



The Economic and Fiscal Consequences of Immigration

DETAILS

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Summary

More than 40 million people living in the United States were born in other countries, and almost an equal number have at least one foreign-born parent. Together, the first generation (foreign-born) and second generation (children of the foreign-born) comprise almost one in four Americans. It comes as little surprise, then, that many U.S. residents view immigration as a major policy issue facing the nation. Not only does immigration affect the environment in which everyone lives, learns, and works, but it also interacts with nearly every policy area of concern, from jobs and the economy, education, and health care, to federal, state, and local government budgets.

Although this report focuses on the United States, the rise in the share of foreign-born populations is an international phenomenon among developed countries.¹ And, given disparities in economic opportunities and labor force demographics that persist across regions of the world, immigration is an issue that will likely endure. Recent refugee crises further highlight the complexity of immigration and add to the urgency of understanding the resultant economic and societal impacts.

One set of headline questions concerns the economy, specifically jobs and wages: To what extent do the skills brought to market by immigrants complement those of native-born workers, thereby improving their prospects; and to what extent do immigrants displace native workers in the labor market or lower their wages?² How does immigration contribute to vibrancy in construction, agriculture, high tech, and other sectors? What is the role of immigration in driving productivity gains and long-term economic growth?

Other questions arise about taxes and public spending: What are the fiscal impacts of immigration on state, local, and federal governments—do immigrants cost more than they contribute in taxes? How do impacts change when traced over the life cycle of immigrants and their children? How does their impact on public finances compare with that of the native-born population? To what extent is the sustainability of programs such as Social Security and Medicare affected by immigration and immigration policy?

¹The U.S. is about in the middle of the range for OECD countries in terms of the percentage of its population that is foreign born.

²This report uses the term “immigrant” synonymously with the term “foreign-born.” This follows common practice for referring to the foreign-born population counted in a census or estimated by a survey as “immigrants,” even though technically this population often includes foreign students, temporary workers on H-1B and other visas, and migrants who entered the country surreptitiously or overstayed legal visas.

The Panel on the Economic and Fiscal Consequences of Immigration was convened by the National Academies of Sciences, Engineering, and Medicine through its Committee on National Statistics to distill findings on these complex questions in a way that advances the conversation and improves understanding of these important topics.³ Support for the study was provided by the John D. and Catherine T. MacArthur Foundation and the Academies' Presidents.

IMMIGRANTS AND THEIR CHARACTERISTICS

Key developments have occurred over the two decades since the last major report on this topic from the National Academies of Sciences, Engineering, and Medicine, *The New Americans: Economic, Demographic, and Fiscal Effects of Immigration*:

- The number of immigrants living in the United States increased by more than 70 percent—from 24.5 million (about 9 percent of the population) in 1995 to 42.3 million (about 13 percent of the population) in 2014; the native-born population increased by about 20 percent during the same period.
- Annual flows of lawful permanent residents have increased. During the 1980s, just under 600,000 immigrants were admitted legally (received green cards) each year; after the 1990 Immigration Act took effect, legal admissions increased to just under 800,000 per year; since 2001, legal admissions have averaged just over 1 million per year.
- Estimates of the number of unauthorized immigrants in the United States roughly doubled from about 5.7 million in 1995 to about 11.1 million in 2014. Gross inflows, which had reached more than 800,000 annually by the first 5 years of the 21st century, decreased dramatically after 2007; partly as a result, the unauthorized immigrant population shrank by about 1 million over the next 2 years. Since 2009, the unauthorized immigrant population has remained essentially constant, with 300,000-400,000 new unauthorized immigrants arriving each year and about the same number leaving.
- The foreign-born population has changed from being relatively old to being relatively young. In 1970 the peak concentration of immigrants was in their 60s; in 2012 the peak was in their 40s.
- Educational attainment has increased steadily over recent decades for both recent immigrants and natives, although the former still have about 0.8 years less of schooling on average than do the latter. Such averages, however, obscure that the foreign born are overrepresented both among those with less than a high school education and among those with more than a 4-year college education, particularly among computer, science, and engineering workers with advanced degrees. The foreign and native born populations have roughly the same share of college graduates.
- As time spent in the United States lengthens, immigrants' wages increase relative to those of natives and the initial wage gap narrows. However, this process of economic

³The full text of the panel's charge is reproduced in Chapter 1.

integration appears to have slowed somewhat in recent decades; the rate of relative wage growth and English language acquisition among the foreign-born is now slightly slower than it was for earlier immigrant waves. The children of immigrants continue to pick up English language skills very quickly.

- Geographic settlement patterns have changed since the 1990s, with immigrants increasingly moving to states and communities that historically had few immigrants. Nonetheless, the majority of the foreign-born population continues to reside in large metropolitan centers in traditional gateway states.

Macroeconomic conditions have also changed:

- *The New Americans* was released during a prolonged period of economic expansion; annual real GDP growth was between 2.7 and 4.8 percent in 1992-2000. Since then, the nation has experienced a dot-com bust recession, followed by a largely jobless recovery, a housing boom, the Great Recession, and another long, slow recovery.
- The nation's total public debt which, in addition to federal government debt, includes state and local debt, was about 63 percent of GDP in 1997. After declining to about 54 percent in 2001, it increased to 100 percent by the end of 2012. In 2016, total public debt remains over 100 percent of GDP. The increases of the past decade have occurred largely as a result of, and in response to, the Great Recession.
- Civilian labor force growth has slowed, from around 1.2 percent annually in the 1990s, to 0.7 percent in the 2000s, to a projected 0.5 percent this decade, reflecting current demographics such as aging Baby Boomers and more young people going to college.
- The portion of the labor force that is foreign-born has risen from about 11 percent to just over 16 percent in the past 20 years. Immigrants and their children will account for the vast majority of current and future net workforce growth—which, at less than 1 percent annually, is slow by historical standards.

LABOR MARKET AND OTHER ECONOMIC IMPACTS

Economic theory provides insights into the mechanisms whereby immigration may impact wages and employment in a receiving country. By increasing the supply of labor, an episode of immigration is predicted to reduce the wages of workers already in the labor market who are most similar to the new arrivals; the incomes of others may increase, either because immigrants' skills complement their own or because the returns on capital increase as a result of changes to the labor force. The mix of skills possessed by arriving immigrants—whether manual laborers, professionals, entrepreneurs, or refugees—will influence the magnitude and even the direction of wage and employment impacts.

Given the potential for multiple, differentiated, and sometimes simultaneous effects, economic theory alone is not capable of producing definitive answers about the net impacts of immigration on labor markets over specific periods or episodes. Empirical investigation is needed. But wage and employment impacts created by flows of foreign-born workers into labor markets are difficult to measure. The effects of immigration have to be isolated from many other influences that shape local and national economies and the relative wages of

different groups of workers. Firms open and close, people retire, workers switch jobs, and a stream of young native-born job seekers comes of age. Changes occur in technology, global supply chains, international trade, and foreign investment. The inflow of the foreign-born at a given time is, under normal circumstances, a relatively minor factor in the \$18 trillion dollar U.S. economy.

The measurement task is further complicated because the impact of immigration on labor markets varies across time and place, reflecting the size of the inflow, the skill sets of natives and incoming immigrants, the local industry mix, the spatial and temporal mobility of capital and other inputs, and the overall health of the economy. Some of the processes that are set in motion take place immediately upon arrival of the foreign-born, while others unfold over many years. Aside from supplying labor, immigration (like population growth generally) adds to consumer demand and derived demand for labor in the production of goods and services which, in turn, may affect workers' wages and incomes.

Beyond these real world complexities, several additional measurement problems must be resolved. Primary among these is that characteristics of local economies affect where people decide to live. Evidence suggests that immigrants locate in areas with relatively high labor demand and wages for the skills they possess and that immigrants are more willing than natives to relocate in response to changes in labor market conditions. If immigrants predominantly settle in areas that experience the highest wage growth, the observed wage growth (or dampened wage decline) may be erroneously attributed to the increase in immigration. Additionally, correct identification of the wage and employment effects of immigration must account for the possible migration response of natives to the arrival of immigrants. Researchers have made great strides in addressing these issues in recent decades; even so, the degree of success in dealing with them is still debated.

Empirical research in recent decades has produced findings that by and large remain consistent with those in *The New Americans*. When measured over a period of 10 years or more, the impact of immigration on the *wages* of natives overall is very small. However, estimates for subgroups span a comparatively wider range, indicating a revised and somewhat more detailed understanding of the wage impact of immigration since the 1990s. To the extent that negative wage effects are found, *prior immigrants*—who are often the closest substitutes for new immigrants—are most likely to experience them, followed by native-born high-school dropouts, who share job qualifications similar to the large share of low-skilled workers among immigrants to the United States. Empirical findings about inflows of skilled immigrants, discussed shortly, suggest the possibility of positive wage effects for some subgroups of workers, as well as at the aggregate level.

The literature on *employment* impacts finds little evidence that immigration significantly affects the overall employment levels of native-born workers. However, recent research finds that immigration reduces the number of hours worked by native teens (but not their employment rate). Moreover, as with wage impacts, there is some evidence that recent immigrants reduce the employment rate of prior immigrants—again suggesting a higher degree of substitutability between new and prior immigrants than between new immigrants and natives.

Until recently, the impact of high-skilled immigrants on native wages and employment received less attention than that of their low-skilled counterparts. Interest in studying high-skill groups has gained momentum as the H1-B and other visa programs have contributed to a rapid rise in the inflow of professional foreign-born workers (about a quarter of a million

persons per year during the last decade). Several studies have found a positive impact of skilled immigration on the wages and employment of both college-educated and noncollege-educated natives. Such findings are consistent with the view that skilled immigrants are often complementary to native-born workers, especially those who are skilled; that spillovers of wage-enhancing knowledge and skills occur as a result of interactions among workers; and that skilled immigrants innovate sufficiently to raise overall productivity. However, other studies examining the earnings or productivity prevailing in narrowly defined fields find that high-skill immigration can have adverse effects on the wages or productivity of natives working in those fields.

With so much focus in the literature on the labor market (and much of this on the short run), other economic consequences—such as the role of immigrants in contributing to aggregate demand, in affecting prices faced by consumers, or as catalysts of long-run economic growth—are sometimes overlooked by researchers and in policy debates. By construction, labor market analyses often net out a host of complex effects, many of which are positive, in order to identify direct wage and employment impacts.

The contributions of immigrants to the labor force reduce the prices of some goods and services, which benefits consumers in a range of sectors including child care, food preparation, house cleaning and repair, and construction. Moreover, new arrivals and their descendants are a source of demand in key sectors such as housing, which benefits residential real estate markets. To the extent that immigrants flow disproportionately to where wages are rising and local labor demand is strongest, they help equalize wage growth geographically, making labor markets more efficient and reducing slack.

Importantly, immigration is integral to the nation's economic growth. Immigration supplies workers who have helped the United States avoid the problems facing stagnant economies created by unfavorable demographics—in particular, an aging (and, in the case of Japan, a shrinking) workforce. Moreover, the infusion by high-skill immigration of human capital has boosted the nation's capacity for innovation, entrepreneurship, and technological change. The literature on immigrants and innovation suggests that immigrants raise patenting per capita, which ultimately contributes to productivity growth. The prospects for long-run economic growth in the United States would be considerably dimmed without the contributions of high-skilled immigrants.

FISCAL IMPACTS

Beyond wage and employment considerations, policy makers and the general public are interested in the impact that an expanding population, and immigration in particular, has on public finances and the sustainability of government programs. All population subgroups contribute to government finances by paying taxes and add to expenditures by consuming public services—but the levels differ. On average, individuals in the first generation are more costly to governments, mainly at the state and local levels, than are the native-born generations; however, immigrants' children—the second generation—are among the strongest economic and fiscal contributors in the population. Estimates of the long-run fiscal impact of immigrants and their descendants would likely be more positive if their role in sustaining labor force growth and contributing to innovation and entrepreneurial activity were taken into account.

Two basic accounting approaches, each with advantages and disadvantages, can be used to estimate the fiscal impact of immigration. Static models may be used to analyze a specific time frame, often a tax year. If data are available, cross-sectional static models can be repeated over multiple years to calculate fiscal impacts for a historical period. By contrast, dynamic projection models can be used to compute the net present value of tax contributions and government expenditures attributable to immigrants and, in some analyses, their descendants projected over their life cycles. Such analyses involve modeling the impact of an additional immigrant on future public budgets.

Regardless of the modeling approach, assumptions play a central role in analyses of the fiscal impacts of immigration. An important example is how the children of immigrants are treated in the analysis. In forward-looking projections, the logic for including second generation effects is straightforward: even when the children of immigrants are native-born citizens, the costs and benefits they generate to public finances would not have accrued in the receiving country had their parents not immigrated in the first place. In cross-sectional analyses, life-cycle effects are captured only to the extent that data are detailed enough to reveal earnings levels of the children of immigrants once they become adults. Even then, the current fiscal contribution of today's adults provides only an imperfect estimate of the future contribution of today's children.

Analysts must also make assumptions about immigrants' use of public services. For services such as education and health care, where the total cost of provision is roughly proportional to the number of recipients, expenditures should be assigned on a per capita, average cost basis. In other cases, the marginal cost of provision may differ greatly from the average cost. For pure public goods (such as national defense, government administration, or interest on the national debt),⁴ the marginal cost of an additional immigrant is, at least in the short run, zero or close to it; thus, for answering some questions, it may be reasonable to allocate the costs of pure public goods only to the native-born or to the pre-existing population consisting of natives and earlier immigrants. For analyses estimating the fiscal impact of other kinds of immigration scenarios—e.g., for large numbers of arrivals taking place over a multiyear period—the zero marginal cost assumption becomes less tenable. Because public goods such as national defense represent a large part of the federal budget, decisions about how to allocate these expenditures have a very large impact on fiscal estimates. For forward-looking intergenerational accounting models, additional assumptions must be made about government budgets, the tax burden across generations, and the interest rate, all of which can affect results dramatically.

While cross-sectional estimates of fiscal impacts are limited in a number of ways, 20 years of Current Population Survey (CPS) data on the first and second generations analyzed by the panel reveal numerous insights about the fiscal impacts of immigrants at the national level:

- Immigrant and native-born populations have historically been and remain very different in terms of their age structure. For the 1994-2013 analysis period, the first generation was heavily concentrated in working ages. Meanwhile, during the early

⁴A pure public good has the characteristic that its consumption by one individual does not reduce the amount available to be consumed by others, and it is not possible to exclude any individuals from consuming the good.

years of this period, the second generation had higher shares of elderly and young people relative to the first and third-plus generations;⁵ however, by 2012, the second generation had become more heavily concentrated at younger ages, including younger adults.

- Cross-sectional data from 1994-2013 reveal that, *at any given age*, the net fiscal contribution of adults in the first generation (and not including costs or benefits generated by their dependents) was on average consistently less favorable than that of the second and third-plus generations. Relative to the native-born, the foreign-born contributed less in taxes during working ages because they earned less. However, this pattern reverses at around age 60, beyond which the third-plus generation has consistently been more expensive to government on a per capita basis than either the first or second generation; this is attributable to the third-plus generation's greater use of social security benefits.
- The same cross-sectional analysis for 1994-2013 reveals that second generation adults had on average a more favorable net fiscal impact for all government levels combined than either first or third-plus generation adults. Reflecting their slightly higher educational achievement, as well as their higher wages and salaries (at a given age), the second generation contributed more in taxes on a per capita basis during working ages than did either of the other generational groups.
- Examining the per capita fiscal impact in an alternative way that reflects the age structure of each generational group as it actually existed in each year during the 1994-2013 analysis period produces a different perspective on the data. For this analysis, the panel included net fiscal costs of dependent children as part of the calculations for their parent's generation. Under the conservative assumption that the per capita fiscal cost of public goods such as national defense should be assigned on an average cost basis, the first generation group (including dependent children) again had a more negative fiscal impact than either of the other generation groups. This outcome is primarily driven by two factors: first, the lower average education level of the first generation translated into lower incomes and, in turn, lower tax payments; second, higher per capita costs (notably those for public education) were generated at the state and local levels because the first generation had, on average, more dependent children than other adults in the population (due in part to the age structure of first generation adults). A partially offsetting positive fiscal impact was created by the fact that, during the analysis period, first generation adults were disproportionately of working ages and paying taxes.
- Under the same assumptions as above, and using the same data, the fiscal impact of the second generation group (including their dependent children) was only modestly less negative than for the first generation over the period as a whole and considerably more negative than that of the third-plus generation. This result may appear at odds with the *age-specific* data indicating that the second generation typically outperforms all other generations along a number of dimensions, including years of education, per capita wage and salary income, and per capita taxes paid. This apparent incongruity is due mainly to changing age profiles. At the beginning of the 1994-2013 period, the

⁵Throughout the report, "third-plus generation" is used as shorthand to refer to any American who is in the third or higher generation after immigration (generally, those with two U.S. born parents).

second generation was concentrated in the (fiscally expensive) retirement ages. By 2013, comparatively more second generation individuals were in younger age groups, while more third-plus generation individuals were in older age groups. As a result of this demographic shift, the second generation group's fiscal impact became only slightly more negative than that of later generations. The larger negative effect for the second generation group during the analysis period was due entirely to their age distribution.

- Figures for the 1994-2013 analysis period translate into large fiscal shortfalls overall for *all three* groups (although the federal and total fiscal picture became more favorable for the first and second generation groups over the period, while it generally became less favorable for the third-plus generation group). These shortfalls are consistent with deficit figures in the National Income and Product Accounts for the federal, state, and local level budgets combined. For 2013, the total fiscal shortfall (i.e., the excess of government expenditures over taxes) was \$279 billion for the first generation group, \$109 billion for the second generation group, and \$856 billion for the third-plus generation group.⁶ Under this scenario, the first generation group accounted for 17.6 percent of the population and 22.4 percent of the total deficit, while the second generation accounted for a slightly higher share of the total deficit (8.7 percent) than their share in the population (7.4 percent). While the fiscal shortfall for the average member of the first generation group was larger than it was for an average member in either native-born group, the shortfall for the latter groups would have been larger without the presence of the first generation group because federal expenditures on public goods such as national defense (assigned to members of all three groups on an average cost basis here) would have to be divided among a smaller population.
- Because government expenditures on public goods are large, accounting for almost one-third of total federal spending, the average versus marginal cost assumption is an important driver of fiscal impact estimates. When a marginal cost allocation of public goods is assumed instead of the average cost allocation used in the fiscal impact numbers reported above, the total net fiscal impact of the first generation group accounts for less than 4 percent of the total deficit, while still accounting for 17.6 percent of the sample population.

Models that project the fiscal impact of immigrants and their descendants—that is, models that add up the future tax payments and benefit receipts each year from the time of entry into the United States—provide an alternative to the static historical analyses described above. Although the assumptions involved—about the government budget, choice of interest rate, or who pays for public goods—strongly influence the results, additional important insights about the impact of immigration on fiscal balances can be derived:

- Viewed over a long time horizon (75 years in our estimates), the fiscal impacts of immigrants are generally positive at the federal level and negative at the state and local levels. State and local governments bear the burden of providing education benefits to young immigrants and to the children of immigrants, but their methods of

⁶Again, in this analysis, dependent children are included in the generational group of the parent to which they are assigned.

taxation recoup relatively little of the later contributions from the resulting educated taxpayers. Federal benefits, in contrast, are largely provided to the elderly, so the relative youthfulness of arriving immigrants means that they tend to be beneficial to federal finances in the short term. In addition, federal taxes are more strongly progressive, drawing more contributions from the most highly educated. The panel's historical analysis indicates that inequality between levels of government in the fiscal gains or losses associated with immigration appears to have widened since 1994. The fact that states bear much of the fiscal burden of immigration may incentivize state-level policies to exclude immigrants and raises questions of equity between the federal government and states.

- Today's immigrants have more education than earlier immigrants and, as a result, are more positive contributors to government finances. If today's immigrants had the same lower educational distribution as immigrants two decades ago, their fiscal impact, expressed as taxes paid minus expenditures on benefits received, would be much less positive or much more negative (depending on the scenario). Whether this education trend will continue remains uncertain, but the historical record suggests that the total net fiscal impact of immigrants across all levels of government has become more positive over time.
- An immigrant and a native-born person with similar characteristics will likely have about the same fiscal impact. Persons with higher levels of education contribute more positively to government finances regardless of their generational status. Furthermore, within age and education categories, immigrants generally have a more salutary effect on budgets because they are disqualified from some benefit programs and because their children tend to have higher levels of education, earnings, and tax paying than the children of similar third-plus generation adults.

In addition to the net fiscal effects of immigration for the nation as a whole, the effects on revenues and expenditures for state and local governments are also of concern to policy makers and the public. The panel's analysis of subnational data indicates that the net burden of immigration to fiscal balance sheets varies tremendously across state governments. Consistent with findings in the national level analyses (and for the same reasons), first generation adults plus their dependents tend to be more costly to state and local governments on a per capita basis than adults (plus their dependents) in the second or third-plus generations, and, in general, second generation adults contribute the most to the bottom line of state balance sheets.

For the 2011-2013 period, the net cost to state and local budgets of first generation adults (including those generated by their dependent children) is, on average, about \$1,600 each. In contrast, second and third-plus generation adults (again, with the costs of their dependents rolled in) create a net positive of about \$1,700 and \$1,300 each, respectively, to state and local budgets. These estimates imply that the total annual fiscal impact of first generation adults and their dependents, averaged across 2011-13, is a cost of \$57.4 billion, while second and third-plus generation adults create a benefit of \$30.5 billion and \$223.8 billion, respectively. By the second generation, descendants of immigrants are a net positive for the states as a whole, in large part because they have fewer children on average than do first generation adults and contribute more in tax revenues than they cost in terms of program expenditures.

In jurisdictions with higher spending on schools (kindergarten through 12th grade), the relative cost of first generation immigrants with more dependents is typically higher compared with low-spending jurisdictions. However, this investment could drive higher wages in the future.

DATA RECOMMENDATIONS

The theoretical and empirical advances of recent decades have allowed researchers to address questions about the economic and fiscal impacts of immigration with greater confidence; nonetheless, some questions remain difficult to answer fully. Therefore, this report concludes by identifying data needs for pushing the knowledge frontier forward so that a report published 20 years from now will present an even more comprehensive portrayal of how immigration affects the economy and those engaged in economic activities. A key requirement is building into the nation's statistical infrastructure the capacity to monitor the net contributions of the native-born children of immigrants, who help to shape the nation's economic and demographic future over the course of their entire lives. The ability to identify second generation respondents is extremely desirable for empirical analyses of both the labor market and fiscal impacts of the children of immigrants, who may on average attain different education and skill levels (often higher), achieve different occupational outcomes, and generate at least slightly different fiscal impacts compared with the general population. Perhaps the most important of the data recommendations for advancing research on immigration identified in this report—and also recommended in our sister panel's report on *The Integration of Immigrants into American Society*—is for the U.S. Census Bureau to add a question on the birthplace of parents to the American Community Survey (ACS). This addition would permit more accurate monitoring of local populations and labor forces than is possible with the current source of such information, the CPS, which while highly valuable has a considerably smaller sample size than the ACS.