Policy Ideas: A study of Immigration's Impacts on Global Economies

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Author's Notes

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Abstract

This paper looks at the effects immigration can have on a nation's economy. The motivation for conducting this was to give policymakers in the United States, who have been grappling with immigration reform for a good chunk of time, some insights into the economic benefits that immigrants pose. This could then maybe inform their decision-making in this policy realm. The paper begins with a theoretical, economic model that finds that no immigration was the best for the United States; this did not seem reasonable. The model was subsequently updated and found that the borders of the United States should be open to anybody and everybody. This also did not seem like a plausible solution. Because of the two extremes, an empirical analysis was then conducted to help answer the question of what level of immigration would be helpful. This empirical analysis of nations around the globe did not discover anything new; rather, it confirmed prior analyses run by other scholars, which found that immigration has little impact on an economy. This did not lead to the conclusion that immigration is bad, though. Instead, it was determined that other measurements or determinations should be used when considering the levels of immigration a country should allow for within its sovereign borders, such as qualitative factors, in addition to the necessary quantitative factors.

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Model Introduction

Throughout much of human history, civilizations have seen a mass influx of people immigrating to their land as a problem. Governments tell immigrants that their problems are the responsibility of their home nation. As nationalism begins to gain prevalence again around the globe, a country's people and voters are wanting to see less and less immigration into their homeland. These natives think that their nation's jobs and resources belong to themselves, first and foremost. What a lot of them do not realize is how much of the goods and services they enjoy are available to them because of immigration. More immigrants are coming to the United States than ever before, including record border crossings under the Biden administration. Currently, this topic is a hot issue in the United State Congress with the administration wanting to repeal the Title 42 restrictions on immigration, which were put in place by the Trump administration considering the COVID-19 public health emergency the country was faced with.

According to the Pew Research Center (2018), approximately 44.8 million of the 328 million people in the United States were immigrants in the year 2018. This means that roughly 13.7% of the people in the United States have immigrated from a foreign land and that the United States has more immigrants than any other country in the world. All immigrants fall into one of three categories: those that are lawful permanent citizens, those applying for lawful citizenship, and those currently undocumented. Undocumented immigrants carry some controversy because entering the United States without proper documentation is illegal. Immigrants are no different from native citizens in terms of the work they are able to

contribute to society. This was also a point of contention during the Trump administration, when it instated public charge rules, which gave preference to those people immigrating to the United States who were more likely to sustain themselves and not rely on public benefits. Just like native citizens, immigrants are a part of the labor force. According to Sherman and others (2019), around 66% of adult immigrants were active participants in the U.S. labor force. That number is about 4% lower for native citizens. The employment rate among the foreign-born population is 63.4%, compared to just 59.8% for the native-born population. Many immigrants come to the United States in search of better work opportunities than what was available in their home countries. Based on these statistics, immigrants are finding those opportunities and capitalizing.

All the work immigrants do has led to substantial economic growth in the United States. According to Amadeo (2020), immigrants contributed approximately 15% of U.S. economic growth between the years 1990 and 2014. One reason that there is a greater contribution from immigrants is the number of educational opportunities they have access. Around 30% of immigrants had a college degree in 2016. For comparison, around 32% of native U.S. citizens had obtained a college degree, a gap that has shrunk greatly over the years. While an increasing number of educated immigrants helps the economy, it is the immigrants without a college degree that contribute the most to the American economy. According to Sherman and others (2019), immigrants without a college degree make up 36% of the farming, fishing, and forestry occupations. Uneducated immigrants also make up 29% of the textile industry, 27% of the food manufacturing industry, and 24% of the construction industry. These jobs may not be the glamorous jobs that students study years to occupy one day. However, they

are vital to the American economy. A typical day for an American citizen consists of waking up, driving to work, and eating dinner with their family. The car that American drove to work, the building they worked in, and the food they ate were all very well likely could have been created by an immigrant.

If there were to be a reduction in the number of immigrants and the work they do, how great would it be and who would feel it the most? For the United States government, the impact would be catastrophic. According to Kosten (2018), immigrants contribute around $328 billion in tax revenue every year. If the Obama administration's Deferred Action on Childhood Arrivals program (DACA) were to end or be scaled down as proposed by the Trump administration, the United States would lose just under $800 million in tax revenue. California, Texas, New York, Illinois, and Florida would be the states impacted the most. What makes those states important here is that those states are the 5 biggest economies in the United States and are heavily populated. From 2005-2014, the US government's total expenditures on refugees amounted to $206 billion. Immigrants contribute more than that in the federal taxes they pay alone. If the government were to look at immigration from a pure financial standpoint, they are operating at a net positive. Immigration has also caused a phenomenon called the immigration surplus. When immigrants enter the American work force, they increase the economy's total productive capacity which in turn increases GDP. Furthermore, immigrants fuel the economy by working jobs that always have a need for workers, such as construction, service, hospitality, tourism, and other industries that are important to the nation.

From these data, it is easy to see that both the United States government and economy are reliant on immigration and would lose a large amount of money without it. A common question asked when weighing the pros and cons of immigration is what benefits are brought to the United States' economy through immigration and what is the optimal level of immigration needed to maximize those? This is a question that policymakers have been attempting to answer for generations. Based on the data, the United States would be better off granting citizenship to every immigrant from around the world. In theory, this would maximize both the economy's productive capacity and GDP, making the United States the by far the greatest economy in the world. However, letting everyone in is not practical because there's still millions of native-born citizens and the United States does not have anywhere near enough resources to sustain that large of a population. The current political climate and debate surrounding immigration in the United States would also make letting every immigrant an impractical solution, although Senator Thom Tillis, a Republican from North Carolina, has recently suggested he would be open to bipartisan negotiations on revising the immigration system in the United States. It would also be impossible to simply remove all immigrants and make the work force entirely comprised of natives because the United States seems to have some sort of dependence on immigration. The question about the optimal level of immigration remains. The best way to answer that question is to take multiple factors into consideration and construct an economic model. After all, the economy is an important factor to voters. The past couple of years have seen high inflation and this year is a midterm election year in the United States Congress. This economic issue has been at the forefront of voters' minds and could likely contribute to one, or both, chambers of Congress flipping from the party of current President, Joseph Robinette Biden Jr.

For this model, the main agent is the United States government, and its objective is to maximize the welfare of its constituents, United States citizens. The main variables and parameters in this model include the number of natives and immigrants in the United States, the utility of United States citizens, the capital output in the United States, and the output elasticity of both labor and capital in the United States. This model came to an interesting conclusion: the optimal choice for the government would be to purge immigrants, one of the impractical outcomes outlined earlier. Because of this, an additional model to factor in the savings rate and the depreciation of man-made capital in the United States was created. This updated model came to another interesting conclusion: the United States would be better off granting citizenship to every immigrant from around the world. This would also be impractical, as previously discussed. Given these outcomes and all the data about immigration, is there really an optimal level of immigration in the United States? The proposed model will seek to put a theoretical answer to this real-world problem that has an impact on many peoples' lives.

Model Setup

This model considers the problem of immigration from the viewpoint of the government within the United States of America. The role of the government is to maximize welfare, W, in the nation. The entire population of the nation is denoted as N, which is made up of native citizens to the country, denoted as n, and immigrants to the country, denoted as i. Each of these citizens to the country contributes their utility, u, to the overall welfare in the nation. People get utility from consumption, which is denoted by c, and consumption is determined by the portion of income one receives from the country's overall output, Y. A nation's overall output has inputs that influence it including capital, K, and the size of the labor force, L. To simplify

the model, only variables n and K are treated as exogenous. Treating n as exogenous allows us to focus on immigration into the country rather than migration out of the country. Also treating K as exogenous makes for one less moving part and shows what natural resources a country has. All other variables in the model are treated as endogenous.

Because the model is from the perspective of the government, the original optimization problem was

$$\max_{N,i,L,Y,c,u} W = Nu.$$

This problem is constrained by multiple equations, including the utility function

$$u = u(c).$$

The utility function used assumes that as consumption increases, so does utility, leaving the first derivative to be positive; this increase in utility is diminishing as consumption increases, though, so the second derivative is negative. The simulation further complicates this equation to be

$$u = c^p,$$

which is shown in graphical form by Figure 3. In the model, the output of a nation is a function of its capital and labor force, shown by

$$Y = Y(L, K).$$

As with consumption, the first derivative of the output function is positive with respect to both capital and labor, but the second derivative is negative with respect to both variables. This shows that output increases with the increase of both capital and the labor force, but at a diminishing rate. The overall output is shown graphically by Figure 1. This figure is simulated by using the Cobb-Douglas function,

$$Y = L^a K^b,$$

which uses the parameters set out in Table 1. For simplification purposes, the labor force is the same as N in this model, shown by

$$L = N.$$

This decision was made to simplify the model. Additionally, N is made up of all immigrants and natives within a country, shown by

$$N = n + i,$$

with the simple constraint that shows the total population of the U.S. is equal to the number of natives and the number of immigrants. Finally, as mentioned earlier, the consumption of a person in the United States is their proportion of the population times the total income of the nation; this equality is shown by

$$c = \frac{1}{N} Y,$$

shown in graphical form in Figure 2. After substituting all of these constraining equations into one another, and then into the optimization problem, the equation is left as

$$\max_i W = (n + i) u \left(\frac{1}{n+i} \cdot Y(n + i, K) \right).$$

After this equation was examined, it was realized that each person's utility in the United States was the same. Because of that, the optimization problem could be simplified further to maximize each person's average welfare. This was done by dividing the entire equation by $n + i$, which ultimately left us with

$$\max_i AW = u \left(\frac{1}{n+i} \cdot Y(n + i, K) \right).$$

The average-welfare graph is shown by Figure 4. To find the optimal level of immigrants, though, the first derivative was set as the following:

$$\frac{\partial AW}{\partial i} = \left[\frac{-1}{(n+i)^2} \cdot Y(n+i,K) + \frac{1}{n+i} \cdot \ Y_L(n+i,K)\right] \cdot u'\left(\frac{1}{n+i} \cdot Y(n+i,K)\right)$$

equal to 0. When Figure 5 was assessed, it was noticed that the first-order condition flattened out and stayed a negative number at all values. This came after the model was simulated by trying multiple parameters, shown in Table 1. These numbers are rather arbitrary, besides n, which was set at its respective value to capture the approximate number of people currently residing in the United States. What was realized, was that this outcome was that all capital was natural, so it cannot be expanded through creation by individuals. Because of this, the additional output that results from additional immigrants does not make up for how much an additional immigrant will reduce an individual's income. These numbers ultimately would be looked at by the United States government and they would close their borders to immigration; on top of closing borders, the government could use this original model to make a case to get rid of some of its native citizens in the interest of maximizing average welfare.

The finding of not allowing immigration did not seem reasonable. Even more perplexing was the fact that a nation could use this model to justify purging its citizens. For these reasons, it was understood that the model needed additions. Thus, our additional model was born. After analyzing the model, it was realized that not all capital in the United States comes from natural resources. Rather, people make machines that also contribute to output, so with this in mind, some variables were added to the model to shift to the other extreme of only man-made capital in the United States. The new parameters in the additional model are shown in table 2.

The model showed that increasing i ultimately just increases the overall labor force L, as shown by the expression

$$\frac{d}{dL}\left[\frac{Y(L,K)}{L}\right] = \frac{Y_L L - Y}{L^2},$$

which, when derived, is equal to

$$Y_L - \frac{Y}{L}.$$

The new constraints of this additional model include

$$sY = \delta K_m,$$

which shows that in the long-run economic equilibrium, the aggregate savings must make up for aggregate depreciation of man-made capital. The new budget constraint to include savings is

$$c = \frac{1}{N}(1-s)Y.$$

And the new capital function out of *non*-saved income becomes

$$K = K_r + K_m.$$

The new production function as shown in figure 6 is

$$Y = Y(L, K_m),$$

which must be adjusted for Cobb-Douglas, to include natural and man-made capital,

$$Y = L^a(K_r + K_m)^b.$$

By taking the new first-order derivative to include the new variables for capital,

$$\frac{\partial AW}{\partial i} = \left[\overbrace{\frac{1}{n+i}\cdot\ Y_L(n+i, K_m)}^{MB} - \overbrace{\frac{1}{(n+i)^2}\cdot Y(n+i, K_m)}^{MC}\right]\cdot u'\left(\frac{1}{n+i}\cdot Y(n+i, K_m)\right)$$

and setting it equal to 0, the new solution becomes

$$\max_i AW = u\left(\frac{1}{n+i} \cdot (1-s) \cdot Y(n+i, K_m)\right).$$

These results are almost the exact opposite of the first model and suggest that the best course of action for the United States government is to grant citizenship to every immigrant from around the world. In figures 8 and 9, utility and average welfare increase at a constant rate. Figure 10 shows that the marginal benefit of each additional immigrant decreases and eventually flat lines as more immigrants are added. This is another perplexing result, as letting in every single immigrant just is not practical. No nation in the world has enough resources or jobs available for a population that size. This model presents the conclusion that there really is no optimal level of immigrants. The model does indeed have some shortcomings, though, such as technological innovation and the new ideas immigrants bring. Another is that capital is both natural and manmade. Perhaps if those variables were considered, an optimal solution could be calculated. However, this model and a lot of the data from the literature review show that there is no optimal solution. Immigrants seem to increase both the productive capacity and GDP of the economy, but there are also other considerations needed, as is the case in many policy debates.

Model Results

The topic of immigration has recently become a hot-button issue in the realm of politics. The viewpoint of an economist is one that can help settle the debate and provide a rational way of analyzing a question held by so many: what is the optimal number of immigrants that should be let in by the United States of America? This model was used to answer this very question by examining the benefits that immigrants could bring to an economy. This includes

the impacts that immigrants have on the labor force, output, and overall welfare within a nation. Because politics has led to debates on the topic of immigration in the past and many people look to their elected lawmakers to deal with the situation in the United States, this model examines how to answer the overall question from the viewpoint of the government. The objective of the government is to do nothing more than maximize the welfare of society. All of the above constraints were taken in mind when creating this model; the model found that when all capital was natural, or set, a nation should not let in any immigrants; rather, it found that purging the nation's existing citizens would be beneficial for the average welfare of that nation. Then, the model showed that when all capital was man-made, and none was natural, the government of a nation is compelled to let in endless amounts of immigrants in the interest of the average welfare of the citizens it serves.

Neither of these outcomes seems to be reasonable for the model. Because of this, some updates are suggested for the model going forward. The first suggestion would be to find a middle ground between the two simulations. The real world does not have strictly natural resources for capital or strictly man-made resources. Rather, the capital stock is a mix of both. In the interest of simplification, this model failed to represent that reality. So, future models should consider a blend between natural resource capital and human-created capital.

Second, this model used a Cobb-Douglas equation to represent its production function. This is standard economic practice, but one important variable was left out of that function in this specific model: the variable that considers the effects that technological gains and human capital have on a nation's output and how that output grows over time. Adding a constraint

involving the technological variable would make it more realistic; this constraint would make the level of technology a function of the population. The function relating the level of technology to the population would have a positive first derivative and a negative second derivative, making it concave. The reason for this shape is the fact that additional people and diverse thoughts increase innovation and problem-solving abilities within a nation. This has been found to be true by people in academia, such as a study which found that when solving a mystery, a group of three friends and a stranger performed better than a group of four friends. Phillips attributed this to the fact that not knowing someone in the group does not allow for "lazy assumptions [to] slide" and the phrasing of ideas is more thought out (Eriksson 2016). Findings of this sort make a case for immigration to breed innovation within a nation, which in turn breeds economic growth.

Additionally, this model treated every person residing in the United States as equal. This is not true in the real world. There are income disparities and wealth gaps that account for different utilities for each person, but this model was used to look at a bird's-eye view of the issue at hand, not up close to each individual citizen.

Overall, this model can be used to show that immigration continues to contribute to economic growth in nations. While the model was unable to find an exact amount of immigration that is optimal for the United States, it was used to highlight some key findings, including that capital and the labor force need to be balanced at an optimal level for a nation's output. Using this model, a strong case can be made for immigration to be allowed in some fashion, but it is unable to provide an exact number of immigrants a nation should allow within its borders.

With the updates suggested, the possibility of firm answers to the ultimate question is not yet off the table.

Statistical Analysis Introduction

The economy of a nation is very important to its citizens and leaders alike. For the citizens, the economy, and its gross domestic product (GDP), act as a measure of wellbeing of their nation and the citizens themselves; for the leaders, this GDP is a measure for how well they have been doing their jobs. Many voters tend to vote on how the economy is doing as can be seen in the 2008 United States Presidential election. This election was one in which the Democratic candidate, Barack Obama, ran on the issue of change from the previous Bush Administration, which was Republican. Obama was helped by the fact that the economy was tanking just months before the election and his message of change resonated with people and led them to vote for his ticket because they felt and believed he would turn the poor economy around. The United States serves as just one example of where the economy is important to the voters. This can also be seen with the recent Brexit craze in Great Britain and folks believing that the United Kingdom (UK) leaving the European Union (EU) would help their national economy, which lead to the referendum vote in favor of the UK withdrawing from the EU. Another example of this from outside the United States would be the Yellow Jacket protests in France that began over economic issues and have turned into something much larger. These are just a few, small examples of how impactful the economy is on just elections in nations. A nation's economy can, and does, influence more than just political elections within its nation.

As mentioned, a nation's GDP measures the wellbeing of a nation for many economists, but it can also be used to measure the growth and the state of that nation's economy at a macro level. There are a lot of factors that lead to the final calculation of a GDP including spending by the government and consumers, investment, and net exports. Many politicians claim the policies they plan to enact will positively affect the economy of their respective nations; they would be doing a disservice to their voters if they believed the policies they supported would hurt their economy. Because the model above could not give any concrete answers to the question posed of what the optimal level of immigration is for the United States, it was thought to conduct a statistical analysis of nations around the globe.

Literature Review

Studies in the past have researched questions similar to the one posed in this paper. This includes Robert Rowthorn's (2008) work, titled "The Fiscal Impact of Immigration on the Advanced Economies." This study reached some interesting conclusions. First, Rowthorn found that the fiscal impact of skilled migrants on a country were substantial. On the flipside, Rowthorn also found that unskilled migrants tend to have a net negative fiscal impact on the country they migrate to. That may not always be the case if they do not take advantage of the public benefits available to them. Because of the dichotomy of these two groups of migrants, many studies in the past have found that immigrants have about a one percent impact on GDP. Rowthorn (2008, p. 577) came to similar conclusions of the sorts, when he found that the overall contributions of migration are relatively small, suggesting that "in general, there is no strong fiscal case for or against sustained large-scale immigration."

Another study conducted by Ethan Lewis and Giovanni Peri (2015) observed the effects immigration had on local economies rather than the national economy. It noted that while immigration policy is typically promulgated at a national level, immigrants tend to make their impact at the local or community level. Like Rowthorn, Lewis and Peri also noted the impacts that the skills possessed by the immigrants had on their ability to make impacts on the economies of the places they inhabit. The key takeaways from Lewis and Peri's study were that immigrants helped native citizens' wages to increase. It also concluded that immigrants could induce innovation in nations. While innovation was not specifically measured in this study, it is generally thought by economists to have positive effects on the economy by increasing productivity and efficiency on the supply side, thus reducing costs, among its other positive impacts.

After reviewing the studies above and their outcomes, a hypothesis was formed regarding the impacts that immigrants would have on economies. It is believed that the relationship between net migration and GDP is not linear, but quadratic. Although that is the belief, the study done only conducted a linear analysis for reasons to be explained later. Because of that stipulation, the hypotheses for this statistical analysis only deal with the linear model that is to be ran. With that being clarified, the hypotheses for the study were as follows:

- A positive relationship exists between a nation's net migration and its national wealth, measured by its GDP.
- A positive relationship exists between a nation's population and its national wealth, measured by its GDP.

Research Methods

One of the main issues with the theoretical model was that it presented policymakers with two options: no immigration at all or unlimited immigration. Both outcomes seemed very unreasonable. Because of this, it was thought that the best approach to truly get an answer to the question posed would be to run a quadratic regression analysis, rather than a simple linear regression analysis, which has a constant slope and would provide yet another extreme and unreasonable answer. When it came time to analyze the data, running a quadratic analysis seemed to be redundant and unnecessary. The reason for this is that the numbers that came from the initial linear regression confirmed prior studies found when conducting the literature review: it is hard to find an economic case to be made for immigration, but that is not to say there are no other qualitative reasons to advocate for immigration. For this analysis, the data used were drawn from the Heritage Foundation's *2019 Index of Economic Freedom* (population and GDP) and the Central Intelligence Agency's *World Fact Book* (net migration). The variables came from 2019 numbers, but this was seen as a positive for the research at hand. Although the data could be seen as stale, it was useful because it was from a year prior to COVID, when countries experienced lockdowns which greatly harmed their economies. Because of this, it could be hard to attribute economic growth or loss solely to immigration. Again, this cannot be solely done due to the nature of the economy and how many pieces play into it. The data set had information on 171 countries and covered a lot of different metrics for these nations ranging from their political structure and practices to things like their GDP and public debt. For its indicator of immigration, this analysis used net migration, which was given as the number of migrants per 1,000 people in population; this was the independent variable. When conducting

the linear analysis, population, in millions of people, was used as well. This variable was also treated as an independent variable. The reasoning behind this is because in economics, it is generally thought that a larger population leads to a larger workforce, which in turn, will lead to a larger GDP. That was also the main reason for conducting the linear regression: to see the extent to which population can explain a greater GDP. As for the economic indicator for this study, GDP was chosen to be the dependent variable. This was measured in billions of dollars. Once these determinations were made, the regression analysis was completed using the SPSS software provided to students with university accounts.

Statistical Analysis Results

Tables 3 and 4 in Appendix III give the results of the linear regression ran, including population as one of the independent variables. The coefficient of determination, referred to as R square in table 3, was measured at 0.657. This shows that about 65% of the variability in GDP can be directly attributed to population and net migration. This number is relatively high, meaning that the impacts that both independent variables have on GDP are both significant and convincing. In table 4, there are many numbers there. One of the most notable columns in that table is the beta. The numbers that fall under that column determine the magnitude of the effects that its respective row has on GDP. What can be extrapolated from that column is that while both population and net migration have a positive impact on GDP, the overall population contributes to a much higher degree than that of net migration. This study was conducted at the conventional confidence level of 95%. Because of that, it took a level of significance of less than or equal to 0.05 to reject the null hypotheses. In this case, the null hypotheses are that no relationship exists between the respective variables. With

that in mind, the null hypotheses, for each of the hypotheses stated above were both rejected with the available data; this also means that both alternative hypotheses, or the stated hypotheses, were able to be accepted. Looking at this, one may ask why the first null hypothesis was able to be rejected. This is because SPSS defaults to conducting a two-tail test. This is not what the hypothesis suggested, though. Rather, the hypothesis was directional, leading to the need for a one-tail test. Because of that, the significance level can be divided in half, to 0.0255 for net migration, leaving the data sufficient to accept the hypothesis. As for the second hypothesis, concerning population and GDP, no such questions existed because it could be rejected at the even stronger 99% confidence level, even when shown as a two-tailed test by SPSS. Although the first hypothesis was accepted with the given data set and it is still believed that the regression for net migration and GDP is quadratic, not linear, the quadratic regression was still not run. This choice was made because the beta level given for net migration was so low leading to the assumption that immigration does not have any significant impacts on a country's national wealth. Previous studies conducted, as referenced in the literature review above, have made similar inferences, leading the research to be comfortable with drawing such conclusions and not conducting further studies.

Conclusion

After creating a model and conducting a statistical analysis, it can be concluded that immigration does not have significant effects on a nation's economy. These benefits may be marginally positive, but they are not large enough for this paper to be able to make a policy proposal based solely on economic effects. This conclusion is similar in nature to studies

conducted previously on similar subject matters. It is always important to note the shortfalls that this project has. First, it can be claimed that immigration into a nation would increase that country's population, and thus, its GDP with the conclusions drawn above. While that is a reasonable argument to make, it fails to pass the test that the updated model provided: it makes a case for unlimited immigration, which does not seem to be as reasonable or compatible with other factors surrounding the issue. This further leads to the suggestion that net migration's curve with GDP is quadratic in nature. If future studies were to take another glance at the issue at hand, with updated data, it would be suggested that the study run a quadratic regression. Another suggestion would be to conduct a study that incorporates game theory, something used by both politicians and economists when examining a problem. Using game theory could be used once the optimal level of immigration is determined. Utilizing game theory could look like exploring the payoffs to certain decisions people can make. Once these payoffs are determined, a policymaker could then optimize the number of people who choose immigration to the discovered level. Once that level is reached, the benefits for the next person to stay put would have to be higher than their option to migrate. This could look like increasing enforcement to curb illegal immigration. This study did not have the manpower or results to be able to undertake such an activity. Second, many economists have noted the shortfalls that GDP holds. It is a monetary measurement of all final goods and services sold within a boundary. For many nations, this neglects to measure work done in the house or childcare provided by mothers who have made the financial choice to stay at home and not earn an additional income for their family. This is just one example out of many situations that do not get measured by GDP. It is also important to note that while it is a single example, it is one that is the experience of many households through the

United States, and presumably the entire world. What this example does illustrate also, is the quantitative nature of GDP; it is a statistic that fails to measure qualitative factors, such as happiness. As the saying goes, money does not buy happiness. This is true and GDP proves to be a prime example to support this old saying. After all, this was a quantitative study, though, so GDP seemed to fit the mold. That brings up yet another shortcoming of this project: it was purely numbers based. That is something ends up not being compatible with human life. The topic of immigration is layered and should include many factors when it is brought up. This project was limited and not able to account for qualitative factor. That is the recommendation of this report: if discussing policy regarding immigration, do not solely consider the economic impacts it may have; be sure to also include the human nature of this inherently human issue that this world is faced with.

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Appendix II. Figures

Original Model Graphs

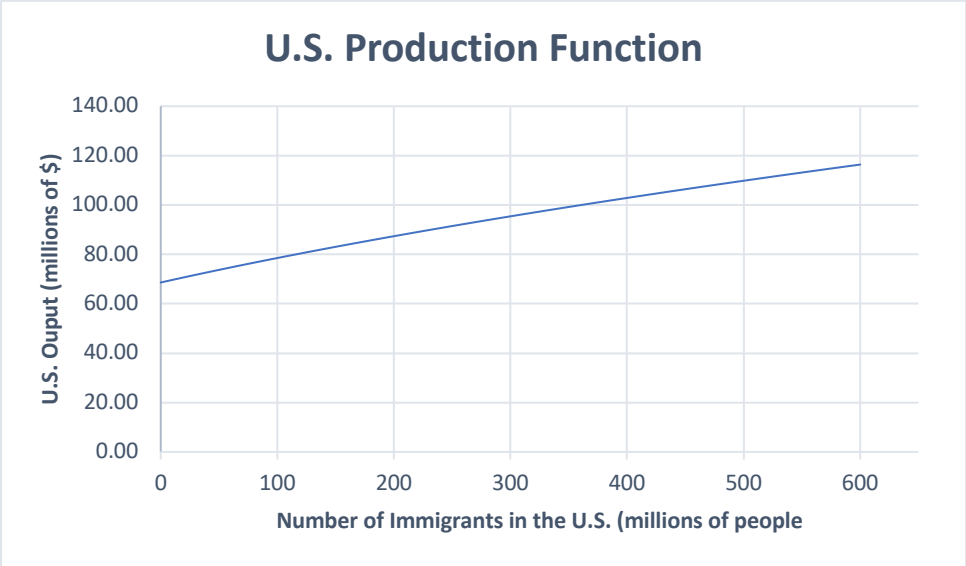

Figure 1.

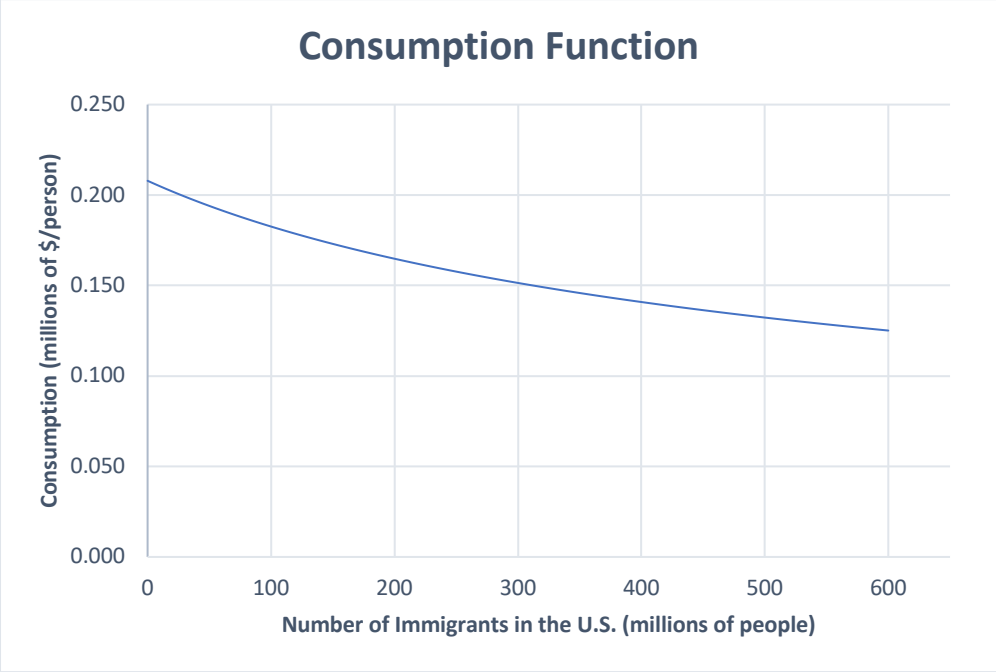

Figure 2.

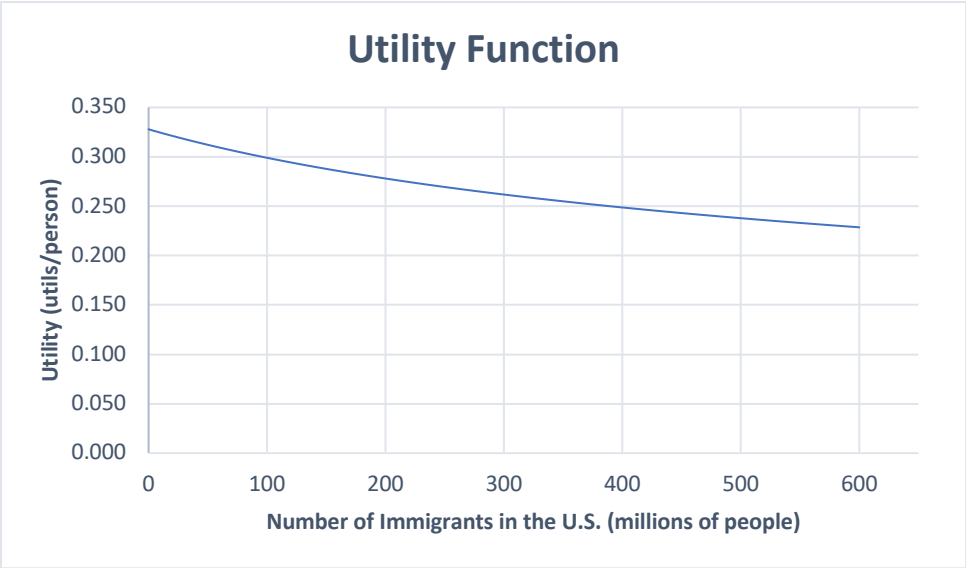

Figure 3.

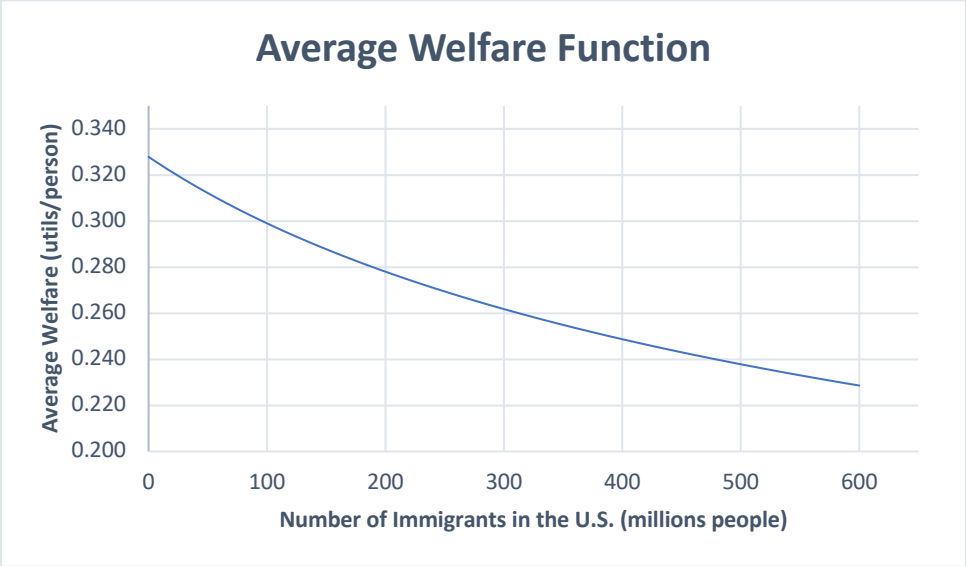

Figure 4.

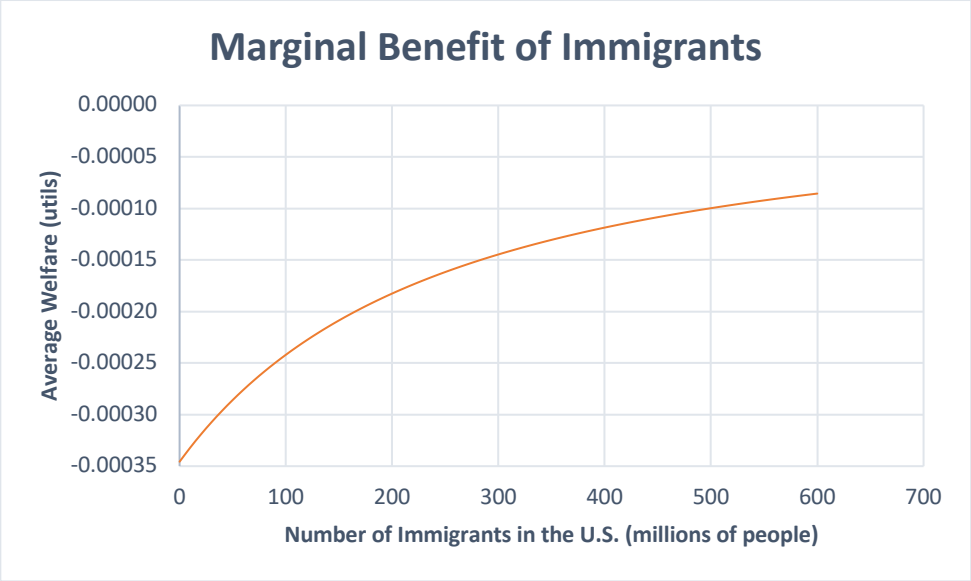

Figure 5.

Additional Model Graphs

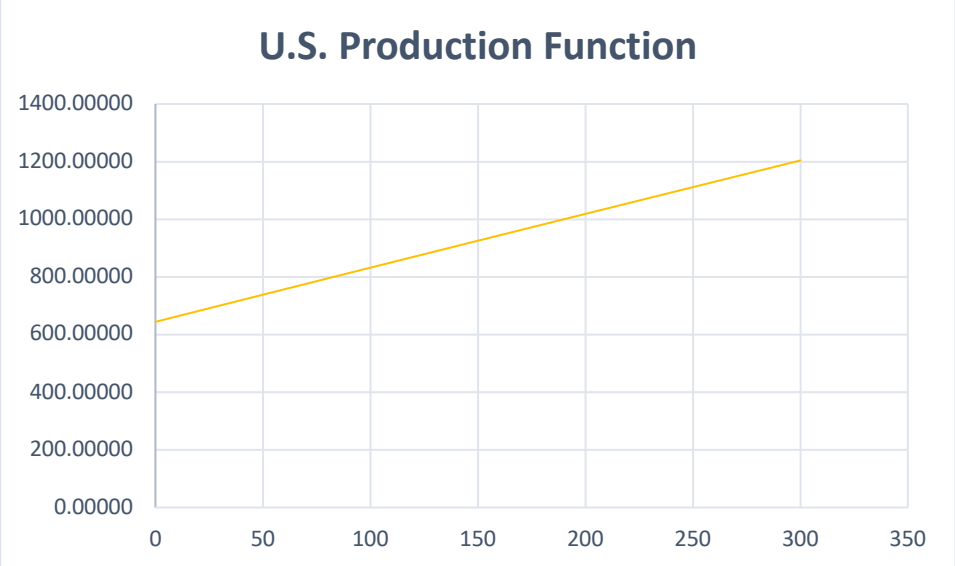

Figure 6.

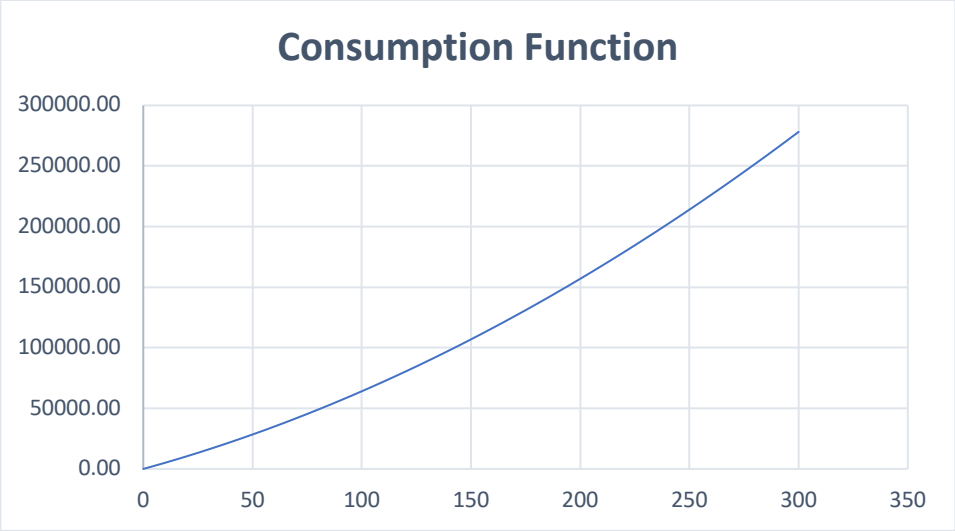

Figure 7.

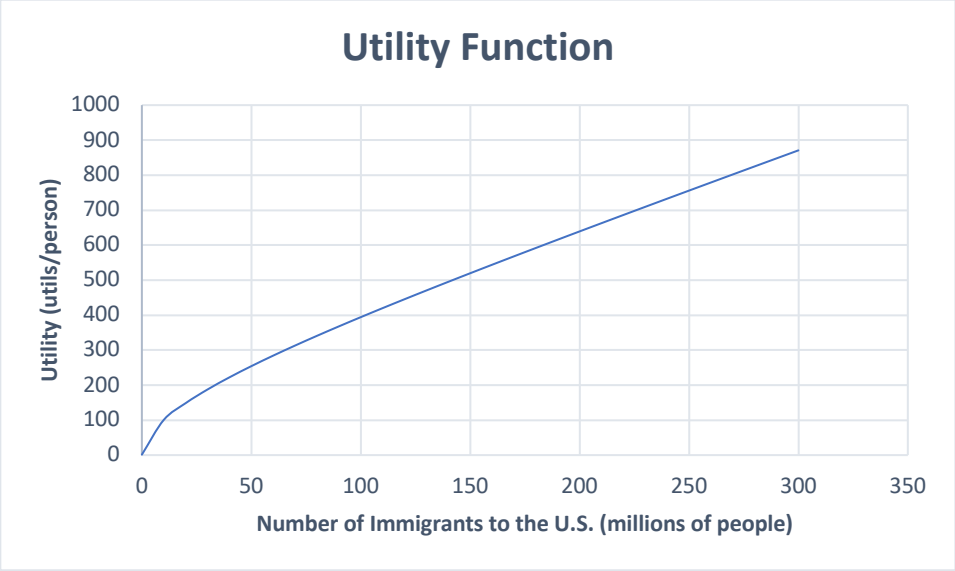

Figure 8.

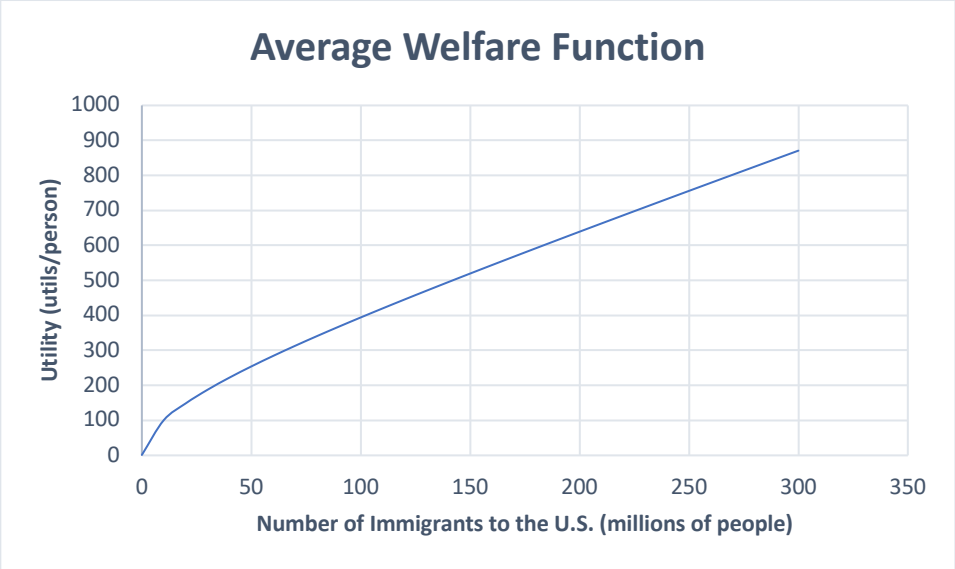

Figure 9.

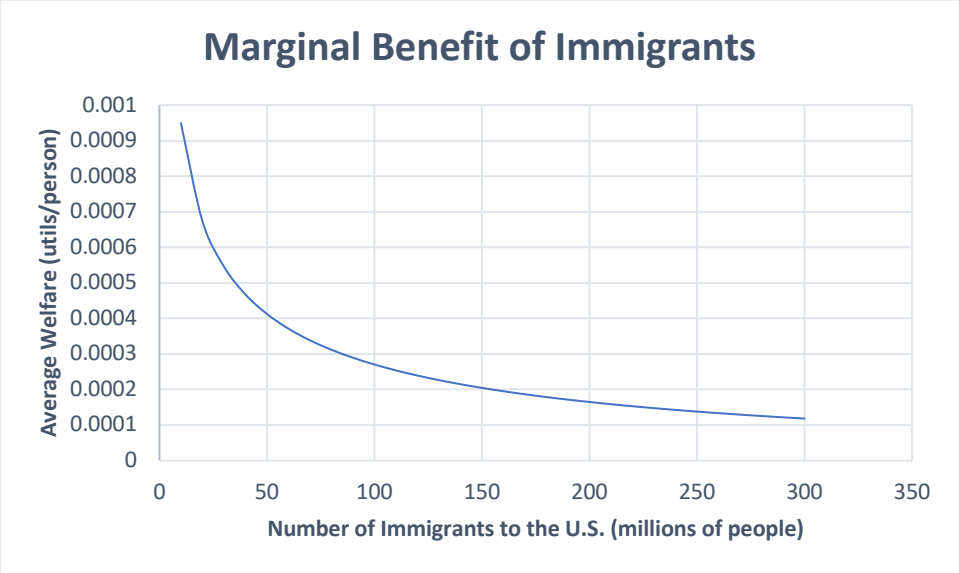

Figure 10.

Appendix III. Tables

Original Model Parameters

Variable	Value	Explanation
a	0.51	Output elasticity of labor
b	0.34	Output elasticity of capital
K	42.00	Capital output
n	330.00	Number of native U.S. citizens
p	0.71	U.S. person's preference for consumption

Table 1.

Additional Model Parameters

Variable	Value	Explanation
a	0.59	Output elasticity of labor
b	0.39	Output elasticity of capital
n	330.00	Number of native U.S. citizens
p	0.54	U.S. person's preference for consumption
s	0.23	Savings rate in the U.S.
δ	0.06	Depreciation rate of man-made capital in the U.S.

Table 2.

Regression Summary

R	R Square	Adjusted R Square
0.810	0.657	0.652

Table 3.

Regression Coefficients

	Unstandardized B	Beta	Significance
Constant	188.158	----	0.120
Net Migration	54.386	0.090	0.051
Population	13.339	0.804	<0.001

Table 4.