

Immigration, Social Security, and Broader Fiscal Impacts

Author(s): Ronald Lee and Timothy Miller

Source: *The American Economic Review*, Vol. 90, No. 2, Papers and Proceedings of the One Hundred Twelfth Annual Meeting of the American Economic Association (May, 2000), pp. 350-354

Published by: American Economic Association

Stable URL: <https://www.jstor.org/stable/117249>

Accessed: 18-03-2020 18:41 UTC

## REFERENCES

Linked references are available on JSTOR for this article:

[https://www.jstor.org/stable/117249?seq=1&cid=pdf-reference#references\\_tab\\_contents](https://www.jstor.org/stable/117249?seq=1&cid=pdf-reference#references_tab_contents)

You may need to log in to JSTOR to access the linked references.

---

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact [support@jstor.org](mailto:support@jstor.org).

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <https://about.jstor.org/terms>



JSTOR

*American Economic Association* is collaborating with JSTOR to digitize, preserve and extend access to *The American Economic Review*

## Immigration, Social Security, and Broader Fiscal Impacts

By RONALD LEE AND TIMOTHY MILLER\*

Population aging and rising health costs will cause dramatic increases in federal expenditures some decades from now (Lee et al., 1999). Rising immigration to the United States may help avert this future crisis by slowing population aging and helping to pay for Social Security and public health care. But many immigrants have low education and high fertility, so their net fiscal impact may be costly rather than beneficial.

This paper revisits our earlier analysis of the fiscal impact of immigration (Lee and Miller, 1997), henceforth LM97, in light of higher projected rates of productivity growth, an unexpected increase in the effective federal income tax rate in recent years, and some revisions of the demographic projections. We will emphasize implications for Social Security, and address points raised by the recent literature (Holger Bonin et al., 1998; George Borjas, 1999; Alan Auerbach and Philip Oreopolis, 2000; Kjetil Storesletten, 2000).

### I. Theory

Immigrants differ from natives in age, education, language, culture, region of residence, emigration, and fertility. These characteristics affect their own public-sector impact as well as the numbers and characteristics of their descendants, who likewise affect the public sector. Transfer programs for health, education, wel-

fare, and pensions are of particular concern, but there are other important effects as well. Like any incremental member of the population, immigrants help spread the cost of public goods, such as defense, and help to service the pre-existing federal debt and thereby reduce taxes at the federal level for the preexisting population. The public sector also provides congestible services, whose costs rise roughly in proportion to the population size, and which also require capital expenditures. Through these programs, immigrants are costly, particularly at the state and local level.

Immigrants also affect factor prices and factor supplies, but our partial-equilibrium analysis ignores these consequences (see Storesletten [2000], which includes them). However, empirical analyses do not agree that immigrant workers depress wages or raise unemployment of natives. If they do, then they must also raise profits by a greater amount, thereby generating higher taxes, which offset any loss in taxes on labor earnings.

### II. Methods and Data

1. *The Need for Longitudinal Calculations.*—Most analyses examine the taxes paid and benefits received by immigrant individuals or immigrant-headed households in a given year, for example using PUMS or CPS. Such studies are easily misleading, because current U.S. immigrant *individuals* are disproportionately of working age and, consequently, pay more in taxes than they cost in benefits. Nonetheless, they will grow old and retire, and these future costs are not included; nor are their children included as costs or as taxpayers. Calculations based on immigrant *households* are also highly misleading, because U.S.-born children of immigrants count only while they live with their immigrant parents, but once they have matured into the labor force and head their own house-

\* Lee: Departments of Demography and Economics, University of California, 2232 Piedmont Ave., Berkeley, CA 94720 (e-mail: rlee@demog.berkeley.edu); Miller: Department of Demography, University of California, 2232 Piedmont Ave., Berkeley, CA 94720 (e-mail: tmiller@demog.berkeley.edu). Our research was funded by NIA grant no. R37 AG11761. Ryan Edwards provided key fiscal projections used in our analysis.

holds, their tax payments are excluded. Demonstrating these problems, in Lee and Miller (1998 p. 198) we show that, in 1994, immigrant individuals had a positive fiscal balance of 32 billion dollars; immigrant households had a negative fiscal balance of 13 billion dollars; and immigrants together with all their surviving children had a positive balance of 30 billion dollars. The only meaningful calculation is longitudinal, tracing the consequences of an immigrant's arrival through subsequent years, and taking full account of all the immigrant's descendants. Cross-sectional studies cannot be viewed as measuring a short-term impact.

2. *Demography.*—We assume that fertility (TFR) moves from its current level near 2.0 to a long-run level of 1.9, consistent with Social Security assumptions. We assume that life expectancy rises to 86 years in 2075, about four years higher than Social Security assumptions (Lee and Lawrence Carter, 1992). Our baseline assumption is for 1.29 million immigrants per year, of which 30 percent eventually emigrate, yielding 900,000 net immigrants annually, as assumed by Social Security projections. First-generation immigrants have a TFR of 2.7 compared to 2.0 for natives. Fertility of the second generation is midway between that of the first generation and natives, while third-generation fertility is indistinguishable from that of natives (LM97). We distinguish immigrants by single years of age, by years in the United States since immigration, by education (less than, equal to, or greater than high school), and we distinguish their descendants by immigrant generation, age, and education. We project educational attainment of descendants based on estimated inter-generational transition matrices (LM97).

3. *Fiscal Environment.*—The impact of an immigrant will depend on the fiscal environment during the years of tax-paying, so we must project future adjustments of the public budgets. Our projections are based on Lee et al. (1999), with most assumptions following those of the Congressional Budget Office. We assume that current public-program structure is unchanged, except for the legislated increase in normal retirement age. Age schedules of taxes and benefits rise with labor productivity, except that retirement benefits, health-care costs, and some

other items receive special treatment. Population age distributions, along with estimated age profiles of benefit costs, generate expenditures for 25 programs. Most other public expenditures are assumed to increase in proportion to GDP. GDP is driven by labor-force growth and productivity growth, assumed to be 1.6 percent per year in baseline. Population aging leads to a large increase in public expenditures as a share of GDP between 2010 and 2035. In our baseline, we assume that the federal government adjusts the budget so that the non-OASDI debt/GDP ratio does not exceed 0.8, and so that OASDI trust funds do not fall below 100 percent of the next year's costs. In our baseline, OASDI tax rates start rising in 2028, and other federal tax rates do not rise until 2048 (contrast LM97, where the budget was balanced in 2016 and thereafter). In these projections, public goods (mainly defense) are provided with zero marginal cost, whereas other government goods and services are provided at a cost proportional to the population.

4. *Data.*—Our age-specific program cost profiles are estimated from pooled CPS data, 1994–1996, with occasional use of other sources such as PUMS and Social Security administrative data. All profiles are then adjusted proportionately to match National Income and Product Accounts (NIPA) control totals for 1998.

5. *Strategy.*—Our fiscal projections provide future taxes and benefits by age, educational level, and immigrant generation. We project the descendants of an immigrant of given age and their educational attainments. Given the projected tax and benefit rates, we can then calculate all the measures described below. To reduce the great uncertainty in the long-horizon net-present-value (NPV) calculations, we emphasize annual projections of impacts, and we conduct sensitivity tests on key assumptions.

### III. Results

Figure 1 plots the net fiscal consequences of a single composite immigrant arriving in 1998 (state, local, and federal combined) by generation for each future year. The lines give the weighted average of the consequences for each

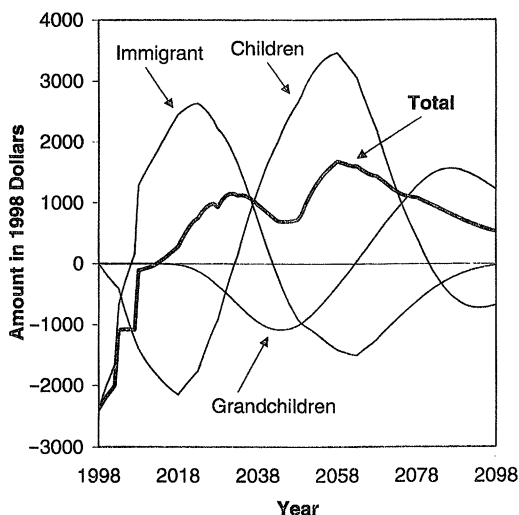


FIGURE 1. PRESENT VALUE OF ANNUAL FISCAL IMPACTS OF ONE IMMIGRANT ADMITTED IN 1998, DISCOUNTED AT 3 PERCENT

characteristic, using frequencies among recent immigrants. We see that the initial impact is negative, as the immigrant sends children to school and has low earnings in the years soon after arrival. The impact turns positive after 16 years (although no fiscal adjustment occurs before 2028, and then only for OASDI). The figure shows how each generation cycles through negative, positive, and finally negative impacts, but because the generations overlap the total impact remains positive after 16 years, although discounted values trend towards zero.

Similarly, we project the impact in each future year of increasing the immigrant stream by 100,000 per year from now on, maintaining the composition of the current stream. Figure 2 plots the results for federal and state/local impacts, each expressed as a percentage of the corresponding tax revenues. We see that the federal impact is always positive and rising, but even after 75 years it amounts only to about 0.7 percent of federal revenues. The state/local impact is always negative but never exceeds 0.5 percent of state/local revenues. The total impact is initially negative but becomes positive after several decades, and it is always small relative to total tax revenues. We have made similar projections for the impact on OASDI. The impact is conveniently summarized by calculating

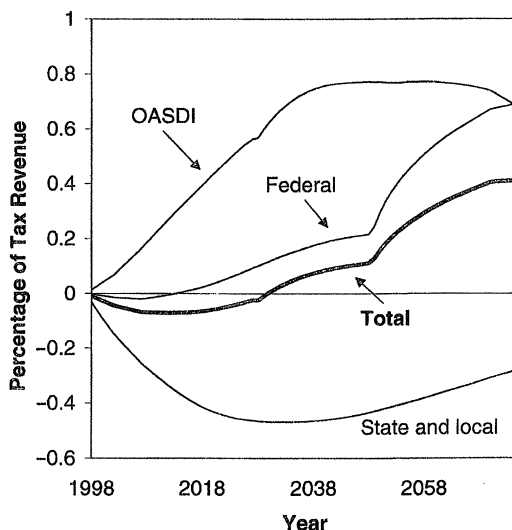


FIGURE 2. UNDISCOUNTED ANNUAL FISCAL IMPACTS OF 100,000 ADDITIONAL IMMIGRANTS ADMITTED EACH YEAR, EXPRESSED RELATIVE TO TAX REVENUE

*Notes:* OASDI = net fiscal impact on Old-Age, Survivors, and Disability Insurance expressed as a percentage of OASDI payroll taxes. Federal = net fiscal impact on federal government excluding OASDI expressed as a percentage of federal taxes. State and local = net fiscal impact on state and local governments expressed as a percentage of state and local taxes. Total = net fiscal impact on all levels of government expressed as a percentage of total taxes.

its effect on the actuarial balance, the present value (PV) of tax revenues less costs, plus the initial trust-fund balance minus the PV of costs in 2075, all divided by the PV of payroll over the next 75 years. It is currently  $-2.07$  percent, and we find that 100,000 more net immigrants annually would improve it by  $+0.06$  percent. This very small effect is similar to the Social Security Trustees'  $+0.07$  percent (calculated from their sensitivity analysis; see Board of Trustees, 1999). The small difference probably arises mainly because the Trustees treat immigrants of a given age as identical to natives in earnings and fertility whereas we give them their actual earnings distribution and fertility.

We can summarize the projected consequences for a single immigrant, as described earlier, by calculating the NPV over various time horizons up to 300 years. The results are reported in Table 1. State/local impacts are always negative, whereas OASDI and all federal impacts are always positive, with the federal

TABLE 1—NET PRESENT VALUES FOR A SINGLE IMMIGRANT  
(BY HORIZONS, IN THOUSANDS OF 1998 DOLLARS)

Horizon (years)	State/local	OASDI	Total federal	Total
25	-39	18	27	-13
50	-46	27	56	10
75	-40	29	86	46
100	-36	25	103	66
300	-32	13	131	99

impact growing strongly as the horizon lengthens. The total impact starts negative and only becomes positive after several decades.

#### IV. Relation to Recent Literature

Storesletten (2000) takes an approach quite similar in many respects to ours, but the economic side of his model is more developed, and the demographic side less developed. Capital, factor prices, and labor supply are endogenous. The general equilibrium feedbacks reduce the impact of immigration by about 20 percent. He finds the NPV of a legal immigrant to be \$7,400, substantially lower than the \$99,000 we find here. However, this number does not reflect public goods; adding them raises the NPV to \$26,000 (Storesletten, 2000 p. 16). The discount rate is endogenous and varies; results are closer to ours when 4 percent is used in place of the endogenous discount rate. He assumes substantially higher fertility and lower mortality than we do, implying a lower old-age dependency ratio than is projected by the Social Security Actuaries, which would further reduce the NPV. His estimates are therefore fairly consistent with ours after taking these identifiable differences in assumptions into account.

LM97 assumed that the federal budget would be balanced starting in 2016; without this assumption, the NPV became slightly negative. Based on this, Borjas (1999) suggests that the higher rate of productivity growth in recent years, together with the higher federal tax yield and vanishing deficit, may permit the United States to grow its way out of the aging-related fiscal crisis expected in a few decades. "Immigration would then generate huge fiscal losses for natives, as they would have to share the fiscal savings generated by economic growth

with more people" (Borjas, 1999 p. 125). We projected one scenario in which productivity grows at 2.6 percent per year. Consequently, the OASDI tax increase is delayed by eight years relative to baseline until 2036, and the general federal tax increase is delayed by six years until 2054. In this case, the NPV of a composite immigrant in 1998 rises from \$99,000 to \$266,000, contrary to Borjas's concern. The higher productivity growth means that immigrants also receive higher wages and pay higher taxes, eventually receiving higher retirement benefits as well. The higher effective federal tax rate of recent years means that immigrants pay higher taxes even without any additional budget adjustment.

Our results are also consistent with the generational accounting of Auerbach and Oreopolis (2000), when they include public goods. Like them, and like LM97, we find that the educational level of immigrants matters a great deal to their fiscal impact.

#### V. Discussion

Although the future is highly uncertain, it is clear that the consequences of immigration can be assessed only over very long time horizons. Some U.S.-born children of immigrants arriving today will still be alive 130 years from now. Perhaps the most important conclusion, on which most analysts agree, is that the overall fiscal consequences of altering the volume of immigration would be quite small and should not be a major consideration for policy. We find that 100,000 more immigrants per year would initially raise taxes for nonimmigrants, and later reduce them, by amounts less than 1 percent of current tax levels. Costs will be much heavier for states and local areas that receive many incremental immigrants, while states with few immigrants should reap the advantages of reduced federal and OASDI taxes without bearing the local costs of education and health care for immigrants.

A higher rate of immigration would benefit OASDI, even though many immigrants have low education. One reason is that immigrants have high fertility, which at least temporarily eases the projected fiscal burden of the retiring baby boomers in a few decades. As with other fiscal impacts, however, the effect is quite

small. Our results also suggest that a policy of admitting only high-education immigrants of young working ages could be highly fiscally beneficial, consistent with the findings of Bonin et al. (1998), Auerbach and Oreopolis (2000), and Storesletten (2000). However, such a policy would most likely conflict with other goals of immigration policy.

#### REFERENCES

- Auerbach, Alan and Oreopolis, Philip.** "The Fiscal Impact of U.S. Immigration: A Generational Accounting Perspective," in James Poterba, ed., *Tax policy and the economy*, Vol. 14. Cambridge, MA: MIT Press, 2000 (forthcoming).
- Board of Trustees, Social Security Administration.** *The 1999 annual report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Disability Insurance Trust Funds*. Washington, DC: U.S. Government Printing Office, 1999.
- Bonin, Holger; Raffelhüschen, Bernd and Walliser, Jan.** "Can Immigration Alleviate the Demographic Burden?" Unpublished manuscript, Institut für Finanzwissenschaft, Albert-Ludwigs-Universität, Freiburg, Germany. 1998.
- Borjas, George.** *Heaven's door: Immigration policy and the American economy*. Princeton, NJ: Princeton University Press, 1999.
- Lee, Ronald and Carter, Lawrence.** "Modeling and Forecasting the Time Series of U.S. Mortality." *Journal of the American Statistical Association*, September 1992, 87(419), pp. 659–71.
- Lee, Ronald and Miller, Timothy.** "The Lifetime Fiscal Impacts of Immigrants and Their Descendants," in James Smith and Barry Edmonston, eds., *The new Americans*. Washington, DC: National Academy Press, 1997, pp. 297–362.
- \_\_\_\_\_. "The Current Fiscal Impact of Immigrants: Beyond the Immigrant Household," in James Smith and Barry Edmonston, eds., *The immigration debate*. Washington, DC: National Academy Press, 1998, pp. 183–205.
- Lee, Ronald; Tuljapurkar, Shripad and Edwards, Ryan.** "Uncertain Demographic Futures and Government Budgets in the US." Unpublished manuscript, University of California–Berkeley, 1999.
- Storesletten, Kjetil.** "Sustaining Fiscal Policy Through Immigration." *Journal of Political Economy*, April 2000, 108(2), pp. 300–23.