



IMMIGRATION AND AMERICAN JOBS



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Immigration and American Jobs

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Executive Summary

The US labor market has been slow to recover from the deep recession of 2007–2009. As of September 2011, there were almost seven million fewer jobs than before the downturn. Policymakers have debated numerous ways to increase employment, from government spending to tax policy to training and education initiatives. But relatively little consideration has been given to immigration reform as a way to boost the economy, even though immigration policy affects innovation and job growth. Instead, the immigration debate has become painfully deadlocked, with widespread agreement that the current system is broken but little consensus on how it should be fixed. In these challenging times, more should be done to identify incremental changes to immigration policy that could be made immediately to boost employment for US workers and accelerate the country’s economic recovery.

To better understand the potential for immigration policy to help rejuvenate the US economy, policymakers need answers to basic questions such as whether the foreign born take jobs from the native born or instead create more jobs, on balance, and what types of immigrants generate the most jobs for native-born workers. Although numerous studies have explored how immigration affects natives’ wages, there is relatively little research on how immigration affects employment among US natives. This study seeks to fill this gap and answer the question of what specific changes to immigration policy could speed up American job growth.

There are two basic theories of how immigration affects natives’ labor market outcomes. One is that immigrants have the same skills as US natives and the two groups “compete” for jobs. In this view,

immigration reduces natives’ employment. The other theory is that foreign-born workers “complement” US-born workers. That is, immigrants and natives have different skills, and immigration diversifies the workforce. Immigration results in more productive companies, stronger economic growth, and higher employment among US natives.

This study focuses on two groups most frequently identified by policymakers and employers as vital to America’s economy: foreign-born adults with advanced degrees and temporary work visa holders. (For simplicity, all foreign born are referred to here as immigrants, regardless of their visa type.) In trying to establish whether these groups help or hurt job prospects among US natives, the study uses hard numbers—annual data from the US Census Bureau and applications for temporary work-



ers—to perform a state-level comparison that answers the question, “In states with more immigrants, are US natives more or less likely to have a job?” This study also looks at the fiscal effect of the foreign born by comparing the benefits they receive to the taxes they pay.

The analysis yields four main findings:

1. Immigrants with advanced degrees boost employment for US natives. This effect is most dramatic for immigrants with advanced degrees from US universities working in science, technology, engineering, and mathematics (STEM) fields. The data comparing employment among the fifty states and the District of Columbia show that from 2000 to 2007, an additional 100 foreign-born workers in STEM fields with advanced degrees from US universities is associated with an additional 262 jobs among US natives. While the effect is biggest for US-educated immigrants working in STEM, immigrants with advanced degrees in general raised employment among US natives during 2000–2007:

- An additional 100 immigrants with advanced degrees in STEM fields from either US or foreign universities is associated with an additional eighty-six jobs among US natives.
- An additional 100 immigrants with advanced degrees—regardless of field or where they obtained their degrees—is associated with an additional 44 jobs among US natives.

2. Temporary foreign workers—both skilled and less skilled—boost US employment. The data

show that states with greater numbers of temporary workers in the H-1B program for skilled workers and H-2B program for less-skilled non-agricultural workers had higher employment among US natives. Specifically:

- Adding 100 H-1B workers results in an additional 183 jobs among US natives.
- Adding 100 H-2B workers results in an additional 464 jobs for US natives.
- For H-2A visas for less-skilled agricultural workers, the study found results that were positive, but data were available for such a short period that the results were not statistically significant.

3. The analysis yields no evidence that foreign-born workers, taken in the aggregate, hurt US employment. Even under the current immigration pattern—which is not designed to maximize job creation, has at least eight million unauthorized workers, and prioritizes family reunification—there is no statistically significant effect, either positive or negative, on the employment rate among US natives. The results thus do not indicate that immigration leads to fewer jobs for US natives.

4. Highly educated immigrants pay far more in taxes than they receive in benefits. In 2009, the average foreign-born adult with an advanced degree paid over \$22,500 in federal, state, and Federal Insurance Contributions Act (FICA, or Social Security and Medicare) taxes, while their families received benefits one-tenth that size through government transfer programs like cash welfare, unemployment benefits, and Medicaid.



The results here point directly to several policy proposals that would boost US employment. These policies would require neither new taxes nor new spending cuts. Specifically, policymakers could create jobs by doing the following:

- **Giving priority to workers who earn advanced degrees from US universities, especially those who work in STEM fields.** The results show that the most dramatic gains in US employment come from immigrants who earned advanced degrees at US universities and are employed in STEM fields. Changing permanent and temporary immigration policies to favor holders of advanced degrees from US universities in STEM fields is an obvious step given the demand for highly skilled workers and the extensive investment the country already makes in such students. Without a clear path to stay in the United States, these foreign students will fuel innovation and economic growth in countries that compete with the American economy.
- **Increasing the number of green cards (permanent visas) for highly educated workers.** This study shows that foreign-born workers with advanced degrees create more jobs for US workers than immigrants overall. Yet only 7 percent of green cards are currently awarded to workers based on their employment. The United States can increase the number of immigrants with advanced degrees in the US workforce by increasing the number of green cards distributed through employment-based categories.
- **Making available more temporary visas for both skilled and less-skilled workers.** The findings here suggest that expanding the H-1B program for skilled temporary foreign workers would increase employment for US natives. Similarly, this study suggests that the H-2B program for seasonal, less-skilled workers in fields other than agriculture leads to significant employment gains for US natives. But both these programs are severely limited under current law. Only 85,000 H-1B visas and 66,000 H-2B visas are available each fiscal year, and the process for obtaining H-2B visas is often prohibitively difficult and costly. This study found a positive but not statistically significant relationship between H-2A temporary agricultural visas and employment among US natives. Further study is warranted to explore whether H-2A visas should be increased as well.

America is currently mired in a period of the slowest economic growth seen in several generations, with persistently high unemployment, anemic job growth, and little bipartisan agreement on how to address these pressing problems. Action is required if America is to get back to work. Immigration policy can, and should, be a significant component of America's economic recovery. Targeted changes to immigration policy geared toward admitting more highly educated immigrants and more temporary workers for specific sectors of the economy would help generate the growth, economic opportunity, and new jobs that America needs.

Introduction

As of September 2011, the United States had almost seven million fewer jobs than before the recession of 2007–2009. The debate on ways to increase employment has focused on government spending, tax cuts, and new training and education initiatives. One area that has received little attention for its job-generating possibilities is immigration policy. Instead, discussion over immigration policy has stalled, with widespread agreement that the current system is broken but little consensus on how it should be fixed. Too little has been done to identify incremental changes to existing immigration policy that could be made immediately and would boost employment and accelerate the country’s economic recovery.

Immigrants¹ play a sizable role in the US labor market. Almost one in six workers is foreign born. Over one million people receive lawful permanent resident status each year, and hundreds of thousands more enter illegally in a typical year. A smaller number of workers enter legally through temporary worker programs for skilled and less-skilled workers.

Whether immigrants take jobs from US-born workers or, on balance, create jobs is not well understood. Policymakers particularly need to know how different groups of foreign-born workers affect employment to design immigration policies that benefit the US economy. A growing body of economic research points to economic benefits from immigration. Immigration has a small but positive effect on output, or gross domestic product (GDP).² Immigration reduces the cost of labor-intensive goods and services.³ The foreign born boost inven-

tion and innovation, and they are more likely than US natives to start businesses.⁴ Immigration appears to encourage US natives to upgrade their skills through additional education or training.⁵ Studies indicate that immigration may have a small positive effect on Americans’ wages, although there is also some evidence that immigration has no effect or even a negative effect on wages, especially among the least educated.⁶

Despite this voluminous literature on the economic effects of immigration, there is relatively little research on how foreign-born workers affect employment among US natives. This paper uses the prevailing methodology in the economics literature to analyze the impact of immigration on employment for US natives. Specifically, the paper asks:

- Does increasing the number of immigrants with advanced degrees as a fraction of all employment lead to higher rates of employment among US natives?
- What is the impact of immigration on employment among US natives across all sectors and education levels?
- Do temporary foreign workers—both skilled and less skilled—increase or decrease employment among US natives?
- What is the fiscal impact of immigrants, looking at both taxes paid and benefits received?

Based on the answers to these questions, the study then discusses changes in immigration policy that would attract and admit more foreign-born workers in those categories found to correspond with the greatest job creation for US natives.

Background

The 38.5 million foreign born who live in the United States are a diverse group. They are more than three times as likely as US natives to lack a high school diploma, but they are also more likely to have a professional degree or doctorate. Accordingly, the foreign born are overrepresented in both less-skilled occupations, such as construction workers, housekeepers, and agricultural laborers, and highly skilled occupations, such as medical scientists, physicians, and chemists.

Because of their tremendous diversity, the foreign born potentially affect US-born workers in almost every facet of the economy, including the labor market. Some of these effects may be positive while others may be negative. US-born workers who face heightened competition as a result of immigration may face lower wages or lose their jobs. But immigrants may also have different skills than American workers, resulting in a more diverse workforce, greater productivity, and higher wages for US workers. Natives also may benefit from new jobs created by immigrants who develop new technologies or start new businesses.

A simplistic model of supply and demand assumes that immigrants have the same skills as US natives. The two groups *compete* for jobs. If that is the case, then native employment and wages fall as immigration increases.

But immigration could instead increase native employment if foreign-born workers *complement* US-born workers. There are a number of reasons this might occur. The foreign born can have different skills and education than US natives and therefore tend to work in different jobs. Research indicates that immigrants tend to work in intensive

manual-labor jobs—jobs that employers often have difficulty filling with US-born workers—while natives specialize in jobs that require more communications skills.⁷ For example, having more foreign-born roofers can allow American contractors to build more houses, creating more jobs for US-born workers in higher-paying skilled, supervisory, or white-collar jobs such as foremen or “front office” workers doing sales and coordination. Immigration also can encourage some natives to work more by lowering the cost of hiring help with domestic chores and child care.⁸ In addition, immigration can save jobs: in the increasingly globalized economy, some companies will move factories and jobs offshore if they cannot find or bring in workers with the skills needed to fill essential positions.⁹

In addition, immigrants can create jobs for natives through their entrepreneurial activities. For example, 25 percent of high-tech companies founded during 1995 to 2005 had at least one immigrant founder.¹⁰ Over 40 percent of companies in the Fortune 500 in 2010 were founded by an immigrant or the child of an immigrant.¹¹ Immigrants may also drive innovation, which then leads to job growth. Highly educated immigrants obtain patents at double the rate of highly educated US natives, and their presence appears to spur patent activity by US natives as well.¹²

With two economic theories—“*compete*” versus “*complement*”—offering contradictory predictions, the question of how immigration affects employment is ultimately an empirical one. Yet previous economic research offers surprisingly few answers. Although there is an extensive literature on how immigration affects the earnings of US-born workers,¹³ only a few studies have looked closely at the relationship to employment. These studies yield mixed results.¹⁴ Recent research on the overall effect of immigration concludes that the foreign born may have a modest negative impact on US employment in the short run, particularly if the economy is in a recession, but a more positive effect in the long run.¹⁵ Another study finds evidence of zero or posi-

tive effects on the employment rate for US natives, including among less-educated natives.¹⁶ These previous studies have looked at the effect of all immigration on native employment. In contrast, this study tries to inform policy by looking specifically at the employment impact of groups of immigrants that have been identified by researchers and policymakers as leading to innovation and job creation.

Methodological Approach. Ideally, we would like to know what would have happened to the employment of US natives in the absence of immigration and then compare that with what actually happened. The difference would be immigration's effect on the employment of US natives. But because it is not possible to know what would have happened without immigration, researchers typically rely either on models that simulate the impact of immigration based on assumptions about how substitutable foreign- and US-born workers are for one another, or on models that compare areas that receive large numbers of immigrants with areas that receive relatively small numbers. This paper takes the latter approach.

This study uses the fact that the percentage of the workforce that is foreign born varies from state to state to examine the relationship between immigration and employment among US natives. In other words, it asks whether having a higher share of workers who are foreign born in a given state increases or decreases the employment rate among US natives in that state. A positive relationship would indicate that more immigration creates jobs for US natives, while a negative relationship would indicate that more immigration decreases employment for US natives. (The method is explained in more detail in the appendix.)

The study specifically looks at groups of immigrants who may be particularly likely to boost job growth by identifying the impact of the following subgroups of immigrants: immigrants with an advanced degree, immigrants with an advanced degree working in a STEM occupation, and immigrants with an

ADVANCED DEGREES

2000-2007



ADVANCED
DEGREE
AND IN STEM
OCCUPATION

**100 FOREIGN BORN WORKERS
= 262 ADDITIONAL JOBS**

Every additional 100 foreign-born workers who earned an advanced degree in the US and then worked in STEM fields created an additional 262 jobs for US natives.



ADVANCED
DEGREE

**100 FOREIGN BORN WORKERS
= 44 ADDITIONAL JOBS**

Every additional 100 foreign-born workers with an advanced degree created an additional 44 jobs for US natives.

advanced degree likely to have been earned at a US university working in a STEM occupation.

While some previous research examines the effect of immigrants of certain skill levels on the employment of similarly skilled natives, this paper looks at the effect of highly educated immigrants, temporary high- and low-skilled foreign-born workers, and immigrants as a whole on all US natives. This approach captures not only the foreign born's effect on similarly skilled native born, but also spillovers into other skill categories, where immigrants might complement natives more than substitute for them. For example, an immigrant with a graduate degree in engineering might compete with US-born engineers for a job, but that immigrant will also buy a house and other goods and services, send children to school, and perhaps someday found a company or develop a commercially important patent, all of which create jobs for workers across the skill spectrum.

This paper uses data from the US Census Bureau's Current Population Survey (CPS) covering all fifty states and the District of Columbia, focusing on the

periods 2000–2007 and 2000–2010. The former represents a period of economic recovery and growth while the latter period includes the recent recession, during which the US-born employment rate fell by more than two percentage points. The analysis begins in 2000 to avoid including the high-tech bubble of the late 1990s.¹⁷

The study relies on the fact that the percentage of the workforce that is foreign born—the immigrant share—varies from state to state. This difference across states allows for comparisons that yield the relationship between immigration and American jobs. But one of the fundamental challenges when using cross-state comparisons to show a relationship between immigrants and jobs is that immigrants tend to be more mobile and go where the jobs are. As a result, evidence of high immigrant shares in states with strong economic growth and high employment could be the *result* of greater job opportunities (as immigrants move to jobs), rather than the *cause*. Cross-state comparisons would then show an artificially high impact of immigrants on the native employment rate. The study avoids “overcounting” the effects of immigrant workers drawn by a recent economic boom by using an estimation technique (known as “two-stage least squares (2SLS) regression estimation” and discussed in the appendix) that is designed to yield the effect of immigration independent of recent growth and employment opportunities. The analysis also controls for state- and time-specific factors that might affect native employment rates.

The findings suggest how smarter immigration policies could help reduce government deficits.

Significantly, the CPS data include both foreign born who are legally present in the country and

those whose presence is unauthorized. And while it is not possible in the data to distinguish between legal permanent immigrants, temporary foreign workers, and those here illegally, it is important to recognize that effects might well differ among the groups because they tend to differ in skill level. Unauthorized foreign born (roughly 30 percent of all foreign born) are disproportionately less skilled. Estimates suggest that almost one-half of unauthorized immigrants have not completed high school, and they comprise 22 percent of all adults without a high school degree in the United States. Meanwhile, those here legally (roughly 70 percent of all foreign born, including temporary workers and students) are actually more likely than the US-born to have a bachelor’s degree or higher.¹⁸

This study also examines the specific effect of temporary worker programs on the employment rate among US natives across states. The study looks at the three main temporary worker programs: H-1B visas for skilled workers, H-2A visas for seasonal agricultural workers, and H-2B visas for seasonal nonagricultural workers. For each visa program, it simply asks whether more approved applications for temporary workers in each state, relative to total employment, corresponds to higher or lower employment rates for US natives, controlling for state- and time-specific factors.

There are two reasons to think that this study, which uses annual, state-level data over a ten-year period, may actually underestimate the job-creating effects of highly skilled immigrants. First, it does not capture long-run effects if the economy benefits more from immigrants in the long run than in the short run (as suggested by other recent research).¹⁹ Second, it does not capture “spillover effects” if immigrants create jobs in states other than the one where they work (for example, more immigration in California leads businesses to also create new jobs at a subsidiary in Indiana).

Finally, the study also seeks to examine the fiscal impact of immigrants by using 2009 data on tax

payments and government benefits. Clearly, immigrants' economic impact goes beyond paying taxes and receiving benefits. Immigrants are also consumers, which increases economic activity and GDP and leads indirectly to additional tax revenues. But by focusing strictly on taxes and government transfer programs, this study identifies immigration's most direct fiscal impact on federal and state government budgets. The findings suggest how smarter immigration policies could help reduce government deficits.

Results

The results, presented in detail in the appendix, demonstrate that immigrants with advanced degrees overall create jobs for US natives, but the results are most dramatic for immigrants with advanced degrees from US universities working in STEM occupations. The analysis of temporary worker applications suggests that two of the three primary categories of temporary foreign workers (H-1B and H-2B) are associated with strong job creation for US natives; the third type (H-2A) shows a positive association with job creation but the data series is too short to yield statistically significant results. And including all foreign-born workers—regardless of legal status or education level—the data show no evidence that immigration hurts US employment. Finally, consistent with their positive effect on employment, more educated immigrants pay far more in taxes than they receive in government transfers. Specifically, the analysis finds the following:

Immigrants with advanced degrees from US universities who work in STEM fields dramatically boost employment for US natives. During 2000–2007, a 10 percent increase in the share of such workers boosted the US-born employment rate by 0.04 percent. Evaluating this at the average numbers of foreign- and US-born workers during that period, this implies that every additional 100 foreign-born workers who earned an advanced degree in the United States and then worked in STEM fields led to an additional 262 jobs for US natives. (See Table 2)

In addition, immigrants with advanced degrees in general boost employment for US natives.

The overall share of workers who are immigrants with an advanced degree (from foreign and US universities) working in a STEM occupation is also positively associated with the native employment rate. During 2000–2007, a 10 percent increase in the share of workers who are immigrants with advanced degrees working in STEM boosted the US-born employment rate by 0.03 percent. This translates into every additional 100 foreign-born workers with an advanced degree working in a STEM occupation creating about eighty-six additional jobs for US-born workers. The estimates also indicate that simply increasing the number of immigrants with advanced degrees working in all fields, not just STEM, would increase American employment. A 10 percent increase in the share of all workers who are immigrants with advanced degrees boosted the native employment rate by 0.08 percent during 2000–2007. In other words, each additional 100 foreign-born workers with an advanced degree created about forty-four additional jobs for US natives.²⁰ (See Table 1)

Temporary employment visa programs for both skilled and less-skilled workers are positively related to employment of US natives. Temporary foreign worker programs allow employers to hire foreign workers to fill specific jobs. The three main temporary visa programs are the H-1B temporary high-skilled visa, the H-2B temporary less-skilled

visa for nonagricultural workers, and the H-2A temporary less-skilled visa for agricultural workers. The data show that both the H-1B and H-2B visas are positively associated with native employment rates, while the data for the H-2A visas show a slightly positive association with native employment rate, but the data series was too short to yield statistically significant results. (See Table 4)

The estimates show that a 10 percent increase in H-1B workers, relative to total employment, is associated with a 0.11 percent increase in the native employment rate. During the sample period of 2001–2010, this translates into each additional 100 approved H-1B workers being associated with an additional 183 jobs among US natives. A 10 percent increase in H-2B workers, relative to total employment, is associated with a 0.07 percent increase in the native employment rate during 2000–2010. In other words, each additional 100 approved H-2B workers is associated with an additional 464 jobs among US natives.

The results give clear evidence that both the H-1B and H-2B programs for temporary workers correspond to greater job opportunities for US-born workers. The particularly strong results for the H-2B program, which is for less-skilled nonagricultural workers, may be surprising given that some other studies conclude that less-skilled immigrants compete with similarly skilled US-born workers. The results here may reflect that employers, who find the H-2B program expensive and bureaucratic, tend to reserve it for hard-to-fill jobs that are critical to expanding operations. In addition, the results may be biased upward because the temporary worker analysis could not control for immigrants being drawn to areas experiencing strong economic growth and high employment. Even with these qualifications, the study's very strong results for H-2B suggest reasons to expand and simplify the program beyond its current level. Of course, there may be a breaking point where workers on H-2B visas no longer complement, but instead compete with, US-born workers, but that point appears to

be well beyond the current program's limit.

Overall, when looking at the effect of all immigrants on employment among US natives, there is no evidence that immigrants take jobs from US-born workers. The analysis that examines all current immigrants reveals no evidence of an effect, positive or negative, on the native employment rate. More specifically, the foreign-born share of workers is not statistically significantly related to the US-born employment rate during years of growth, 2000–2007, or during the entire decade, 2000–2010. Looking at all immigrants, the data reveal a slight negative, but statistically insignificant, effect that is similar to that estimated in previous research.²¹ Interestingly, this “null effect” is true in a system that prioritizes family reunification over employment-based legal immigration and that contains millions of unauthorized immigrants.

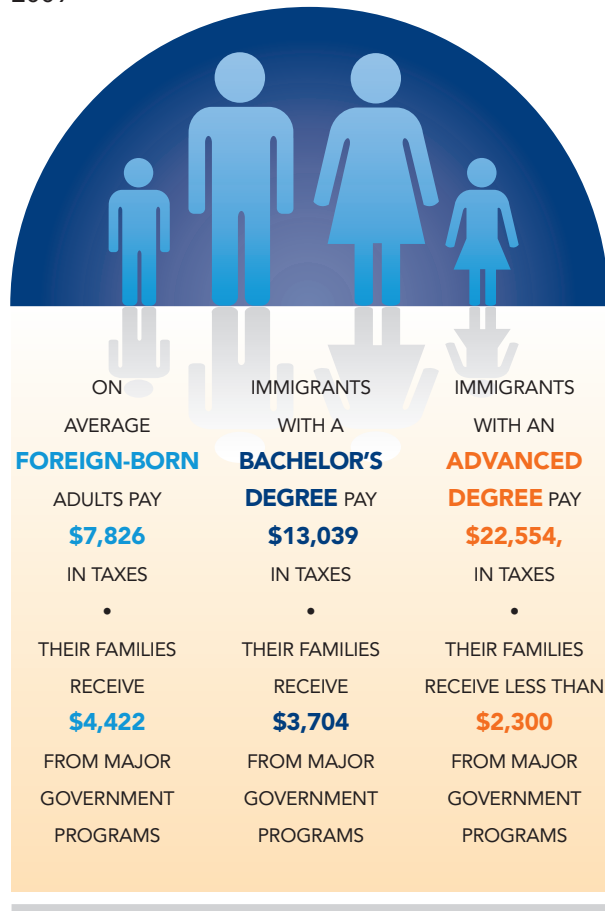
Fiscal Impact

Immigration's effect on US employment is a particularly timely issue given the slow labor market recovery from the 2007–2009 recession, but immigration's fiscal impact is also important, given the sizable federal deficit and many states' budget woes. This paper therefore turns to data on earnings, tax payments, and government transfers among the foreign born in 2009. Details about the data and estimates are in the appendix.

On average, immigrants pay more in taxes than their families receive in federal benefits from the major government programs such as welfare, unemployment benefits, food stamps, and Medicaid. And as immigrants' education level increases, the likelihood of working, annual hours worked, and annual earnings also increase. As a result, increases in the

education level of immigrants lead to increased tax payments. Not surprisingly, an increase in education level also corresponds with a decrease in government benefit payments to immigrants' families.

FISCAL IMPACT 2009



On average, foreign-born adults pay \$7,826 in federal, state, and FICA taxes, while their families receive \$4,422 in cash and in-kind transfers from major government programs in a given year. For immigrants with a bachelor's degree, tax payments average \$13,039, while their families receive cash and in-kind transfers valued at \$3,704. And for immigrants with an advanced degree, the average tax payment is \$22,554, while their families receive less than \$2,300 in cash and in-kind transfers from major programs.

These calculations are a snapshot of the fiscal

impact at a point in time and do not account for immigrants' taxes and transfers over their entire lifetimes. Nor does the study capture the more indirect economic impacts of immigration such as increasing economic activity or positively affecting American employment, both of which lead to higher tax revenues and, in the case of greater employment, reduced transfer payments. The direct fiscal impact of the foreign born in a single year is only a small piece of understanding their economic costs and benefits.

Policy Implications

There is no doubt that immigrants play a vital role in the American economy. Each year, the number and characteristics of those who enter the country affect employment, economic growth, and government revenues and expenditures for years to come. America's immigration policy is not geared toward stimulating economic growth and job creation. Only 14 percent of the one million-plus green cards issued each year are allocated based on employment. This includes workers' spouses and children, so the true measure is just 7 percent. Meanwhile, every other major developed country puts more emphasis on admitting immigrants that will meet economic needs. Compared with America's 7 percent, Canada admits 25 percent of its immigrants based on employment, Australia 42 percent, and the United Kingdom and Germany almost 60 percent.²²

Given America's sluggish economic growth and persistently high unemployment rate, policymakers must do more to identify changes in American pol-

icy that will boost job creation. This study shows that several specific groups of immigrants—advanced degree holders and temporary foreign workers—lead to greater employment among US natives. It therefore offers a roadmap to US policymakers interested in strengthening employment opportunities for Americans. The following recommendations represent the most immediate ways to capitalize on these findings.

Recommendation 1: Prioritize immigration by workers in STEM fields who hold advanced degrees from US institutions. While increases in the total number of immigrants with advanced degrees boost employment, the effect is biggest for immigrants with US degrees who work in STEM fields. This study estimates that an additional 100,000 such workers could lead to an additional 262,000 American jobs.

One of the best sources of highly skilled immigrants is the pool of foreign students who earn their degrees here and have their education subsidized and supported by American resources. About 50,000 foreign students received advanced degrees from US universities in STEM fields in 2009.²³ After graduation, most foreign students are allowed to work for up to one year in a job related to their field of study, with an additional seventeen months for graduates in STEM fields. After that, they and their employers have to scramble for the limited numbers of H-1B temporary visas and employment-based permanent visas. Keeping these graduates here will create American jobs and provide additional benefits: immigrants who entered the United States on a student visa for college or graduate study are more likely than natives to hold a patent, to have a publication, and, for those who came for graduate study, to start a company with ten or more employees.²⁴ From the perspective of US employment, it makes little sense to force those graduates to leave the United States for home or for other countries eager to capitalize on their first-rate US education.

Recommendation 2: Shift US immigration policy's focus to economic growth by increasing the number of green cards for highly skilled workers. The study estimates that attracting an additional 100,000 highly skilled immigrants with advanced degrees could lead to an additional 44,000 jobs for US natives. The effect is larger still for immigrants with advanced degrees working in STEM occupations. The key takeaway is that bringing in more highly skilled workers will create American jobs.

Despite this, current policy allocates only about 7 percent of green cards based on employment, while the number of H-1B visas for skilled temporary foreign workers is capped at 85,000 annually. Other rules impose further limitations on highly skilled immigration. For example, per-country caps limit each country to no more than 7 percent of green cards issued annually, which creates daunting backlogs for China and India, countries that quickly fill their annual quota. Facing the prospect of working on temporary visas for up to ten years and unable to change employers or even job titles without jeopardizing their initial application, many highly skilled, highly motivated workers from China and India choose to leave for greater opportunities

The key takeaway is that bringing in more highly skilled workers will create American jobs.

back home or in another, more welcoming country. Given what this study shows about the opportunity to boost American employment and contribute to government coffers, policymakers should increase the number of permanent visas for highly skilled workers and rewrite the rules to lift the artificial limits on country caps for green cards.

Recommendation 3: Expand temporary-worker programs for both skilled and less-skilled foreign workers.

The study shows that an increase in skilled temporary foreign workers admitted through the H-1B visa program is positively related to the native employment rate: 183 more jobs for US natives for every 100 additional approved H-1B workers. This finding is consistent with other evidence that the H-1B program leads to innovation. For example, companies and cities with more H-1B workers receive more patents than their peers.²⁵ But US law currently imposes an annual cap of 65,000 new H-1B visas each fiscal year, with another 20,000 new visas for those who hold graduate degrees from US institutions.²⁶ In most years, those numbers are hit well before the end of the fiscal year, sometimes in a matter of days. And even during the recession, the quota continues to be filled. The results of this study, suggesting that H-1B workers boost American employment, make a strong case for the expansion of the H-1B program to meet the obvious market demand.

The study also shows that a modest increase in H-2B workers can deliver a generous boost to the US-born employment rate: 464 more jobs for US natives for every 100 approved H-2B workers. But under current law, the H-2B visa program is bureaucratic and expensive, requiring employers to navigate three separate federal agencies and onerous documentation requirements. The same holds true for the H-2A program, which offers temporary visas to agricultural workers, whose effect on US workers was found to be positive but, because of limited data, not statistically significant. The results of this study, showing that programs for temporary foreign workers appear to bolster US employment, support the idea that US employers use guest workers not to replace American workers but to fill critical needs, allowing operations to continue or expand, which in turn creates additional jobs for Americans. With such evidence, there is a strong case for streamlining and expanding immigrant guest worker programs to serve the American market more effectively.

Conclusion

In the face of the most profound economic crisis since the Great Depression, policymakers are searching for solutions to spur economic growth and job creation. This study shows that immigration policy can help fix the economy, and it would require neither new taxes nor new spending cuts. Specific, incremental changes to immigration, such as more permanent and temporary visas for highly educated immigrants, especially those in STEM fields, and expanded programs for both skilled and less-skilled temporary foreign workers, can lead to job growth even in the short run. Yet despite these possibilities, America's immigration policy has remained largely unchanged for over two decades.

And there is a cost to this inaction: while America remains deadlocked, the rest of the world competes for talent. Every major developed country is more focused than the United States on admitting immigrants to meet economic needs. Many countries are developing programs aimed at recruiting the next generation of job creators. Chile and Singapore have specialized visas for entrepreneurs

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who want to start new companies and create new jobs. Taiwan, China, and Israel are among the countries that provide incentives for expatriate researchers to return and work in their home countries. Not only is America failing to recruit foreign-born talent to come here, but the country is also losing foreign-born talent who are already here. Graduates of top US universities look elsewhere when they have no easy way to stay and work in the United States. Entrepreneurial immigrants from China and India, many with years of work experience at American companies, are returning home because of outdated, inflexible US immigration policies coupled with improving economic prospects at home.²⁷ Changes in immigration policy are needed to boost employment, drive economic growth, and keep America competitive in today's global economy.

Appendix

This paper examines the relationship between immigration and employment of US natives at the state level. It estimates a reduced-form model that focuses on the relationship between the immigrant share and the employment rate of US natives. The basic empirical model estimated here is

$$\ln \frac{L_{st}^n}{p_{st}^n} = \beta \ln \frac{L_{st}^f}{L_{st}^{n+f}} + \delta_s + \delta_t + \varepsilon_{st},$$

with superscripts n indicating US natives and f indicating the foreign born, respectively, s indexing states, and t indexing years. The focus is on estimates of β , which indicates how changes in the immigrant share of the employed affect the native employment rate. The δ terms are state and year fixed effects, and ε is a random error term. The error terms are robust and clustered on the state.

Observations are weighted using the number of US natives in a state as a share of the total US native population that year. This gives each year the same total weight in the regressions. Regressions are estimated using ordinary least squares (OLS) or 2SLS, as discussed below.

Several variants of the basic model are estimated. The first model examines the relationship between the immigrant share and the native employment rate for all people aged sixteen to sixty-four. Extensions of this model then examine the relationship between the number of foreign-born workers within a specific group relative to all workers and the native employment rate. The specific groups are immigrants aged sixteen to sixty-four with a bachelor's degree or higher, immigrants aged sixteen to sixty-four with an advanced degree (master's, professional, or doctorate), and immigrants aged sixteen to sixty-four with an advanced degree who report a STEM occupation, defined here as engineers, mathematical and computer scientists, and natural scientists. Those results are reported in table 1.

The relationship between the immigrant share and the native employment rate may differ for immigrants educated in the United States and those educated abroad. The regression models for the three specific groups (bachelor's degree or higher, advanced degree, and advanced degree reporting a STEM occupation) are therefore estimated with separate variables for immigrants likely to have received their highest degree in the United States and those likely to have received their highest degree abroad. The data used here do not indicate where an individual's education occurred, so individuals with a bachelor's degree who appear to have entered the United States before age twenty-one and advanced degree holders who appear to have entered the United States before age twenty-five are classified here as US educated. The results for the relationships with the overall native employment rate are reported in tables 2 and 3.

The relationship between temporary foreign workers and employment of US natives is examined by regressing the US-born employment rate on the number of approved temporary foreign workers (as explained below) relative to the number of people aged sixteen to sixty-four employed in a given state and year. Separate models are estimated for H-1B workers, H-2A workers, and H-2B workers. The results are reported in table 4.

Data. Native employment rates and immigrant shares are calculated using the 2000–2010 CPS merged with outgoing rotation groups data.²⁸ Immigrants are defined here as people who report that they were born abroad (and not to US-citizen parents); the surveys ask about US citizenship status but not about visa status, so it is not possible to distinguish between legal permanent residents, temporary nonimmigrants, and unauthorized migrants in the data.

Some specifications report results using the full sample from 2000 to 2010, while others report results using data from 2000 to 2007. With the full sample, the maximum number of observations is 561. Some specifications drop state-year cells with no employed US natives or with no immigrants because of the log-log specification.

The CPS data include all foreign born, regardless of legal status or visa type. Very little data on the foreign born by legal status or visa type are available. The Department of Labor publishes data on applications for temporary foreign workers through the H-1B, H-2A, and H-2B programs. Those data are used here for the years they are available: 2001–2010 for the H-1B program, 2006–2010 for the H-2A program, and 2000–2010 for the H-2B program.²⁹ The measure of temporary foreign workers used here is the number of approved foreign workers in a given state and year. These counts of approved workers proxy for the ultimate number of new temporary foreign workers in each state, since data on actual temporary foreign worker inflows by geographic area are not available.³⁰

Instrumental Variables. A key concern regarding state-level models like those estimated here is whether the immigrant share is exogenous. If immigration is positively related to economic conditions that also boost the native employment rate, the estimated relationship between the immigrant share and the native employment rate is upward biased, or too positive. The standard method of controlling for this endogeneity bias is to use a variable that is well correlated with the endogenous variable (the immigrant share) but not related to shocks to the outcome variable (the native employment rate) as an instrumental variable for the endogenous variable. 2SLS regressions then capture the relationship between the exogenous component of the immigrant share—the part that is unrelated to economic conditions—and the native employment rate.

This paper uses the number of immigrants in the population as an instrument for the number of immigrants in the workforce in tables 1–3. The first-stage regressions are very strong.³¹ There is no instrument available for the temporary foreign worker OLS regressions reported in table 4 because, by definition, the number of temporary foreign workers in the population equals the number of foreign-born workers in the workforce.

Results. The native employment rate is weakly negatively related to the immigrant share during both 2000–2007 and 2000–2010, as shown in the top row of table 1. A 10 percent increase in the immigrant share is associated with a 0.02 percent decrease during 2000–2007 and a 0.01 percent decrease using 2000–2010 in the OLS specifications. In the 2SLS specifications, a 10 percent increase in the immigrant share is associated with a 0.08 percent decrease during 2000–2007 and a 0.13 percent decrease during 2000–2010. None of the estimates are significantly different from zero. As expected, the 2SLS results are more negative, albeit not significantly so.

The other rows in table 1 report results from esti-

mating the model with various subgroups of immigrants. The 2SLS results for immigrants with a bachelor's degree or higher indicate that a 10 percent increase in their share of the total workforce is associated with a 0.03 percent increase in the overall native employment rate during 2000–2007 and a 0.02 percent decrease during 2000–2010 (row 2). A 10 percent increase in the number of immigrants with an advanced degree as a share of the total workforce is associated with a 0.08 percent increase in the overall native employment rate during 2000–2007 and a 0.03 percent increase during 2000–2010 (row 3). A 10 percent increase in the number of foreign-born advanced degree holders with a STEM occupation relative to all workers is associated with a 0.03 percent increase in the overall native employment rate during 2000–2007 and a 0.02 percent increase during 2000–2010 (row 4). In the main text, the 2SLS estimates are evaluated at the national averages during 2000–2007.

Two interesting patterns emerge from table 1. First, the results indicate that the employment effect of immigration becomes more positive as immigrants' education level increases. For example, the point estimate for 2000–2007 is more than twice as large for foreign-born advanced degree holders than for all foreign-born college graduates.

Second, the results suggest more positive employment effects during 2000–2007 than during 2000–2010. There were sizable declines in US-born employment rates in many states during the Great Recession, which officially began in December 2007. From 2008 to 2009, the US-born employment rate fell by an average of 2.7 percentage points—from 64.4 percent to 61.7 percent—across states, for example. The immigrant share of the population aged sixteen to sixty-four actually increased, on average, during that period. The economy therefore had more immigrants to absorb even as the number of jobs was falling. It is not surprising that the relationship between the immigrant share and the native employment rate is more positive during periods

of economic growth than during recessions.³²

The results are generally similar if the immigrant shares of bachelor's degree or higher or advanced degree holders are calculated relative only to similarly educated workers rather than relative to all workers. Measuring the foreign born relative to similarly educated workers rather than relative to all workers is arguably better if immigrants primarily compete with similarly educated US natives for jobs. But over one-fifth of foreign-born college-educated workers—and a slightly lower share of college-educated US-born workers—hold unskilled jobs.³³ Measuring the size of various groups of immigrants relative to all workers may therefore be more appropriate. The results are similar regardless of the measure used.

In general, the relationship between the immigrant share and the overall native employment rate does not appear to vary with whether immigrants are likely to have received their highest degree in the United States or abroad. The results in table 2 (for 2000–2007) and table 3 (for 2000–2010) indicate few differences between the estimated coefficients for the US-educated and foreign-educated variables. The one exception is immigrants with advanced degrees and in STEM occupations during 2000–2007. Here, the share of US-educated immigrants is significantly positively associated with the native employment rate, while the share of foreign-educated immigrants is not. However, the estimated coefficients are not significantly different from each other within either the OLS or the 2SLS specification.

The results are again similar if the immigrant shares by likely place of education are calculated relative to similarly educated workers rather than all workers. In results not shown here, the only notable difference from the tables is that the foreign-educated share with an advanced degree becomes statistically significantly different from zero at the 10 percent level in the 2000–2010 data (but remains not significantly different from the result for the US-educated share with an advanced degree).

The results for temporary foreign workers, shown in table 4, suggest positive employment effects. The native employment rate is positively related to the number of approved applications for H-1B workers relative to the total number of workers. The estimate indicates that a 10 percent increase in H-1B workers is associated with a 0.11 percent increase in the native employment rate. The native employment rate is also positively related to the number of H-2B workers, with a 10 percent increase in the share of H-2B workers associated with a 0.07 percent increase in the native employment rate. The native employment rate is not significantly related to the number of H-2A workers in the five years of data available.

The regressions for temporary foreign workers include all years of data available. Dropping the years 2008–2010 from the H-1B data leaves only six years of data (because the 2007 data are riddled with errors); the estimated coefficient is a statistically insignificant 0.005 for the period 2001–2006. Dropping the years 2008–2010 from the H-2B data gives an estimated coefficient of 0.006, which is significant at the 5 percent level.

Fiscal Impact. Data from the March 2010 CPS are used to examine immigrants' earnings, taxes, and government transfers.³⁴ The March CPS asks about income from various sources during the previous calendar year, including cash transfer programs like welfare, unemployment insurance, and workers' compensation, in addition to earned income, interest, dividends, and rental income. It includes the market value of food stamps, school lunch, and housing subsidies, and the fungible value of Medicaid and Medicare.³⁵ The Census Bureau creates estimates of federal, state, and FICA taxes paid by individuals. The estimates of federal taxes are net of the earned income tax credit, child tax credit, and one-time stimulus programs in effect for 2009. Government transfers are reported here at the family level, while employment, earnings, and taxes are reported at the individual level. Census estimates of FICA contributions are doubled to account for the employer contribution.

The sample here is restricted to immigrants aged twenty-five to sixty-four whose earnings are not imputed. Immigrants below age twenty-five are not included because younger people are more likely to have not yet completed their education. The sample includes people who report zero earnings.

Table 5 shows calculations for three groups: all immigrants, immigrants with a bachelor's degree but not an advanced degree, and immigrants with an advanced degree. Immigrants with a bachelor's degree account for 19 percent of immigrants, and those with an advanced degree account for 11 percent.

Employment rates and average hours are higher among immigrants with more education. Individual earned income and tax payments also increase with education. The Census Bureau estimates indicate that immigrants with an advanced degree paid an average of \$22,554 in combined federal, state, and FICA taxes in 2009, while immigrants with a bachelor's degree paid an average of \$13,039. The average among all immigrants, assuming complete tax compliance, was \$7,826. A foreign-born advanced degree holder thus paid almost three times more in taxes than the average foreign-born adult.

Turning to government transfers, the average adult immigrant's family received about \$2,328 in benefits from major cash transfer programs (welfare, unemployment insurance, workers' compensation, Social Security, Supplemental Security, and disability). Only a small proportion of cash transfers are from the means-tested cash welfare programs (for example, Temporary Assistance for Needy Families) that are often the focus of public debate. Unemployment insurance was a large component of transfers, likely because of the high unemployment rate in 2009.

The average family of an immigrant bachelor's degree holder received \$2,236 from major cash transfer programs in 2009, and the average family of an immigrant graduate degree holder received \$1,358.

The value of in-kind benefits from major programs (food stamps, Medicaid, Medicare, and school

lunch) decreases with education as well. The average value of in-kind benefits is \$2,094 for all adult immigrants' families, versus \$1,468 for families of immigrants with a bachelor's degree and \$893 for families of immigrants with an advanced degree. Medicaid, the public health insurance program whose main beneficiaries are low-income children and their mothers, is the most important source of in-kind benefits.

The data on earnings, taxes, and transfers presented in table 5 are an incomplete snapshot of the foreign born in 2009. They do not include all taxes paid; sales taxes, local taxes, and property taxes are omitted. They also do not include other costs of services immigrants receive that are borne by the general public. The most important of these is pub-

lic education for their children, most of whom are US citizens by birth.

For simplicity, earnings and taxes are reported at the individual level, while benefits are reported at the family level. Many families contain both foreign- and US-born adults and adults with different levels of education.

These data yield partial equilibrium estimates of the fiscal impact of any changes in immigration policy because they do not incorporate any effects of immigration on US natives' or other immigrants' tax payments or transfers. Finally, as discussed in the text, public policy should consider immigrants' tax payments net of government transfers over their entire lifetime, not just at a point in time.

TABLE 1 ESTIMATED EFFECT OF THE IMMIGRANT SHARE ON THE NATIVE EMPLOYMENT RATE

	2000-2007		2000-2010	
	OLS	2SLS	OLS	2SLS
All foreign born	-0.002 (0.008)	-0.008 (0.008)	-0.001 (0.010)	-0.013 (0.010)
Bachelor's degree or higher	0.008* (0.004)	0.003 (0.005)	0.003 (0.006)	-0.002 (0.007)
Advanced degree	0.011** (0.004)	0.008* (0.004)	0.005 (0.004)	0.003 (0.005)
Advanced degree and in STEM occupation	0.004** (0.002)	0.003* (0.002)	0.002 (0.003)	0.002 (0.003)

NOTE: Significance levels are indicated as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Shown are estimated coefficients (standard errors) from regressions of the log of the employment rate among US natives on the log of the number of employed immigrants in a given group relative to the total number employed in that state and year. The immigrant employment share is instrumented using the immigrant population share. Each coefficient is from a separate regression. Standard errors are robust and clustered on the state, and observations are weighted with the fraction of US natives in that state within each year.

The estimated coefficients give the percentage change in the native employment rate if the immigrant share increases by 1 percent.

TABLE 2

ESTIMATED EFFECT OF THE IMMIGRANT SHARE ON THE NATIVE EMPLOYMENT RATE, BY PLACE OF EDUCATION, 2000–2007

	US		Abroad	
	OLS	2SLS	OLS	2SLS
Bachelor's degree or higher	0.003 (0.003)	0.001 (0.004)	0.004 (0.003)	0.001 (0.003)
Advanced degree	0.006** (0.003)	0.005* (0.003)	0.006** (0.003)	0.005* (0.003)
Advanced degree and in STEM occupation	0.004* (0.003)	0.0004 (0.002)	-0.0002 (0.0025)	-0.001 (0.002)

NOTE: Significance levels are indicated as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Shown are estimated coefficients (standard errors) from regressions of the log of the employment rate among US natives on the log of the number of employed immigrants in a given group relative to the total number employed in that state and year. The immigrant employment share is instrumented using the immigrant population share. Each pair of coefficients is from a separate regression. Standard errors are robust and clustered on the state, and observations are weighted with the fraction of US natives in that state within each year.

The estimated coefficients give the percentage change in the native employment rate if the immigrant share increases by 1 percent.

TABLE 3

ESTIMATED EFFECT OF THE IMMIGRANT SHARE ON THE NATIVE EMPLOYMENT RATE, BY PLACE OF EDUCATION, 2000–2010

	US		Abroad	
	OLS	2SLS	OLS	2SLS
Bachelor's degree or higher	0.001 (0.004)	-0.001 (0.004)	0.002 (0.003)	-0.001 (0.004)
Advanced degree	0.001 (0.003)	0.001 (0.003)	0.005 (0.003)	0.005 (0.004)
Advanced degree and in STEM occupation	0.002 (0.003)	0.001 (0.003)	0.001 (0.002)	0.001 (0.002)

NOTE: Significance levels are indicated as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Shown are estimated coefficients (standard errors) from regressions of the log of the employment rate among US natives on the log of the number of employed immigrants in a given group relative to the total number employed in that state and year. The immigrant employment share is instrumented using the immigrant population share. Each pair of coefficients is from a separate regression. Standard errors are robust and clustered on the state, and observations are weighted with the fraction of US natives in that state within each year.

The estimated coefficients give the percentage change in the native employment rate if the immigrant share increases by 1 percent.

TABLE 4

ESTIMATED EFFECT OF TEMPORARY FOREIGN WORKER APPLICATIONS ON THE NATIVE EMPLOYMENT RATE

	OLS	
H-1B applications, 2001–2010	0.011*	(0.006)
H-2A applications, 2006–2010	0.001	(0.004)
H-2B applications, 2000–2010	0.007**	(0.003)

NOTE: Significance levels are indicated as * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Shown are estimated coefficients (standard errors) from regressions of the log of the native employment rate in a state and year on the log of the number of approved temporary foreign workers relative to total employment. Standard errors are robust and clustered on the state, and observations are weighted with the fraction of US natives in that state within each year.

The estimated coefficients give the percentage change in the native employment rate if the immigrant share increases by 1 percent.

TABLE 5

AVERAGE EARNINGS, TAXES, AND TRANSFERS AMONG THE FOREIGN BORN, 2009

	All	Bachelor's Degree	Advanced Degree
Percent employed	76	78	84
Annual hours worked	1,422	1,525	1,738
Average annual earnings	\$28,945	\$40,609	\$72,414
Average value of taxes paid			
Federal taxes	\$2,406	\$5,160	\$10,055
State taxes	\$954	\$1,596	\$3,141
FICA taxes	\$4,466	\$6,283	\$9,358
Average value of benefits received by family			
Welfare	\$86	\$25	\$24
Unemployment insurance	\$881	\$801	\$515
Workers' compensation	\$88	\$35	\$1
Social Security	\$950	\$1,097	\$715
Supplemental Security	\$213	\$173	\$74
Disability	\$110	\$105	\$29
Average value of in-kind benefits received by family			
Food stamps	\$300	\$75	\$56
Medicaid	\$1,111	\$686	\$459
Medicare	\$516	\$651	\$343
School lunch	\$167	\$56	\$35

NOTE: Calculations are for immigrants aged twenty-five to sixty-four using data from the March 2010 CPS. All values are for the previous calendar year. Calculations include zero values. Individuals are weighted using final person weights.

Endnotes

- 1 This study uses the term “immigrants” to refer to all foreign born. This includes naturalized citizens, permanent residents (“green card” holders), temporary visa holders, and unauthorized migrants.
- 2 Council of Economic Advisers, *Immigration’s Economic Impact* (Washington, DC: White House, June 2007), http://georgewbush-whitehouse.archives.gov/cea/cea_immigration_062007.html (accessed June 7, 2011).
- 3 Patricia Cortés, “The Effect of Low-Skilled Immigration on US Prices: Evidence from CPI Data,” *Journal of Political Economy* 116, no. 3 (2008): 381–422.
- 4 Jennifer Hunt and Marjolaine Gauthier-Loiselle, “How Much Does Immigration Boost Innovation?” *American Economic Journal: Macroeconomics* 2, no. 2 (2010): 31–56; William R. Kerr and William F. Lincoln, “The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention,” *Journal of Labor Economics* 28, no. 3 (2010): 473–508; and Robert E. Fairlie, *Estimating the Contribution of Immigrant Business Owners to the US Economy* (Washington, DC: Small Business Administration, Office of Advocacy, 2008), <http://archive.sba.gov/advo/research/rs334tot.pdf> (accessed June 14, 2011).
- 5 Jennifer Hunt, “The Impact of Immigration on the Educational Attainment of Natives” (mimeo, McGill University Department of Economics, Montreal, Canada, 2010); and Giovanni Peri and Chad Sparber, “Highly-Educated Immigrants and Native Occupational Choice,” *Industrial Relations* 50, no. 3 (2011): 385–411.
- 6 Studies that find evidence of positive or zero wage effects include David Card, “Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration,” *Journal of Labor Economics* 19, no. 1 (2001): 22–64; Gianmarco I. P. Ottaviano and Giovanni Peri, “Rethinking the Effects of Immigration on Wages,” *Journal of the European Economic Association* (2011, forthcoming); and Heidi Shierholz, *Immigration and Wages: Methodological Advancements Confirm Modest Gains for Native Workers* (Washington, DC: Economic Policy Institute, 2010), www.epi.org/page/-/bp255/bp255.pdf?nocdn=1 (accessed March 4, 2011). For research that reports adverse wage effects, see, for example, George J. Borjas, “The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market,” *Quarterly Journal of Economics* 118, no. 4 (2003): 1335–74.
- 7 Giovanni Peri and Chad Sparber, “Highly-Educated Immigrants and Native Occupational Choice.”
- 8 Patricia Cortés and José Tessada, “Low-Skilled Immigration and the Labor Supply of Highly Educated Women,” *American Economic Journal: Applied Economics* 3, no. 3 (2011): 88–123.
- 9 Gianmarco I. P. Ottaviano, Giovanni Peri, and Greg C. Wright, “Immigration, Offshoring, and American Jobs” (National Bureau of Economic Research Working Paper No. 16439, Cambridge, MA, 2010), www.nber.org/papers/w16439 (accessed May 20, 2011).
- 10 Vivek Wadhwa, Ben Rissing, AnnaLee Saxenian, and Gary Gereffi, *Education, Entrepreneurship, and Immigration: America’s New Immigrant Entrepreneurs, Part II* (Kansas City, MO: Kauffman Foundation, 2007), http://sites.kauffman.org/pdf/entrep_immigrants_1_070907.pdf (accessed June 8, 2011).
- 11 Partnership for a New American Economy, “The ‘New American’ Fortune 500,” www.renewoureconomy.org/sites/all/themes/pnae/img/new-american-fortune-500-june-2011.pdf (accessed June 15, 2011).
- 12 Jennifer Hunt and Marjolaine Gauthier-Loiselle, “How Much Does Immigration Boost Innovation?”
- 13 For an overview of the wage literature, see, for example, Rachel M. Friedberg and Jennifer Hunt, “Immigration and the Receiving Economy,” in *The Handbook of International Migration: The American Experience*, ed. Charles Hirschman, Philip Kasinitz, and Josh DeWind (New York: Russell Sage Foundation, 1999); and David Card, “Is the New Immigration Really So Bad?” *Economic Journal* 115 (2005): F300–F323.
- 14 Studies that examine employment impacts include George J. Borjas, Jeffrey Grogger, and Gordon H. Hanson, “Immigration and the Economic Status of African-American Men,” *Economica* 77 (2010): 255–82; David Card, “Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration”; and Christopher L. Smith, “‘Dude, Where’s My Job?’ The Impact of Immigration on the Youth Labor Market” (mimeo, Massachusetts Institute of Technology Department of Economics, Cambridge, MA, 2007), <http://client.norc.org/jole/soleweb/8290.pdf> (accessed June 3, 2011).
- 15 Giovanni Peri, *The Impact of Immigrants in Recession and Economic Expansion* (Washington, DC: Migration Policy Institute, 2010), www.migrationpolicy.org/pubs/Peri-June2010.pdf (accessed May 15, 2011).
- 16 Giovanni Peri, “Rethinking the Area Approach: Immigrants and the Labor Market in California, 1960–2005” (National Bureau of Economic Research Working Paper No. 16217, Cambridge, MA, 2010), www.nber.org/papers/w16217 (accessed May 28, 2011).
- 17 In addition, the occupation codes in the CPS changed in 2000. Beginning the analysis then allows for a consistent classification of STEM workers.
- 18 Jeffrey S. Passel and D’Vera Cohn, *A Portrait of Unauthorized Immigrants in the United States* (Washington, DC: Pew Hispanic Center, 2009), <http://pewhispanic.org/files/reports/107.pdf> (accessed December 2, 2009).

- 19 See Giovanni Peri, *The Impact of Immigrants in Recession and Economic Expansion*.
- 20 A 10 percent increase yields a smaller percent increase in US-born employment for those working in STEM than for foreign-born advanced degree holders in general (0.03 versus 0.08) yet more jobs per 100 (eighty-six versus forty-four). This is because STEM workers are a subset of the larger group of all advanced degree holders; as a result, an increase of 100 advanced-degree STEM workers would constitute a greater proportional increase than would an increase of 100 advanced-degree holders in general and therefore would have a larger effect on the number of jobs for US natives.
- 21 David Card, "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration," reports a comparable estimate of -0.1 to -0.2 percent.
- 22 Organization for Economic Cooperation and Development, *International Migration Outlook* (Paris, France: OECD Press, 2010).
- 23 Stuart Anderson, *Keeping Talent in America* (Dallas, TX: National Foundation for American Policy, 2011), www.nfap.com/pdf/KEEPING_TALENT_IN_AMERICA_NFAP_October_2011.pdf (accessed October 9, 2011).
- 24 Jennifer Hunt, "Which Immigrants Are Most Innovative and Entrepreneurial? Distinctions by Entry Visa," *Journal of Labor Economics* 29, no. 3 (2011): 417–57.
- 25 William R. Kerr and William F. Lincoln, "The Supply Side of Innovation: H-1B Visa Reforms and US Ethnic Invention."
- 26 Institutions of higher education and nonprofit and government research organizations are exempt from the cap, as are current H-1B holders who have already counted against the cap and are switching employers.
- 27 Vivek Wadhwa, Sonali Jain, AnnaLee Saxenian, Gary Gereffi, and Huiyao Wang, *The Grass Is Indeed Greener in India and China for Returnee Entrepreneurs: America's New Immigrant Entrepreneurs, Part IV* (Kansas City, MO: Kauffman Foundation, 2011), www.kauffman.org/upload-edfiles/grass-is-greener-for-returnee-entrepreneurs.pdf (accessed June 16, 2011).
- 28 The data are from <http://nber.org/morg/annual> (accessed March 17, 2011).
- 29 The data are from Foreign Labor Certification Data Center, www.flcdatcenter.com (accessed November 12, 2011), and are for fiscal years. The public-use H-1B data for 2007 contain erroneous codes for the work state, so the analysis here does not include that year. The employer state is used for the work state in 2006 for H-2A applications.
- 30 The counts based on the Department of Labor data are strongly correlated with state-level counts of admissions of H-1B and H-2B visa holders (I-94 data on arrivals into the United States) published by the Department of Homeland Security for fiscal years 2005 through 2009 for H-1Bs and fiscal years 2006 through 2009 for H-2Bs. They are not as strongly correlated with counts for H-2As.
- 31 Attempts to use a predicted measure of the number of foreign born based on historical residence patterns of foreign born from the same region of origin were unsuccessful. There is not enough variation within states in annual data over the eleven-year period to obtain a strong first-stage regression that includes state and year fixed effects. Attempts to use a predicted measure based on historical residence patterns of foreign born from the same region of origin and distance from the US-Mexico border and dummy variables for important ports of entry interacted with year dummy variables—as in Giovanni Peri, *The Impact of Immigrants in Recession and Economic Expansion*—did not pass overidentification tests. Using the foreign-born population share (the foreign-born population relative to the total population rather than relative to all workers) as the instrument—as in George J. Borjas, Jeffrey Grogger, and Gordon H. Hanson, "Immigration and the Economic Status of African-American Men"—yields similar or more positive results than those reported here.
- 32 Giovanni Peri, *The Impact of Immigrants in Recession and Economic Expansion*, also reports that immigration has a more positive effect on native employment when a state's economy is expanding, as measured by the output gap, than when it is contracting.
- 33 Jeanne Batalova, Michael Fix, and Peter A. Creticos, *Uneven Progress: The Employment Pathways of Skilled Immigrants in the United States* (Washington, DC: Migration Policy Institute, 2008), www.migrationpolicy.org/pubs/BrainWasteOct08.pdf (accessed June 14, 2011).
- 34 The data are from National Bureau of Economic Research, "NBER CPS Supplements," www.nber.org/data/current-population-survey-data.html (accessed May 12, 2011). This section is similar to David Card, "How Immigration Affects US Cities," in *Making Cities Work*, ed. Robert P. Inman (Princeton, NJ: Princeton University Press, 2009), but disaggregates immigrants by education. The analysis here ignores issues regarding topcoding, so mean earnings and tax payments are understated, particularly for educated immigrants.
- 35 The Census Bureau values Medicaid and Medicare coverage at the value of the income that the insurance frees up that otherwise would have been spent on medical care. If family income is not sufficient to cover a family's basic food and housing requirements, the fungible-value methodology values Medicare and Medicaid at zero. This method therefore understates the cost of those transfers to low-income families.



IMMIGRATION AND AMERICAN JOBS



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