Is Mexico a Viable Nursery for Social Security?

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Abstract

The predicted lack of funds for Social Security is a result of, if nothing else, a lack of people. The United States has experienced a sustained relatively low fertility since the baby-boom generation, which will result in the largest generation alive beginning to collect retirement in the very near future while the generations still working are substantially smaller. Thus, the ratio of retired to working does not indicate long-term solvency for the program. Simultaneously the government is trying to keep out hundreds of thousands of young, working and fertile individuals. It seems logical that allowing those entering the country illegally to participate in Social Security might correct the problems. Unfortunately, because those entering the country are unlikely to ever become the high wage-earners that make a net contribution to Social Security over their lifetimes, those in the country illegally are unlikely to help push Social Security towards solvency. Indeed, in predictions that use varying projections on the earning potential of immigrants and their progeny all post a long-term negative balance, often catastrophically so. Thus, any scheme in which the established tax rates and benefits for Social Security are applied to undocumented immigrants cannot push Social Security towards solvency.

In 2010 Social Security ran a deficit for the first time in years. Following decades of enormous surplus, the economic downturn had a two-fold effect. Social Security had a substantial decrease in the funds it was collecting through taxes, but in addition individuals were retiring in record numbers. Fortunately, this deficit is likely to be short-term and the surplus of previous years will carry the program through the coming years and if projections about economic recovery hold, the program will return to solvency in the near future. Unfortunately, the long-term prognosis for Social Security includes a deficit that no realistic economic projection can encompass. The reasons are numerous and complex, and although many solutions have been offered, few would be politically popular. The core problem is that Social Security was not intended to support the population of the United States in the 21st Century. With a lower birthrate and substantially longer life expectancy, more people are taking out of Social Security longer, while fewer people are paying into the system. Fixes such as pushing the retirement age back and decreasing benefits may help lessen the shock, but the core problem remains the same. In short, the United States needs huge numbers of young workers who will continue to work consistently into old age and will replenish the working force of the United States in future generations in order to keep Social Security afloat in the future. Immigration has consistently been considered one of the most important political issues in the United States, until recently competing with federal debt and the sustainability of social programs as the most important issue. But do the waves of immigrants, both legal and illegal, fit the prescription for what ails Social Security? Is it a sustainable policy for the United States to use Mexico and other countries as a nursery to prop up entitlement programs? This paper will examine the impact of immigration on Social Security, specifically the long term impact of foreign-born workers if they were to be allowed to participate in Social Security.

Literature Review

The importance of Social Security's solvency moving into the future can be put into perspective by looking into its importance in the past. According to Ycas, "since the enactment of the Social Security Act in 1935 the program has grown to…making payments to 220,000 persons in its first year of operation, to a set of programs covering 133 million workers" (1994). Ycas writes that it is possible to categorize Social Security into three different eras: two in the past and the present. The first era Ycas calls the "age of invention," when continued funding and expansion of benefits was both politically popular and economically possible due to unprecedented economic growth in the middle third of the twentieth century. The second era consisted of only limited changes to Social Security following growing fiscal constraints due to both economic and demographic changes. The third era, into which Social Security is rapidly entering, Ycas calls the "age of maturation," which is in part defined as huge segments of the population having been covered by Social Security through their entire careers and therefore expect to receive benefits and depend on those benefits more.

The "age of maturation," as defined previously, does not by itself constitute a crisis for Social Security. A generation depending on Social Security after having paid into it through their entire career, which was the way the program was intended to operate, does not explain the program posting a deficit in 2010. The increased dependence on Social Security is problematic because it coincides with dramatic demographic changes. When the Social Security Act was enacted in 1935 Ycaz writes "fertility appeared to be fairly predictable," but received a shock in the "baby-boom" generation that saw huge increases in births between 1946 and 1965, peaking at 1957. Using the three-part history framework, in the first phase "fertility rates were high…marriage rates stable, productivity and real wages growing, death rates high and

unchanging, [and] immigration low." Moving into the second phase, the United States saw "unprecedented low levels" of fertility, which has rebounded slightly in the third phase according to Ycas. He believes that one reason for this decline in fertility can be traced to "a decreasing propensity toward early marriage (or any marriage at all), an increasing propensity towards divorce, delays in childbearing, and a markedly increased proportion of children born outside of marriage," which led not only to fewer children, but children that were more likely to be raised in an environment that is "characterized by lower earnings than traditional families." He writes 'until now…this demographic imbalance has had a positive effect." The age group born in between 1946 and 1965, an age group substantially larger than the subsequent and preceding generations, has been paying into Social Security without taking out substantially. Unfortunately, in 2023 those born in 1957, the year that saw the most births within the baby-boom years, will be eligible to begin collecting benefits. A generation of fewer children with a higher percentage coming from backgrounds that would indicate lower lifetime earnings would clearly put Social Security at risk once it took over for the previous generation in financing the program.

While the fertility rate by itself would create problems for Social Security, it has been coupled with another demographic shift: an incredible increase in life expectancy. Ycas writes that "the long-term decline in mortality associated with the conquest of most forms of infectious disease and infant mortality" occurred after the Social Security Act had been passed. Shrestha found in 2006 that the life expectancy for someone in the United States was 77.5 years, up from 49.2 in the first half of the twentieth century. Due to medical advances, illnesses that would have meant a swift death can now take years to finally take the life of those afflicted. Unfortunately for Social Security, Ycas notes that the combination of these two forces mean "an increase in the number of very elderly persons dependent on Social Security…for much of their support." He

later makes the observation that there is no reason to believe that this trend will reverse any time soon, which may result in those eligible for Social Security benefits to depend on them more for longer due to medicine being able to keep them alive but not active, much less able to support themselves.

Yakita (2001) takes a different strategy to predict how Social Security will impact fertility into the future. He writes "the ageing of a population reduces the fertility rate" because "children represent 'consumption' in the working period, the price of which is the marginal rearing cost of foregone wage income, parents restrain" their desire to have children. Children are viewed this way, in part, because "fully funded social security substitutes for private life-cycle savings completely." Yakita also implies that children will be less likely to give money to their parents because they perceive that Social Security is providing for their needs. Thus, Yakita believes the working-aged population is in the disastrous position to be resistant to having children to replenish Social Security's coffers while simultaneously making their parents more dependent on that very program. Following Yakita's framework, it is likely that recent immigrants would take many generations to perceive their parents and offspring in this way, and thus they would be unlikely to revert quickly to the fertility levels of descendents of those presently in the United States.

The problem of decreasing fertility combining with increasing life expectancy to overburden public programs is not unique to the United States. In 2001 the United Nations commissioned a study entitled "Replacement Migration: is it a Solution to Declining and Ageing Populations?" As in the United States, the problem of declining and ageing populations is caused by "declining fertility and increased longevity" all over the world. The result is "severe reductions in the ratio of persons of working age (15 to 64 years) to older persons (65 or older)."

The writers of the study believe that "fertility in most countries will recover sufficiently to reach replacement level in the foreseeable future," although logically that wouldn't help the looming crisis because skyrocketing fertility would not impact the working to aged ratio for at least fifteen years. Echoing the difficulty in the United States, across the countries examined "longevity is in any case projected to increase, even in the absence of possible new medical breakthroughs." The study then examines the same possible solution as this paper: migration from high-fertility regions to low-fertility may help lessen the coming crisis. As in the United States, "the age structure of immigrants is often younger than that of the host population." The consensus of the studies examined is that "the overall ageing trend can be attenuated through immigration, but it cannot be prevented…furthermore, additional large volumes of immigrants are likely to be socially and politically unjustifiable." In the projections offered the United States is consistently the exception to dire predictions, but the predictions do eventually predict insolvency. The study concluded with the findings that although immigration may help in the short term, policy changes such as changing the age of eligibility for benefits or the benefits given are the only ways to make some social programs viable in the long term.

Some scholars have examined the impact of immigration on countries with strained public programs due to population ageing. Storesletten found that through "selective immigration, involving an increased inflow of working-age high-and medium-skilled immigrants can remove the need" for a tax increase to support Social Security (2000). The model produced finds that in order to make Social Security solvent for the foreseeable future, there must be 1.6 million immigrants annually from the selected age and education makeup allowed into the United States, or a increase of 4.4 percent on income taxes. Interestingly, Storesletten cites a study by Borjas and Hilton (1996) that found that non-natives are less likely to collect benefits,

and factors that into the model. Unfortunately, Storesletten's model considers the children of immigrants to have the same demographic characteristics as the children of natives, which is inconsistent with the findings of other scholars. Further, Storesletten concedes that it would be nearly politically impossible to allow the millions of immigrants into the country legally, and attracting the scores of middle-and high-skilled immigrants would be a challenge unto itself. Lee and Miller (2000) construct a similar model. They assume 1.29 million legal immigrants per year, of which thirty percent will eventually return to their home country. They also assume a gradual dip in the fertility of the native population, with the second and third generation following an immigrant's entry eventually reverting to the fertility of the country at large. Finally, they model life expectancy to climb to 86 by 2075. They find that the initial costs are negative due to the expenses required to fund the schooling of the immigrants' children, but that eventually they constitute a net gain to the government. They agree with Storsletten's findings that selective immigration can eventually result in a sustainable Social Security policy.

Theory

Bermingham sets out two potential solutions to the problem of public pensions losing funding due to aging populations that is happening all over the world. One solution is to encourage births, which seems logical since low fertility is half of the equation that is driving the problem. Unfortunately, "an immediate increase in births would not begin to increase a nation's supply of workers for at least fifteen years," which would delay the solvency of the public pensions for a full generation (2001). Additionally, many countries have tried without success to turn around their declining fertility in a variety of different ways. Logically another solution is to discourage longevity, but Bermingham does not explore the option because it is obviously not politically or ethically viable. Therefore, if either of the solutions that Bermingham puts forth are

to work it must be the second, which is increasing immigration. The underlying logic is simple: the short-term problem is that the countries are running out of working-aged people. Immigration is, if nothing else, an infusion of people, who are almost exclusively young and therefore of working age. The long-term problem is that the native population's fertility rate has been decreasing steadily and shows no signs of reversing the trend in the near future. Again, immigration seems to solve this problem almost by definition. Potential immigrants would be motivated to leave their country of origin if there were more supply than demand for workers, which in many countries is a result of high fertility. Due to immigration seeming to provide exactly what is needed to stave off insolvency of Social Security it is the potential solution that will be explored in this paper.

One logical solution that Bermingham leaves out of his article seems to be the simplest, which is changing the structure of Social Security. Giving benefits to fewer people and making the benefits less generous would balance the system, but this is politically unfeasible. Tebelilini examines why altering benefits is so politically unpopular. He writes that those currently working accept a high tax burden because they desire to be absolved from the duty to support their parents while simultaneously attempting to secure their own retirement. Other solutions, such as taxing the wealth of those receiving Social Security rather than their previous wages, fail because "taxing wealth would break the homogeneity of the old generation," which has considerable voting power relative to other groups because it can vote, unlike the youngest generation, and has considerable time and resources to devote to political causes, unlike the working generation. Pecchenino and Utendorf write that the previously documented lengthening of life expectancy strengthens the political power of the older age demographic since "as the population ages the percentage of the voting population in favor of social security benefit, and

therefore tax, increases will rise." The result of this powerful voting block is a scenario in which "the needs of aged parents and young children compete." Unfortunately, the end result is that "social security crowds out education, and reduces economic growth and social welfare" (1999). While steadily increasing taxes on the working-age population could eventually finance the retirement of the "baby-boom" generation, without a substantial and unlikely change in demographics fertility will continue to drop while the population will continue to live longer. Although it is conceptually possible to finance a pension system this way, given enough time the same problems will eventually resurface. Therefore, raising taxes while keeping benefits static will not by itself make Social Security viable long-term but will only delay the problem.

One of the reasons that immigration has the potential to be such an effective tool is because in some ways immigrants can fill the most important voids left by those native to the United States. Storesletten writes that "immigrants are younger than Americans…natives and immigrants…differ in age, skills, and fertility" from the general population and that since the costs to the public associated with youth are not present, they are solely beneficial to the fiscal welfare of the United States until they retire (2000). In order to move Social Security towards solvency the incoming immigrants need to be old enough to no longer require schooling but still have many working years ahead of them before they become eligible to take benefits. Martin found that in 2005, the median age for the Hispanic population in the U.S., who make up most of the illegal immigrant population, was 27.2 years, compared with 36.4 years for the total population and that fifteen percent of the general population were aged 62 or older compared to 6.5 percent of the Hispanic population (2007). Fortunately for the demographics of the United States, as previously established, a high percentage of the immigrant population is Hispanic, but Lee and Miller write that among all racial categories "current U.S. immigrant individuals are

disproportionately of working age and, consequently pay more in taxes than they cost in benefits." Unfortunately, these immigrants "will grow old and retire" (2000). This will, however, be in the years following the baby-boom retirement years. Not only are immigrants in general an infusion of people, but in the case of the United States they are likely to help reverse the trends that have led the country to the current crisis, which makes immigration seem even more likely to be the long-term solution.

A way in which immigrants can help Social Security move towards sustainability is reverse the sagging fertility rates in the country. Cerda concurs with the previously cited Yakita, holding that declining fertility is endogenous to the Social Security system. He writes that

> "the marginal cost of human capital investment per child and the marginal cost of bearing and additional child depends on the opportunity cost of time…which includes the effect on social security payroll tax" (2005).

Lee and Miller write that "immigrants have high fertility" relative to those native to the United States, referring to immigrants from all countries (2000). In the U.S., "Hispanics are the country's largest and fastest growing minority," due to high fertility and immigration according to Martin (2004). Jonsson and Rendall find that there may be a "substantial rejuvenating effect of Mexican immigration" on American fertility rates due not only to the births among those born in Mexico and their immediate progeny, but also by changing the culture that produced low fertility in the United States. One of the reasons immigration can impact fertility so powerfully in America is the common occurrence of "women who were born in Mexico…giving birth in the United States during their reproductive ages." Importantly, they found that both Mexican immigrants and those of Mexican descent had higher fertility rates than those not of Mexican descent, reaching even into the "third-and higher-generations." Although it is obviously impossible to state definitively that the rates will stay comparably high in perpetuity, for the

foreseeable future immigrant populations will not only provide the workers necessary for the present, but will continue to provide workers in future generations, solving one of the long-term demographic forces that are presently endangering Social Security .

Unfortunately, although in the short term immigration provides Social Security with scores of young workers, those workers are unlikely to fit the demographic that would make Social Security stable in perpetuity. Storesletten writes that "Social Security benefits relative to tax contributions are lower for the high-skilled group than for the other skill groups" (2000). Tabellini concurs, writing that "social security programs redistributes…from rich to poor." Illegal immigrants are unlikely to be high-skilled, but Duleep and Dowhan (2008) find that they are unlikely to ever cross into the highly-skilled sector of the U.S. economy. They find that "the specific skills and knowledge associated with their years of schooling and experience are not valued as much by U.S. employers as are the skills of individuals who were raised and educated in the U.S." While they find that usually immigrants earn less than their native peers but gradually catch up, they also note that "the extent to which the earnings trajectories of immigrants and natives differ varies by country of origin," with those from Central and South America catching up with native-born earnings the most slowly. Recently a "decline in immigrant entry earnings has occurred" and one hypothesis offered for this general trend is that "immigrants are more likely to come from countries that are less economically developed." They note that the parts of the world from which the poorest immigrants come are Central and South America, and immigrants from Mexico form the second-poorest group. Duleep and Regets concur, finding that in the recent past there had been a "large decline in initial immigrant earnings" (1996). Martin found that compared to the rest of the population in the United States, the Hispanic population "is younger and characterized by lower levels of educational attainment

and a higher rate of poverty." She later writes "43 percent of Hispanics aged 16 or older were steady low earners…compared with 33 percent of the total population" and that the median annual income was 31% lower. Most damaging to Social Security, she found that "Hispanics of all ages were 1.7 times as likely as the local population to be living below the federal poverty level." To apply the findings to the statement made by Tabellini, Social Security redistributes from wealthy to poor, so logically the solution to a looming lack of funding can't be to increase the numbers of the poor.

While the low earnings of immigrants may by itself move Social Security away from solvency, tragically it may help reverse a previously discussed demographic movement that is common to aging populations all over the world. Storesletten writes that "shorter longetivity would increase net government benefit from immigration," due to the problem discussed previously of Social Security recipients surviving longer than previous generations despite working and therefore contributing to the program for the same period of time as previous generations. Duleep and Dowhan write that "changes in income have a very large effect on the probability of death for individuals at low levels of income and very small effects at high levels of income" (2008). As noted before, immigrants are more likely to spend their lives earning low levels of income and they take longer to escape poverty through education or skill acquisition. Further, Martin's findings that Hispanics, in the country legally and illegally, were more likely to be poor and stay poor indicate first-generation immigrants and their progeny are unlikely to cross in a large scale into the economic standing that will cease to substantively impact their life expectancy. A shorter life expectancy will mean that they will take less in benefit over their lifetime than others who contributed for the same amount of time. Thus, immigrants may help to

solve each of the demographic movements that have been established to be putting Social Security in danger.

On the net, although immigrants may push Social Security through the crisis of the generation retiring in the first decades of the 21st century, immigration likely will not contribute to long-term solvency. Immigration could probably shift the ratio of contributing to receiving in the near future, but broadening the horizon of analysis the combination of immigrants being unlikely to become the high-income contributors that make a net contribution to Social Security, their predicted sustained high fertility through multiple generations with the generations born in the United States also unlikely to become highly-paid all indicate a net loss for Social Security. Although low wage-earners may not live as long as higher wage-earners, their life expectancy is still considerably longer than what Social Security was designed to support. Storelsetten comes to the same conclusion via a different model, writing that although young immigrants coming to the United States will help get the country through the baby-boom retirement, "higher fertility rates will worsen the future fiscal burden" (2000). The model constructed by Geide-Stevenson and Ho that examined the impact of legal immigration concurred. They found that although initially immigrants help keep public pensions afloat, subsequent generations eventually sink the programs. They write "migration makes everybody, other than the initially old in the foreign country, worse off" (2004). Storelsetten also found that "no positive inflow of legal low-skilled immigrants can balance the government budget" (2000). Bermindham, using yet another distinct model, concurs, writing that "immigration is not even remotely possible as a solution to this problem."

This pending insolvency is magnified by the increased dependence by the population on Social Security. Geide-Stevenson and Ho find that "due to the social security system,

residents…save less" (2004). Even among those who save, they are unlikely to save enough to support themselves through their increasingly long lives and may pursue poor strategies on spending their savings due to ever increasing life expectancy. As cited previously, Tabellini believes that working-age voters continue to fund Social Security, in part, because they do not want to contribute out of their own pockets to their parents' well being. Also established previously, the "baby-boom" and subsequent generations will likely depend more on Social Security than the generations who have received it to date because they have been aware of it for the entirety of their working-aged years. This conclusion is vindicated by Fisher, who wrote that in 2006 "21 percent of beneficiary aged units 65 or older received all of their income from Social Security," compared to a much lower rate observed in the past (2007). This increased dependence may prove to be more disastrous than could be deduced by solely examining Social Security figures.

A study by Woods found that among the "baby-boom" generation, pensions from employers are far less common than their parents' generation (1994). Although roughly the same percentage of the population has a retirement plan, far fewer have the guaranteed pensions that were common in the previous generation, and the replacements come in the form of 401(k) plans, which Woods finds to be a perilous source of retirement income. Among the reasons Woods believes 401(k) plans to be inferior to previous pensions are inconsistent contribution levels, poor investment choices, and even good investment choices being without guarantee. Making the baby-boom generation's retirement even more at risk are findings from Anguelov and Tamborini that indicate "persons from the baby-boom generation are approaching retirement with more debt compared with their counterparts from the mid-1990s…more recent cohorts will reach retirement age with less financial cushion than their predecessors" (2010). Importantly,

"lower-income households experiences considerable increases in average total debt." Thus, if Social Security does fail, the results could be more catastrophic than is immediately obvious to someone today.

In an attempt to make Social Security solvent in perpetuity, allowing those presently in the country illegally to participate in the program will likely succeed in the short term by supplying the system with workers that did not require the investment of public education and have many years until they will collect benefits. It is also likely that it will fail in the long term because both the present generation and the subsequent ones are unlikely to become highly-paid workers due to immigrants earning less and moving upward economically more slowly than their native-born counterparts. Coupled with the previously cited statistics that many of the ethnic group that make up the majority of the illegal immigrant population will consistently earn less through multiple generations than other ethnic groups, it is illogical to project that the illegal immigrants through multiple generations will become high wage-earners in large numbers. Thus, it is likely that as a group they will largely remain in the low-earning category, workers from which are a net drain on Social Security. Importantly, an infusion of a highly fertile population will of course result in many more people in the country both in the present and becoming more dramatic in the future. Thus, a very real possibility is that there will be many more people in the country that may be more dependent on Social Security due to both the previously discussed increase in household debt and the decline of traditional guaranteed pensions. Making the shortfall even more dangerous, these individuals may be increasingly dependent on Social Security for a substantial amount of time due to an ever-increasing reasonably predicted lifespan that may lead to citizens making unwise expenditures of their retirement savings due to underestimating how long they will live. Thus, Social Security's failure due to allowing illegal

immigrants to participate may occur when more people are more dependent on the system than the looming "baby-boomer" crisis, making it untenable as a potential solution.

Data and Methods

This project seeks to examine the impact illegal immigrants would have if they were allowed to participate in Social Security. Specifically it asks if illegal immigrants and those born to illegal immigrants could push Social Security past the "baby-boomer" generation's retirement or make it sustainable in the long term. In order to answer these questions the following formulas will be used:

(# of immigrants or descendents of immigrants)X(income)X(Social Security tax rate)=Social Security input

(# of immigrants receiving Social Security)X(income X % of income replaced by Social Security)=Social Security output

Social Security input-Social Security output=balance

To determine the number of people that are either immigrants or their progeny, calculations that predict fertility are used.

(# of female immigrants or descendents)X(fertility rate)=children born in year

Importantly, the fertility rate used is of those who indicated they were of Hispanic origin, instead of the fertility observed by the general population. Once children reach the age of entry into either the fertile or working population, as defined by Social Security, they are entered into those population totals. Using the average age of immigrants upon entry into the United States found by Chiswick, it is calculated how many years they are considered part of the working or

fertile population and removed upon reaching the maximum age used by the Social Security model. Similarly, both those born in the U.S. and immigrants leave the working population and enter the population taking Social Security upon reaching the age of 67. They are removed from the population receiving payments from Social Security based on the longevity expected at 65 for individuals born in a given year.

Using the data for working and retired immigrants and children of immigrants and the fertility projections, four predictions have been made. The first assumes that both immigrants and their children will exhibit earnings similar to illegal immigrant earnings that have been observed. The second prediction assumes that immigrants and their progeny will earn similar to what has been observed of those of the same race in the United States over their career. The third assumes that formerly illegal immigrants will continue to earn a similar amount of money to what is observed now, and those born in the United States will receive wages similar to what has been observed among those in their ethnic group. The fourth prediction assumes that illegal immigrants will begin to earn wages consistent with what has been observed among those of the same race while those born in the United States will earn wages similar to what has been observed in the United States of workers of all races.

Assumptions for life expectancy, illegal immigration and Social Security's finances are all taken from the Social Security Administration. The data pertaining to earnings and gender of illegal immigrants are taken from Chiswick and the fertility of the Hispanic population in the United States is from the U.S. Census Bureau.

Results

The worst case scenario projected, in which illegal immigrants and their progeny never rise above the income levels observed by Chiswick, confirms the hypothesis that immigrants will be a net drain on Social Security. Immigrants allowed to participate arrive with many working years ahead of them, and based on the average age upon arriving in the United States none of the immigrants or their progeny are eligible to receive full retirement income until 2023. In other words, illegal immigrants in the model, who the United States does not have to pay to educate or otherwise bring into the working population, have forty-three years of contributions to Social Security before taking anything out of the program. The new simulation examining only illegal immigrants and their descendents posts a positive balance every year from 1980 until 2029 at which point the program runs a deficit and never recovers. The balance for the population pushes further and further from regaining solvency until 2048. At this point in the simulation those that came to the United States in the largest waves of immigration have passed away and the smaller subsequent waves combine with the relatively small initial fertility contributions to produce fewer individuals receiving retirement payments from Social Security with a relatively large population born in the United States with many working years ahead of them. In the worst case scenario projection following 2048, when the program bottoms out, the balance moves closer to positive values. The program seems to be on the path to recovery, posting continuously more optimistic balances until 2076. In the nine remaining years of the simulation the program begins losing money again and there is no reason to believe that pushing the predictions further into the future would ever bring about a positive balance.

Applying the findings of the projection in which the population never outgains those found in Chiswick's study to the intermediate cost projection by the Social Security

Administration's 2010 Annual Trustee's Report for the entire program, the contributions do push all of Social Security out of the predicted deficit for 2011, 2015 and 2016. In the Trustee Report's intermediate cost assumptions Social Security without illegal immigrants or their progeny has a negative balance in 2011 with a return to positive balance until 2015, at which point the report predicts the program will never again post a positive balance. Although the contribution of illegal immigrants and their progeny eventually becomes quite large, it pales in comparison to the predicted deficits. At this point early in the projection the contribution of illegal immigrants is growing by about $500 million a year while the Trustee Report predicts a deficit growing by roughly $30 billion every year, which illustrates the scope of the coming insolvency in Social Security that this project is attempting to explore.

[insert figure 1 here]

The simulation in which both immigrants and their progeny earn consistent with what has been observed among the Hispanic population in the United States follows the same general trend as the projection in which the population makes far less. The balance gets as large as 34,096,030,505 before the population modeled begins taking from the program. Once the population begins taking from the program, the high replacement rate that remains around fifty-five percent quickly brings the balance into negative values. Immigrants and their progeny are the greatest drain on Social Security in 2048, as with the other model, when the program's balance is -74,446,462,990. Eventually, also consistent with the other projection, the balance steadily regains funds due to the large waves of immigrants that had come into the country previously passing away while the rapidly growing population born in the United States is still working and thus contributing to Social Security. As with the other projection the balance

normalizes and there is no reason to believe that it would eventually regain a positive balance if given enough time.

As with the other projections, this prediction shows the population modeled contributing enough to cover the deficit predicted in 2010 for Social Security and does so again in 2015 and 2016. After 2016 the general Social Security deficit becomes too large for the contribution of immigrants to overcome. The point at which it is closest, in 2017, the population modeled falls short of overcoming the overall deficit by roughly ten billion dollars and the rapidly growing deficit predicted by the Trustees Report quickly outpaces the contribution predicted by the model.

[insert figure 2 here]

The projection in which immigrants continue to earn what has been observed and those born in the United States have earning patterns similar to those observed of Hispanics in general eventually finds itself in the same dire straits the other predictions posit. Although the balance eventually eclipses twenty billion, it eventually moves back into negative values in 2030. Still, the prediction is much more optimistic about the potential positive effect of immigration on Social Security, likely because of the large numbers born in the United States that are still in the workforce making substantially more than the retired immigrants whose income is being replaced for most of the model. The previously discussed model in which all workers and retirees earn the income observed of Hispanics in the United States predicts a largest deficit of seventy-four billion, while the model in which those born in the U.S. make as much over their career as Hispanics in the United States and immigrants continue to make minimum wage predicts a largest deficit of thirty-eight billion. Still, the same pattern observed in the previous predictions

manifests: after an initial surplus, illegal immigrants and their progeny eventually push Social Security into a substantial deficit that is unlikely to recover.

As with the prediction in which the entire modeled population earns over a career what has been observed among Hispanics in the United States, the third model brings the larger Social Security program out of a deficit from 2010 through 2016. Unfortunately, the window of time before the Trustees Report predicts a wildly increasing deficit occurs when those who the model predicts to earn the most have spent very few years in the workforce. Thus, during the relatively few years in which those modeled can push Social Security out of the expected deficit the prediction is a contribution very similar to the first model's projection. In 2017, the year in which the model is closest to erasing the predicted deficit after 2016, it falls a staggering eight billion dollars short. The problem is compounded by the deficit spiraling further into negative values in every subsequent year much more quickly than the model predicts growth in the modeled population's contribution.

[insert figure 3]

The most optimistic of the predictions in which immigrants earn as much as the Hispanic population at large in the United States and those born in the United States earn similar to those in the United States of any ethnic group still eventually predicts a deficit. In this prediction the immigrant population plunges into a deep deficit and eventually overwhelms the positive values contributed by those born in the United States. This is likely because of the high replacement rate for the illegal immigrant population in Social Security with smaller waves of immigrants coming to support those taking out of Social Security. The modeling of those born in the United States that earn similar to those in the greater population is the first projection that is never pushed into

negative values but is still not enough to compensate for the huge deficits described by the Trustee's Report.

Despite the overly-optimistic assumptions, this prediction has the same impact on the net balance for Social Security's deficit as the other projections with the exception of 2017. Unlike the other predictions, it would eclipse the predicted deficit in 2017 with a surplus of more than five billion dollars. Still, as with the other models the predicted deficit for all of Social Security increases quickly outpace the predicted increased contribution from the population modeled. In 2018 the predicted deficit of the entire program with the contribution of illegal immigrants is fourteen billion dollars, and the difference once again becomes very large very quickly.

[insert figure 4]

Although it eventually grows very large, the population born to immigrants in the United States is smaller than might be expected because of the demographics of those who immigrate illegally. The study by Chiswick found that 91% of illegal immigrants were male, which may help explain why 51.3% of the population of those that identify as Hispanic are male (Martin). While counterintuitive, the huge waves of male immigrants are not thought to impact the total number of children born. Even though some of these immigrants may have children with females born in the United States, female behavior is thought to be the determinant of children born in a population. Still, the fertility model predicts that by the end of the model in 2085 there will be 19,035,473 individuals working that are directly descended from a female illegal immigrant. This number reflects only those between the ages of sixteen and sixty-seven, with many not yet working, retired, or passed away based on the demographic trends predicted by the Social Security Administration.

[insert figure 5]

An important aspect to note is that when Social Security has run a surplus the funds taken in but not paid out are put into a trust fund. In the worst-case simulation in which the entire population modeled earns close to minimum 421,697,000,000. While this seems to be a staggering amount of money, it does not push the program into solvency because the total of the negative balance, which shows no signs of reverting back into surplus, is 1,735,440,000,000.

Conclusion

The most basic conclusion is that illegal immigrants paying into Social Security will not move the program towards long-term sustainability. A more troubling finding is that the most reasonable projection for future earnings that includes the subsequent generations also moves the program further away from solvency. These individuals will be born regardless of whether or not their parents or grandparents are allowed to participate in Social Security, and because they are born in the United States they are guaranteed citizenship, and thus participation in the country's social programs.

Answering the question of whether or not illegal immigrants could push Social Security past the retirements of the baby-boomers is more difficult than examining their independent long-term impact. All of the models pushed Social Security out of deficits for 2015 and 2016 which corresponds with those born in 1948 and 1949, years which is almost always considered to be baby-boom years. The years following 1949 saw progressively higher fertility and therefore more retirees to support in the future. The most births were observed in 1957, and those born in that year will enter Social Security in 2024. The modeled population only contributes until 2023 and makes net positive contributions until 2029, under the most pessimistic assumptions, when

those born in 1962 retire. Although they won't fix the coming crisis by themselves, examining the impact of only the baby-boomer retirees indicates illegal immigrants can help to at least some degree. Therefore although illegal immigrants can help Social Security through some of the baby-boomers retirement, they will not erase all of the projected deficits.

To actually carry out the policy of allowing illegal immigrants to participate in Social Security would be substantially more difficult than modeling its effects. It is unlikely that such a program would receive public support even if it were effective because both immigration and Social Security are such volatile issues. Further, in order to practically carry out the projections a huge increase in border security would be necessary to only allow the number of immigrants the Social Security Administration predicted would come to the United States without the promise of Social Security waiting for them. If such a service were available, it is likely that scores of immigrants from all over the world would try to immigrate. Storesletten writes that if amnesty were given in a way similar to the Immigration Reform and Control Act of 1986 there may be a huge inflow of illegal immigrants who try to make it into the country before the window closes.

Ironically, in keeping immigration totals to the same levels predicted it would turn previously illegal immigrants into a variant of a legal immigrant. This by itself would be a staggering endeavor, and assigning Social Security numbers among other costs that would be incurred trying to tabulate and organize a population that previously has deliberately sequestered itself and might not trust those trying to incorporate them would be extremely expensive. The cost becomes catastrophic when applied to the huge number of people that could be affected. In addition to the infrastructure costs not included in the projection are education, healthcare, and other expenses that progeny of immigrants would incur to the country because they have been born in the United States. It is important to note that this project does not make the claim that

illegal immigrants cannot help the United States in any way. The results are strictly limited to the immigrants' contribution to Social Security and do not take the larger economy, which may or may not benefit from such immigrants, into account. It also does not take into account the

Of the four projections assembled, the scenario in which the entire population modeled was paid over an entire career similarly to what was observed among illegal immigrants is the least likely. Although children of immigrants may face difficulties in finding high-paying employment it is unlikely they would spend their entire career close to minimum wage. Unfortunately, the scenario in which immigrants receive wages similar to the general Hispanic population while those born in the United States receive wages similar to the country as a whole is also unlikely. Many believe that the scarcity of employers for illegal immigrants drive down their wages, so without the fear of deportation and with more employers willing to hire them immigrants would probably see an increase in wages. The data on average wages for Hispanic Americans does include some immigrants, but the vast majority of those interviewed were born in the United States. It is unlikely that legalization of their parents or grandparents would erase the roughly fifteen thousand dollar difference. The simulation in which everyone modeled received the same wages as the average Hispanic American could be more accurate than the others, but previously cited authors found that those educated in a country outside of the one in which they are employed earn substantially less than those given a skill set through education that employers within the country desire. It is unlikely that former immigrants would take the opportunity to attend schools and they would further be disadvantaged by spending their formative years away from the culture of their potential employers.

While not perfect, it is reasonable to conclude that the most accurate projection is the one in which illegal immigrants continue to be paid the same wages while those born in the U.S.

continue to be paid the wages observed. As discussed previously, former immigrants' wages would likely rise but it is unlikely they would rise to the level observed in the Hispanic community more generally. It is important to note that although they posted different balances and fell into deficits at different times, all four simulations eventually predict a deficit.

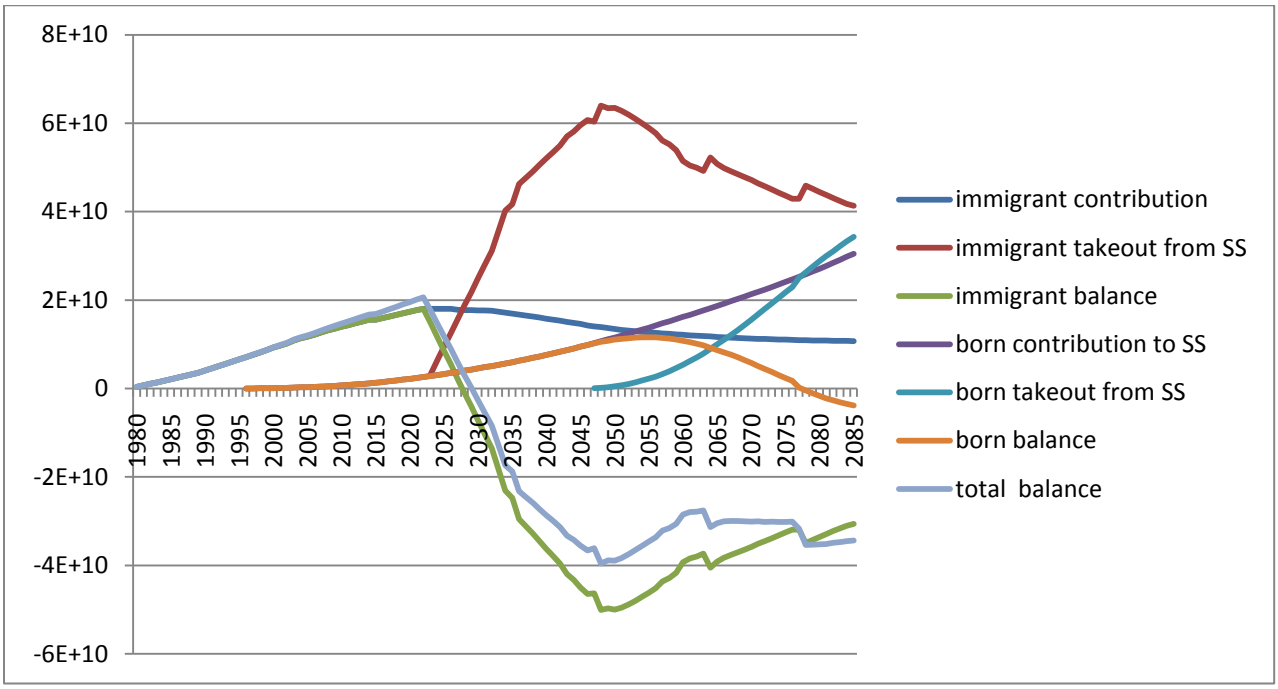
It is important to note that in the projections averages over the course of an entire career were used to compute contribution to Social Security. The true impact would likely help the program move towards positive balances when the deficits become larger in the middle of the simulation because those contributing would be making more than what is calculated due to experience in the industry or acquisitions of skills. The converse also holds, however, and late in the simulation when the program's balance seems to stabilize the young workforce that is supporting the retirees would be making less and thus make the deficit at that point in the simulation much worse.

The heart of the problem found in this project is the taxation and replacement of income rates for those that Social Security considers to be low wage-earners. To tax at roughly six percent and to replace fifty-five percent of the wages means that for every person receiving social security there needs to be roughly nine people contributing. Or to conceptualize it in a different way, for every year taking out of Social Security an individual described by the Social Security Administration as a low wage-earner, they would have to work nine years. This is not consistent with the life expectancy for someone at any point in the course of the model, including 1940 when life expectancy at 67 was over eleven years. It becomes more disastrous by the end of the model when the life expectancy at 67 is more than 21 years. Still, 2010 was the first year in which the program posted a deficit in recent history. The program relies on middle and high-

wage earners to cover the expenses of the low-wage earners so the results that allow scores of predicted low-wage earners to participate is unlikely to help the program.

One of the ways in which the results of the project could help Social Security is if an arrangement in which immigrants and their descendents were allowed a quasi-legal status and allowed to pay into Social Security without paying out. While morally questionable and explicitly unconstitutional, it would provide desperately needed funds to the program. It is possible that illegal immigration and the stigma attached to it have contributed to collapsing the earning potential of Hispanic Americans, so perhaps a scenario in which a politically viable way of truly limiting the number of illegal immigrants could combine with an understanding that these semi-legal residents would contribute to Social Security but not take from it in exchange for not being deported could benefit Social Security. At the very least it could be agreed that they would receive substantially less despite paying in the same amount. This agreement might appease some who are opposed to the immigrants' presence in the United States. It is unlikely to ever be a politically viable solution and could not be implemented in a vacuum. It would have to coincide with a truly closed border and the cooperation of those who may not trust the government. Therefore, it is unlikely that allowing illegal immigrants to participate in Social Security will help to make the program sustainable in the long term, but it may be beneficial for a short period of time.

Figure 1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immigrant contribution
immigrant takeout from SS
immigrant balance
born contribution to SS
born takeout from SS
born balance
total balance

Figure 2

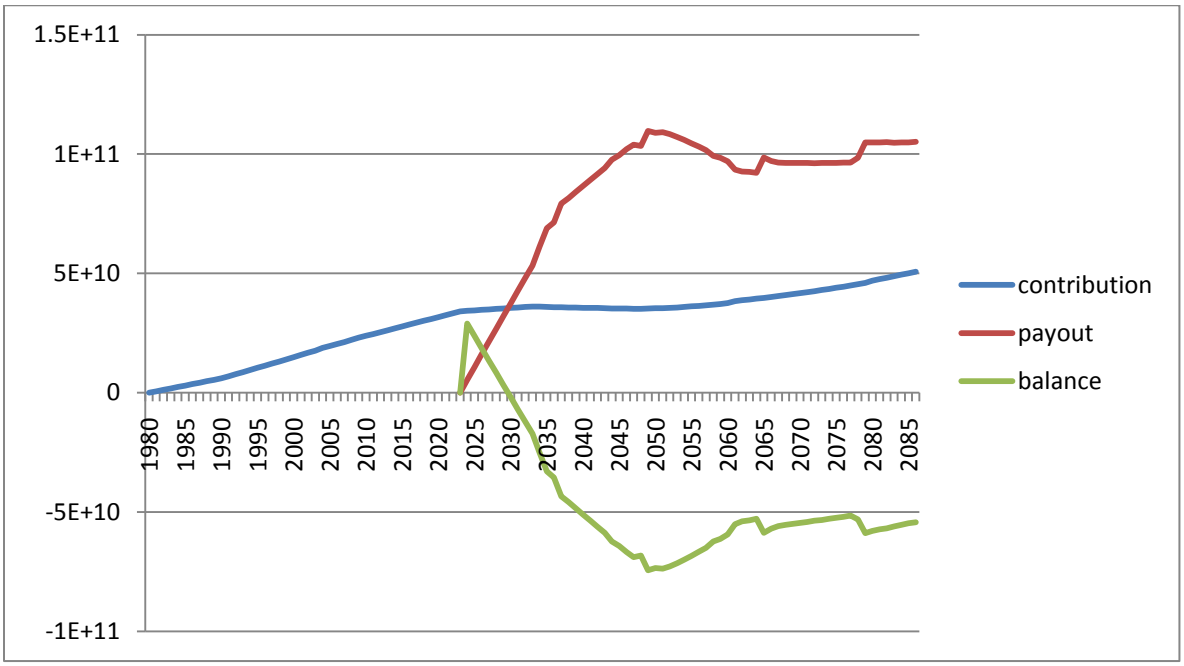
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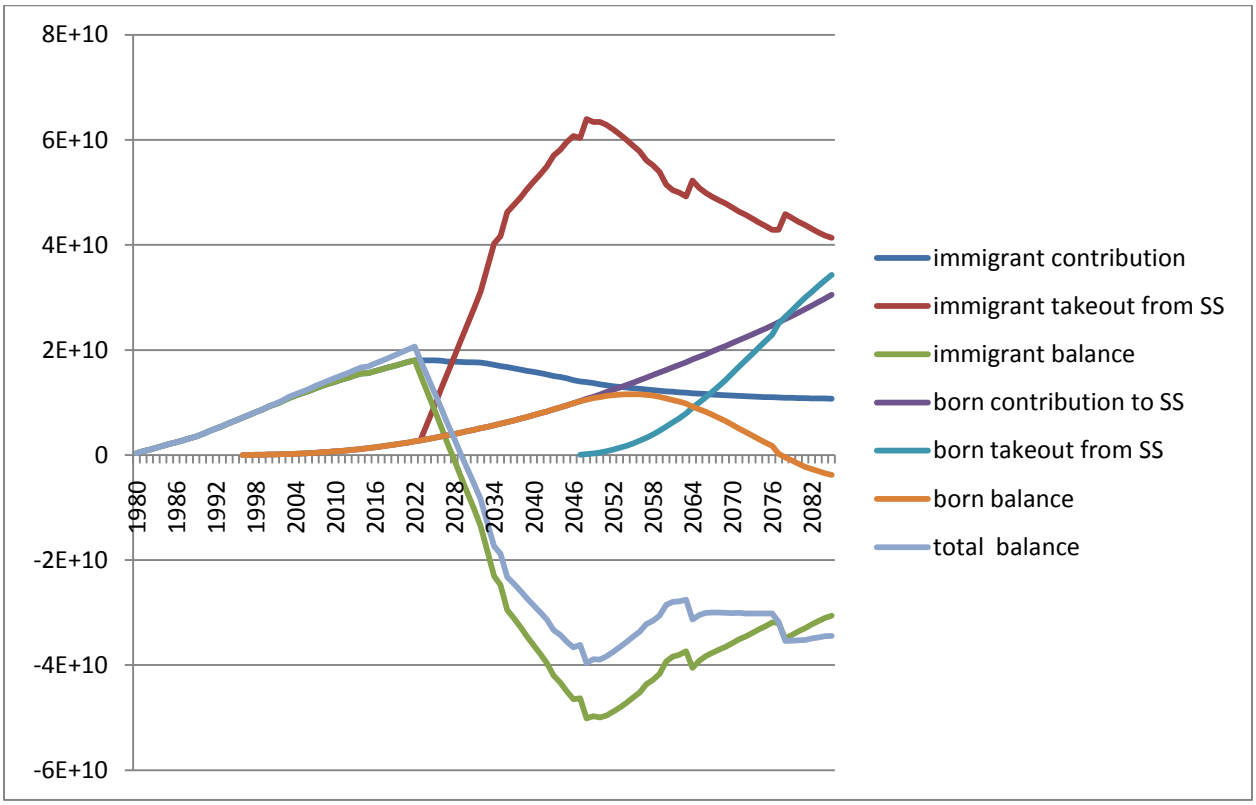
Figure 3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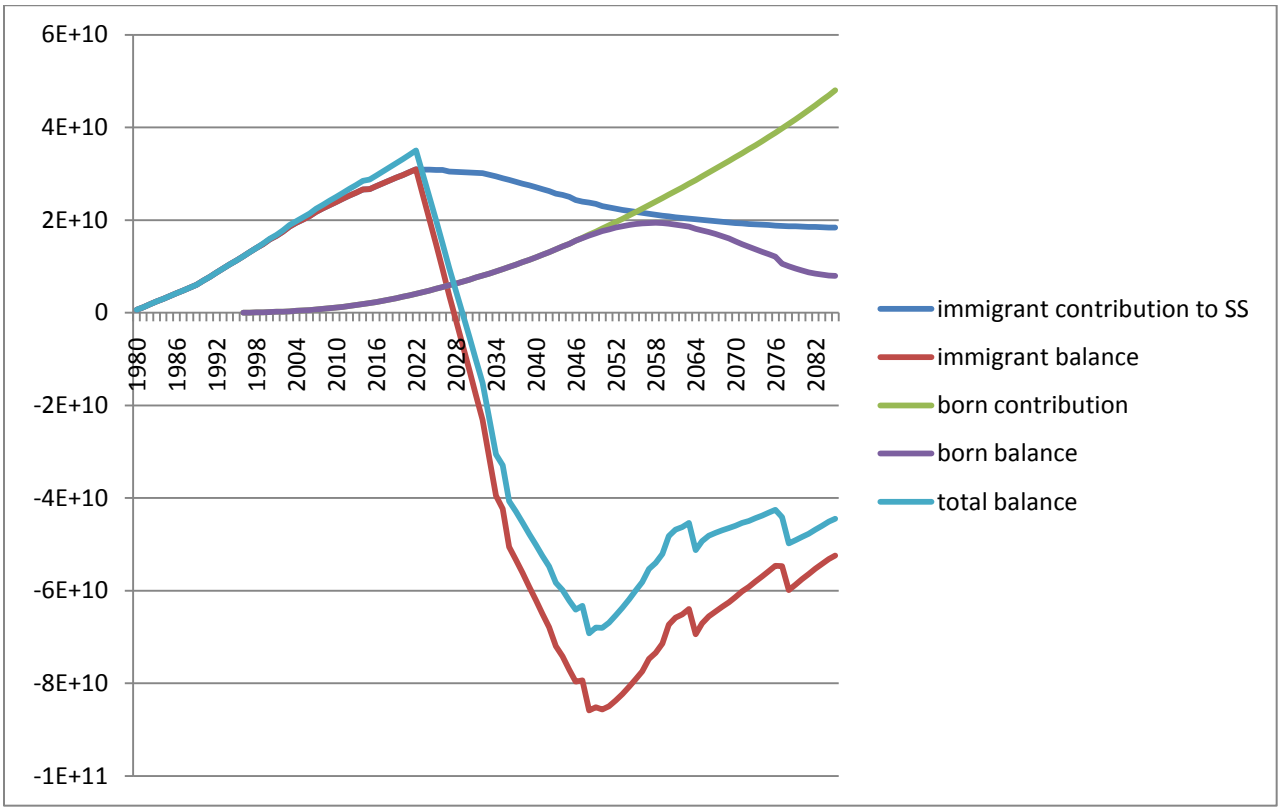
immigrant contribution
immigrant takeout from SS
immigrant balance
born contribution to SS
born takeout from SS
born balance
total balance

Figure 4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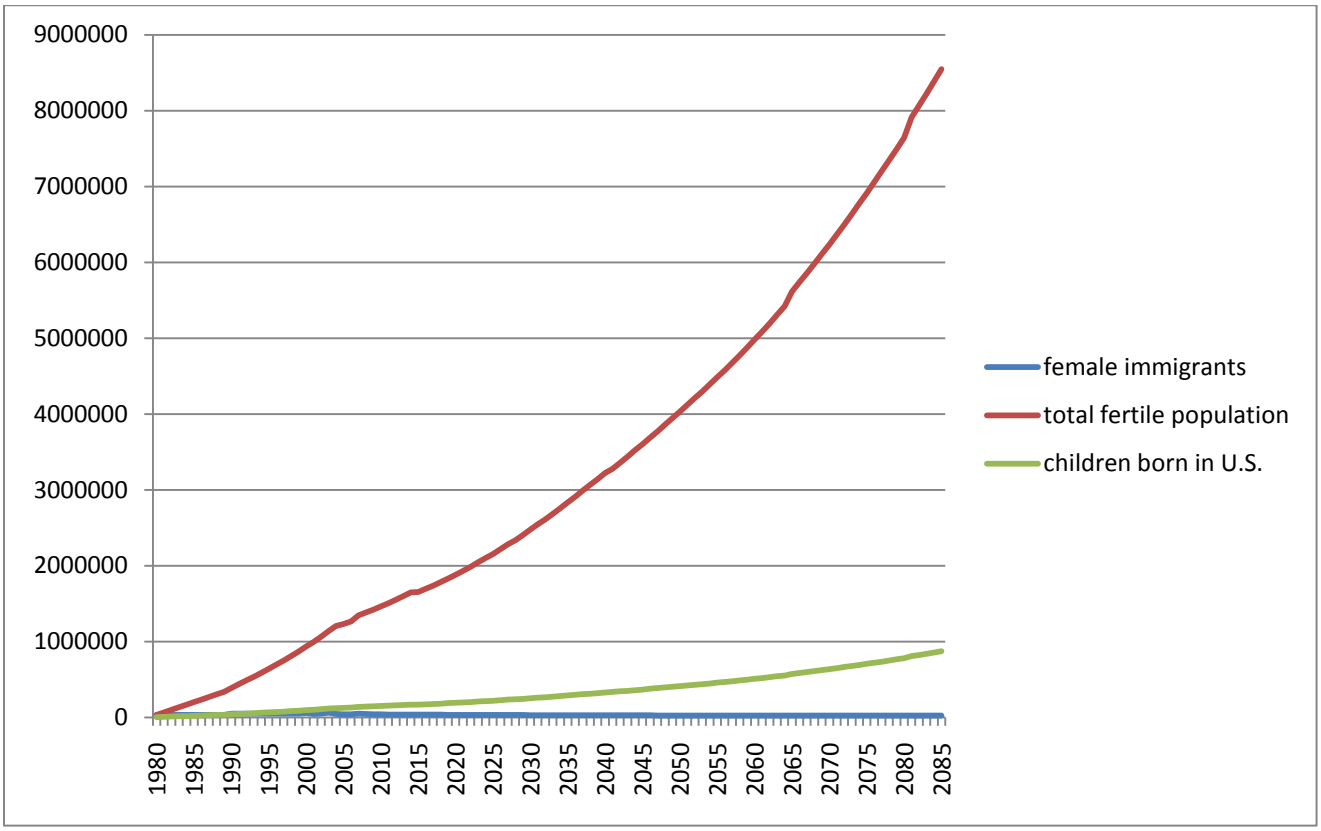
immigrant contribution to SS
immigrant balance
born contribution
born balance
total balance

Figure 5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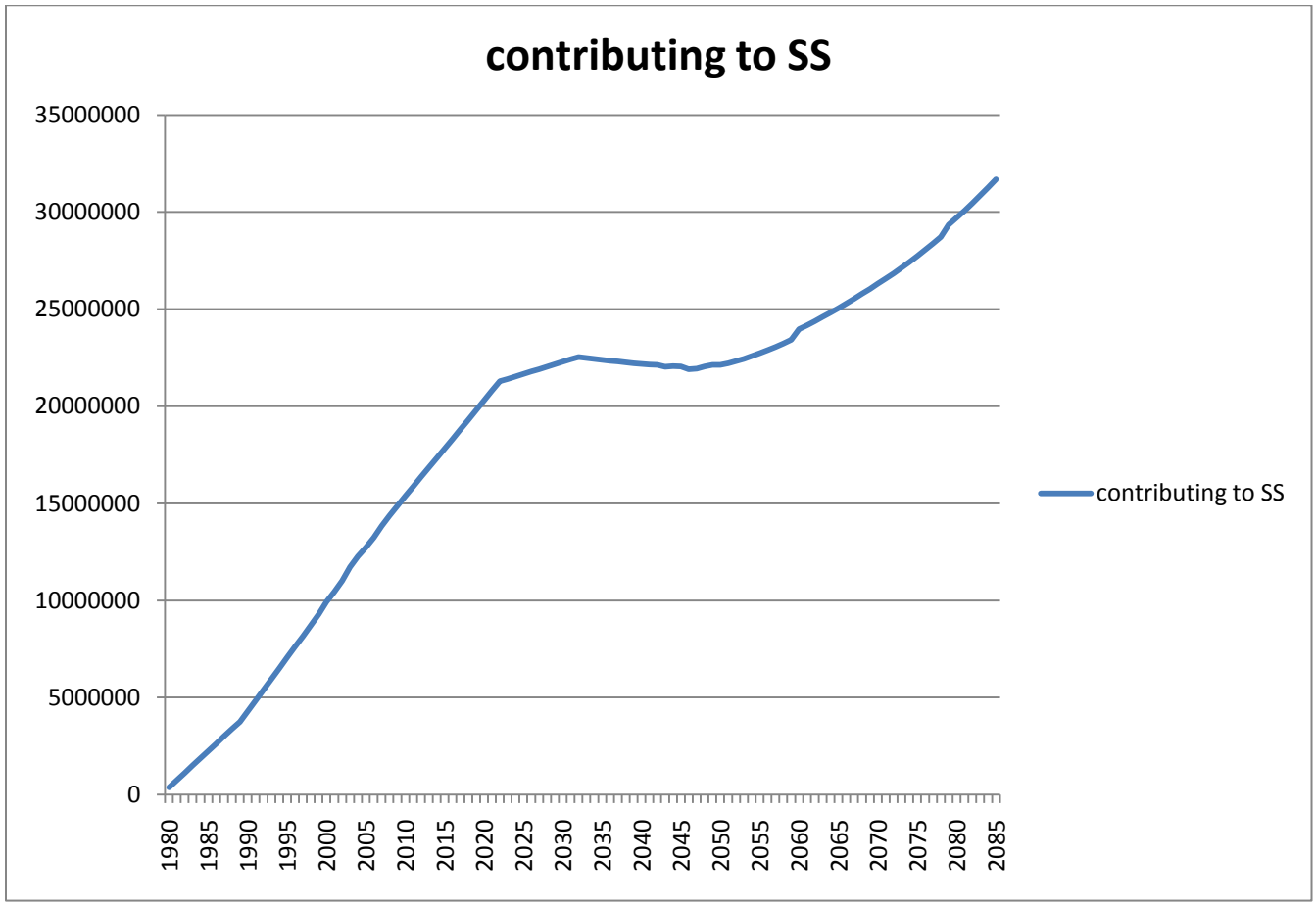
female immigrants
total fertile population
children born in U.S.

Figure 6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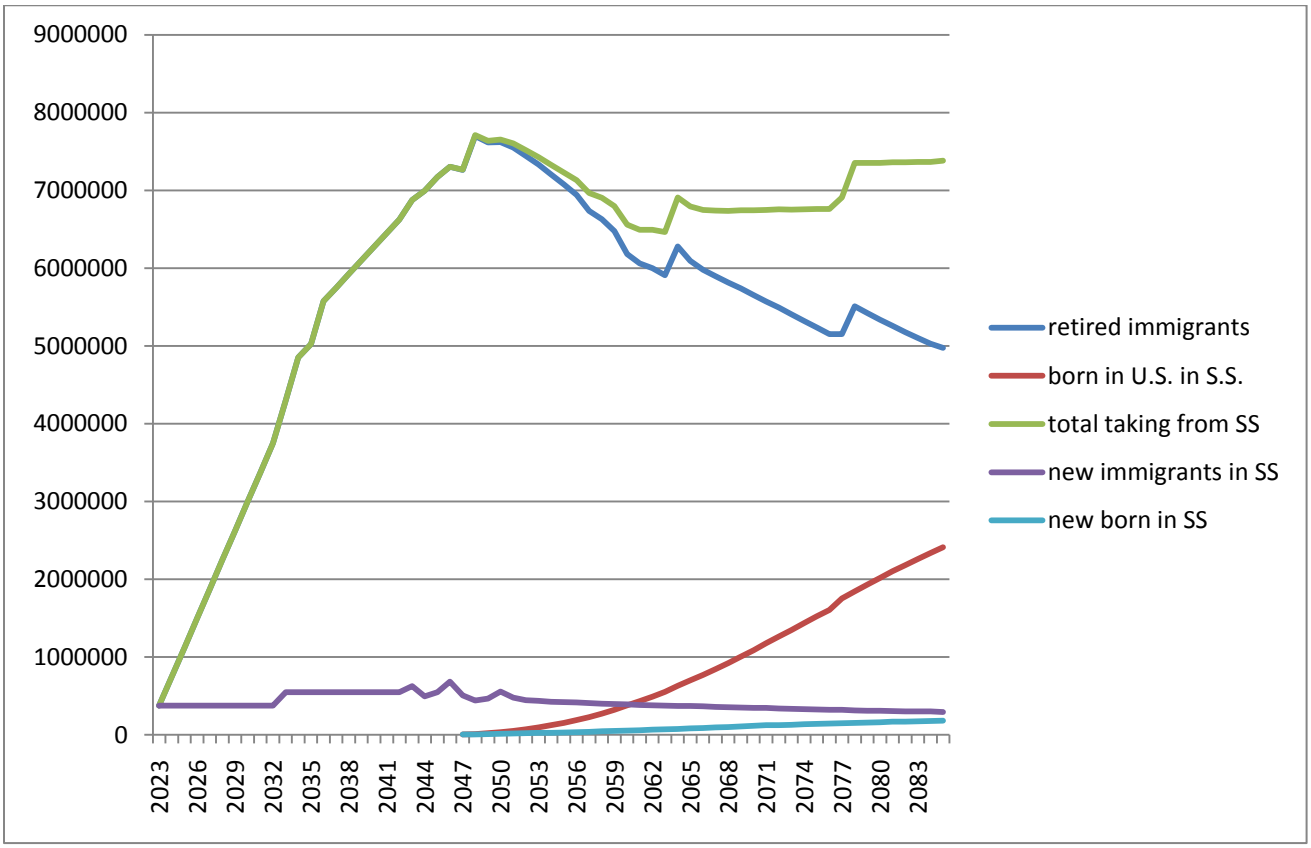
contributing to SS

Figure 7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2074
2077
2080
2083
retired immigrants
born in U.S. in S.S.
total taking from SS
new immigrants in SS
new born in SS

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