Latin America and the Caribbean
Haiti	Americas	Latin America and the Caribbean
Honduras	Americas	Latin America and the Caribbean
Hong Kong (Became Special Administrative Region to China in 1997, “one country, two systems formula”)	Asia	Eastern Asia
Hungary (After liberalization process starting in 1968, first democratic elections 1990)	Europe	Eastern Europe
Iceland	Europe	Northern Europe
India	Asia	Southern Asia
Indonesia	Asia	South-eastern Asia
Iran	Asia	Southern Asia
Iraq	Asia	Western Asia
Ireland (Good Friday Agreement in Northern Ireland in 1998)	Europe	Northern Europe
Italy	Europe	Southern Europe
Jamaica	Americas	Latin America and the Caribbean
Japan	Asia	Eastern Asia
Jordan	Asia	Western Asia
Kazakhstan (Independence from Soviet Union in 1991 as former Soviet Republic. Russia still leases large portion of land)	Asia	Central Asia
Kenya	Africa	Sub-Saharan Africa
Kuwait	Asia	Western Asia
Kyrgyzstan (Independence from USSR in 1991)	Asia	Central Asia
Laos	Asia	South-eastern Asia
Latvia (Independence from USSR in 1991 but last troops left in 1994)	Europe	Northern Europe
Lebanon	Asia	Western Asia
Lesotho	Africa	Sub-Saharan Africa
Liberia	Africa	Sub-Saharan Africa
Libya	Africa	Northern Africa
Lithuania (Declared independence from USSR in 1990, Moscow recognized independence in 1991)	Europe	Northern Europe
Luxembourg	Europe	Western Europe
Macedonia (Independence from Yugoslavia in 1991)	Europe	Southern Europe
Madagascar	Africa	Sub-Saharan Africa

Malawi	Africa	Sub-Saharan Africa
Malaysia	Asia	South-eastern Asia
Maldives	Asia	Southern Asia
Mali	Africa	Sub-Saharan Africa
Mauritania	Africa	Sub-Saharan Africa
Mauritius	Africa	Sub-Saharan Africa
Mexico	Americas	Latin America and the Caribbean
Moldova (Independence from USSR in 1991 but continued presence of Russian troops in eastern territory)	Europe	Eastern Europe
Mongolia	Asia	Eastern Asia
Montenegro (Part of Yugoslavia until its dissolution in 1992, part of Serbia until 2002, State Union with Serbia until 2006 when full independence was declared)	Europe	Southern Europe
Morocco	Africa	Northern Africa
Mozambique	Africa	Sub-Saharan Africa
Namibia (Independence from Germany in 1990)	Africa	Sub-Saharan Africa
Nepal	Asia	Southern Asia
Netherlands	Europe	Western Europe
New Zealand	Oceania	Australia and New Zealand
Nicaragua	Americas	Latin America and the Caribbean
Niger	Africa	Sub-Saharan Africa
Nigeria	Africa	Sub-Saharan Africa
Norway	Europe	Northern Europe
Oman	Asia	Western Asia
Pakistan	Asia	Southern Asia
Panama	Americas	Latin America and the Caribbean
Papua New Guinea (Bougainville region gained independence in 2001)	Oceania	Melanesia
Paraguay	Americas	Latin America and the Caribbean
Peru	Americas	Latin America and the Caribbean
Philippines	Asia	South-eastern Asia
Poland	Europe	Eastern Europe
Portugal	Europe	Southern Europe
Qatar	Asia	Western Asia
Republic of Congo	Africa	Sub-Saharan Africa
Republic of Georgia (Independence from USSR in 1991, conflict with Russia in 2008)	Asia	Western Asia
Romania	Europe	Eastern Europe

Russia/USSR (USSR split into Russia and 14 separate republics in 1991)	Europe	Eastern Europe
Rwanda	Africa	Sub-Saharan Africa
Saint Lucia	Americas	Latin America and the Caribbean
Saint Vincent and Grenadines	Americas	Latin America and the Caribbean
Samoa	Oceania	Polynesia
Sao Tome and Principe	Africa	Sub-Saharan Africa
Saudi Arabia	Asia	Western Asia
Senegal	Africa	Sub-Saharan Africa
Serbia (Declared a new union with Montenegro after dissolution of Yugoslavia in 1992, continued campaign to united ethnic Serbs into a greater Serbia, ending in 1995, State of Union with Montenegro in 2003, full independence of Montenegro in 2006)	Europe	Southern Europe
Sierra Leone	Africa	Sub-Saharan Africa
Singapore	Asia	South-eastern Asia
Slovenia (Independence from Yugoslavia in 1991)	Europe	Southern Europe
Solomon Islands	Oceania	Melanesia
Somalia	Africa	Sub-Saharan Africa
South Africa	Africa	Sub-Saharan Africa
South Korea	Asia	Eastern Asia
Spain	Europe	Southern Europe
Sri Lanka	Asia	Southern Asia
Sudan	Africa	Northern Africa
Suriname	Americas	Latin America and the Caribbean
Swaziland	Africa	Sub-Saharan Africa
Sweden	Europe	Northern Europe
Switzerland	Europe	Western Europe
Tajikistan (Independence from USSR in 1991, civil war 1992-1995)	Asia	Central Asia
Tanzania	Africa	Sub-Saharan Africa
Thailand	Asia	South-eastern Asia
Timor-Leste (Invaded by Indonesia following declaration of independence from Portugal in 1976, two decades of conflict, 2002 recognized as an independent state)	Asia	South-eastern Asia
Togo	Africa	Sub-Saharan Africa
Tonga	Oceania	Polynesia
Trinidad and Tobago	Americas	Latin America and the Caribbean
Tunisia	Africa	Northern Africa
Turkey	Asia	Western Asia

Turkmenistan (Independence from USSR in 1991)	Asia	Central Asia
Uganda	Africa	Sub-Saharan Africa
Ukraine (Independence from USSR in 1991)	Europe	Eastern Europe
United Arab Emirates	Asia	Western Asia
United Kingdom	Europe	Northern Europe
Uruguay	Americas	Latin America and the Caribbean
Uzbekistan (Independence from USSR in 1991)	Asia	Central Asia
Vanuatu	Oceania	Melanesia
Venezuela	Americas	Latin America and the Caribbean
Vietnam	Asia	South-eastern Asia
Yemen (North and South Yemen unified in 1990, brief civil war for southern succession suppressed in 1994)	Asia	Western Asia
Zambia	Africa	Sub-Saharan Africa
Zimbabwe	Africa	Sub-Saharan Africa

Notes: I do not consider territories or protectorates of the United States because immigrants from these areas are either U.S. citizens or nationals and are subject to different immigration restrictions from the rest of the world and from each other. I also do not consider outlying protectorates of other nations (e.g. the British Virgin Islands) because reporting of citizenship and origins for individual immigrants is often unclear in those cases. Israel and Palestine are excluded because immigrants from this region are reported in aggregate while country-level data cannot be meaningfully merged. Democratic Republic of the Congo and Republic of the Congo are also omitted for the same reason. The Holy See/Vatican City is not included because it is not contiguous and many of its citizens do not have full autonomy over their immigration decisions. Taiwan is not considered because the United States does not recognize it as an independent state and the World Bank does not consistently report data on the country. Hong Kong *is* included, though it is not an officially recognized independent state because immigrants from the region are reported separately and data is available from all sources on its economy. Yugoslavia, Kosovo and South Sudan do not exist during the period studied and so are admitted. Former Yugoslavia states are considered separately and any individuals who report their country of origin as Yugoslavia are dropped. Czechoslovakia is not considered, despite persisting until 1993. The Czech Republic and Slovakia are considered separately from 1993 to 2007 and not at all before. Montenegro is not as a separate region from Serbia before 2002, but thereafter is considered as a separate nation. All immigrants who reported USSR are assumed to have immigrated from Russia rather than any former Soviet State. Prior immigrants from Montenegro are included in the Serbian immigrant figure. Andorra, Lichtenstein, Monaco, San Marino, North Korea, Somalia, Syria, Antigua-Barbuda, Dominica, Grenada, Kiribati, Nauru, Micronesia, Marshall Islands, Palau, Seychelles, Tuvalu, Saint Kitts and Nevis, Equatorial Guinea, Guinea-Bissau, Malta, and Slovakia are all excluded because the necessary GDP and/or population data is unavailable. Yemen is always considered as one country, despite the civil war between the north and south.