

5 **E**

EDUCATOR



The Effect of Immigrants on U.S. Employment and Productivity

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MISSION

The *5E Educator* provides K-12 teachers with content to enhance understanding of economics. It also offers lesson plans and Federal Reserve resources to reinforce state and local curriculum. We seek to enrich the learning experience for students and to highlight the importance of economics in the process of everyday decision-making.

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Dear Educators,



The past few years have brought challenging economic times for our nation. This has led to a lot of public debate about the factors affecting our nation's well-being, including the effect of international trade and immigration on our labor pool and the high level of unemployment. There is widespread agreement among economists that although international trade may displace some workers at home or force them to transition into new jobs, on net our country stands to gain from such exchange. But less is widely known about the effects of immigration on our economy. In this issue of the *5E Educator*, we highlight a few recent research studies that attempt to measure the effect immigrants have on our total output and employment, and what they may contribute in terms of economic innovation. Much like the case with

international trade, these studies suggest that immigration tends to enhance our economic prospects in the long run. This issue includes an activity that will help you encourage students to explore both the economic benefits and costs of immigration.

We also are excited to invite you and your students to our new exhibit in Richmond, *The Fed Experience*. Our free, interactive exhibit focuses on the growth of living standards over time and explores how the Federal Reserve supports that growth by keeping inflation low and stable. We hope you will visit us soon.

My regards,

Jeffrey M. Lacker
President
Federal Reserve Bank of Richmond



Hallway Monitor

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Class in Session

The Effect of Immigrants on U.S. Employment and Productivity

This excerpt is from the **FRBSF Economic Letter**, written by **Giovanni Peri**, an associate professor at the University of California at Davis, and visiting scholar at the Federal Reserve Bank of San Francisco.

By Giovanni Peri

The effects of immigration on the total output and income of the U.S. economy can be studied by comparing output per worker and employment in states that have had large immigrant inflows with data from states that have few new foreign-born workers. Statistical analysis of state-level data shows that immigrants expand the economy's productive capacity by stimulating investment and promoting specialization. This produces efficiency gains and boosts income per worker. At the same time, evidence is scant that immigrants diminish the employment opportunities of U.S.-born workers.

Immigration in recent decades has significantly increased the presence of foreign-born workers in the United States. The impact of these immigrants on the U.S. economy is hotly debated. Some stories in the popular press suggest that immigrants diminish the job opportunities of workers born in the United States. Others portray immigrants as filling essential jobs that are shunned by other workers. Economists who have analyzed local labor markets have mostly failed to find large effects of immigrants on employment and wages of U.S.-born workers (see Borjas 2006; Card 2001, 2007, 2009; and Card and Lewis 2007).

This *Economic Letter* summarizes recent research by Peri (2009) and Peri and Sparber (2009) examining the impact of

immigrants on the broader U.S. economy. These studies systematically analyze how immigrants affect total output, income per worker, and employment in the short and long run. Consistent with previous research, the analysis finds no significant effect of immigration on net job growth for U.S.-born workers in these time horizons. This suggests that the economy absorbs immigrants by expanding job opportunities rather than by displacing workers born in the United States. Second, at the state level, the presence of immigrants is associated with increased output per worker. This effect emerges in the medium to long run as businesses adjust their physical capital, that is, equipment and structures, to take advan-

productive capacity, immigrants reduce the capital intensity of the economy. Finally, immigration is associated with an increase in average hours per worker and a reduction in skills per worker as measured by the share of college-educated workers in a state. These two effects have opposite and roughly equal effect on labor productivity.

The method

A major challenge to immigration research is the difficulty of identifying the effects of immigration on economic variables when we do not observe what would have happened if immigration levels had been different, all else being equal. To get around this problem, we take advantage of the fact that the increase in immigrants has been very uneven across states. For example, in California, one worker in three was foreign born in 2008, while in West Virginia the comparable proportion was only one in 100. By exploiting variations in the inflows of immigrants across states at 10-year intervals from 1960 to 2000, and annually from 1994 to 2008, we are able to estimate the short-run (one to two years), medium-run (four years), and long-run (seven to ten years) impact of immigrants on output, income, and employment.

To ensure that we are isolating the effects of immigrants rather than effects of other factors, we control for a range of variables that might contribute to differences in economic outcomes. These include sector specialization, research spending, openness to trade, technology adoption, and others. We then compare economic outcomes in states that experienced increases in immigrant inflows with states that did not experience significant increases.

As a further control for isolating the specific effects of immigration, we focus on variations in the flow of immigrants that are caused by geographical and historical factors and are not the result of state-specific economic conditions. For example, a state may experience rapid growth,

Figure 1 Employment and income

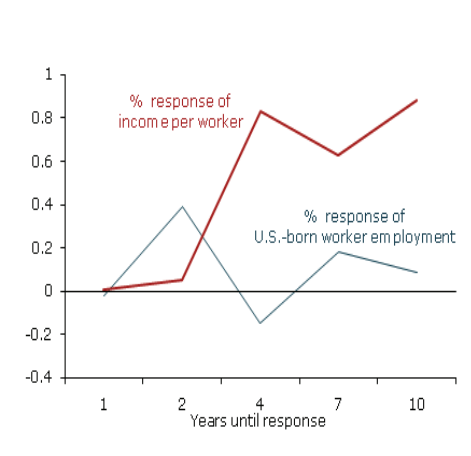
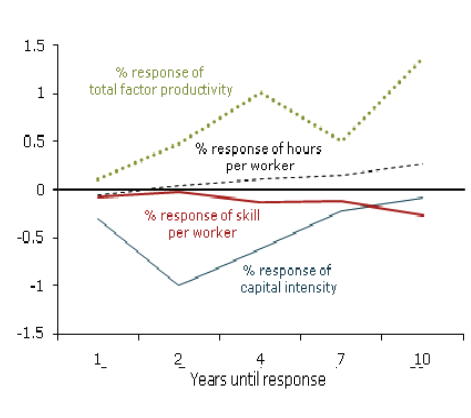


Figure 2 Capital intensity, hours per worker, and total factor productivity



tage of the labor supplied by new immigrants. However, in the short run, when businesses have not fully adjusted their



Class in Session (continued)

which attracts a lot of immigrants and also affects output, income, and employment. In terms of geography, proximity to the Mexican border is associated with high net immigration because border states tend to get more immigrants. Historical migration patterns also are a factor because immigrants are drawn to areas with established immigrant communities. These geography and history-driven flows increase the presence of immigrants, but do not reflect state-specific economic conditions. Hence, economic outcomes associated with these flows are purer measures of the impact of immigrants on economic variables.

The short- and the long-run effects of immigrants

Immigration effects on employment, income, and productivity vary by occupation, job, and industry. Nonetheless, it is possible to total these effects to get an aggregate economic impact. Here we attempt to quantify the aggregate gains and losses for the U.S. economy from immigration. If the average impact on employment and income per worker is positive, this implies an aggregate “surplus” from immigration. In other words, the total gains accruing to some U.S.-born workers are larger than the total losses suffered by others.

Figures 1 and 2 show the response of key economic variables to an inflow of immigrants equal to 1% of employment. Figure 1 shows the impact on employment of U.S.-born workers and on average income per worker after one, two, four, seven, and ten years. Figure 2 shows the impact on the components of income per worker: physical capital intensity, as measured by capital per unit of output; skill intensity, as measured by human capital per worker; average hours worked; and total factor productivity, measuring productive efficiency and technological level. Some interesting patterns emerge.

To read the article in its entirety, log onto www.frbsf.org/publications/economics/letter/2010/el2010-26.html.

Note: This Economic Letter was also featured in the *Wall Street Journal* on August 30, 2010.



Snacks

The recent recession has prompted policy discussions over the costs and benefits associated with U.S. immigration. As such, you may wish to use the content from this issue’s featured articles to prompt discussion. The second article (p.4), in particular, may be a digestible read for high school students. Also, consider using the following activity to help structure the discussion.

Activity: Weighing the Costs and Benefits of U.S. Immigration

An interactive and guided discussion (9th-12th grade)

Directions:

1. Using the internet and or students’ economics texts, have your class define the following terms:

Labor Market
Human Capital
Labor Productivity
Economic Growth
Innovation
Entrepreneurship
Patent
Venture Capital

Hint: The vocabulary assignment can be completed the night before, or if you have access to a computer lab and economic texts, on the day of the discussion. Please note that term definitions are located in the box adjacent to the 2nd featured article.

2. Next, have your students take out a clean sheet of paper and fold it in half, length-wise.

3. On the left side of the fold, at the top of the column, have the students write “Costs.”

4. On the right side of the fold, at the top of the column, have students write “Benefits.”

5. Hand out a copy of “What Immigration Means for the Economy” by Ross Lawrence to each student and have them read the article in its entirety. You may wish to have students highlight or write down any unfamiliar terms. www.richmondfed.org/publications/research/region_focus/2010/q2/pdf/research_spotlight.pdf

6. Next, have students separate into pairs to evaluate and list on the sheet prepared earlier what they believe is a cost or benefit according to the article. Students are also to interject their own contributions of what they deem to be the costs and benefits associated with immigration. Use this opportunity to clarify any highlighted or student identified “unfamiliar terms.”

7. After about 10 minutes, have one student from each group pose as the group’s spokesperson, and begin the class discussion.

8. Each group is to identify to the class one cost and one benefit and explain the rationale for the listings without repeating an earlier group’s discussion.

9. Lastly, have the class vote as to whether or not they believe the benefits outweigh the costs, and whether or not they agree with the author’s positive view of immigration.

Additional activities for 7-12th U.S. History, Civics and Economics students

Interested in demonstrating to your students the knowledge necessary to become a U.S. citizen?

Consider having your students take the Immigration and Naturalization Self Test and or use the Civic Literacy flash cards to test their knowledge of U.S. history, government, and market system. www.uscis.gov/citizenshiptest
www.uscis.gov/portal/site/uscis/citizenship

Want to show your students national and state immigration data? Check out this website: www.census.gov/prod/2010pubs/acsbr09-16.pdf



Class in Session (continued)

What Immigration Means for the Economy

Republished from the Second Quarter 2010 Edition of *Region Focus*, a Federal Reserve Bank of Richmond publication.

By Ross Lawrence

“How Much Does Immigration Boost Innovation?” Jennifer Hunt and Marjolaine Gauthier-Loiselle. *American Economic Journal: Macroeconomics*. April 2010, vol. 2, no. 2, pp. 31-56.

As concerns about a difficult labor market weigh heavily on the minds of many Americans, an enduring anxiety about the effects of immigration on the economy underlies many policy debates. As a result, a number of policymakers and pundits have declared that liberal immigration policies are a source of economic instability for the country. Jennifer Hunt and Marjolaine Gauthier-Loiselle put some of these concerns into context with their recent paper. Much of the conventional wisdom holds that immigrants exhaust more than their share of public resources, in addition to providing competition to native-born Americans in the domestic job market. But economic research about these newcomers suggests that they may provide more of a long-run boon to the U.S. economy than previously thought. This article, for example, studies the contribution of skilled immigrants to innovation in the United States.

The authors point out that the United States had about a 12 percent foreign-born population in 2000, but 26 percent of U.S. Nobel Prize winners from 1990-2000 were immigrants, as were 25 percent of the founders of venture-backed publicly owned American companies between 1990 and 2005. To explore the link between immigration and innovation, Hunt and Gauthier-Loiselle use data about U.S. patents per capita.



Snacks

Interested in enhancing the immigration discussion with economic terms introduced by the featured articles? Here is an assortment of terms you may wish to highlight.

Economic Terms

Labor Market	This is a market where workers compete for jobs, and employers compete for workers.
Human Capital	Attributes or skills that enable an individual to perform a job.
Labor Productivity	This refers to the output per individual worker (or group of workers), per a specific amount of time, typically hourly.
Economic Growth	A positive change in the level of production of goods and services by a country as measured by its GDP from the previous year.
Innovation	The development of a new product, service, or identification of a unique targeted market opportunity.
Entrepreneurship	Capacity and willingness of an individual or group to take on the risk of pulling together the factors of production to establish and run a new business organization to generate a profit.
Patent	A sole right to manufacture, produce or process a given product or service or to claim ownership and benefit from certain intellectual property granted by the government for a specific period of time.
Venture Capital	This is where a group of investors or a specialized financial or banking institution provides a pool of money (capital) for the purposes of either assisting companies in their start-up efforts or helping finance a given firm's growth plans.

Reference: www.businessdictionary.com



Class in Session (continued)

“The purpose of studying patents is to gain insight into technological progress, a driver of productivity growth, and ultimately economic growth. If immigrants increase patents per capita, they may increase output per capita and make natives better off.” As the authors note, such information undoubtedly should influence policy debates about skilled immigration, such as determining the appropriate number of employer-sponsored H-1B visas to allow for skilled workers.

What if immigrants are just crowding out natives from the science and engineering fields? They control for that possibility, however, in a way that is designed to estimate the impact of immigrants on innovation given positive or negative spillover effects.

Based upon individual-level data gathered from the National Survey of College Graduates, the authors show that a 1 percent increase in the proportion of college graduate immigrants in the population increases patents per capita by 6 percent.

“In addition to the direct contributions of immigrants to research, immigration could boost innovation indirectly through positive spillovers on fellow researchers, the achievement of critical

mass in specialized research areas, and the provision of complementary skills such as management and entrepreneurship,” the authors write. They also note “that the immigrant patenting advantage over natives is entirely accounted for by immigrants’ disproportionately holding degrees in science and engineering fields.”

Of course, unskilled immigrants rather than skilled ones often receive the majority of public scrutiny. Other economists, including David Card of the University of California at Berkeley, have looked at this issue. In particular, Card has addressed the question of whether immigrants hurt the job opportunities of less skilled native workers. In a 2005 paper titled “Is the New Immigration Really So Bad?” he concludes that, on the whole, “evidence that immigrants have harmed the opportunities of less educated natives is scant.” He also responds to the research of economist George Borjas of Harvard University and others, who argue that recent years have witnessed an increase in cultural and language differences between immigrants and natives that may make assimilation more difficult. According to Card’s research, immigrants may be adapting to the American lifestyle better than some think — on average, second-generation children of post-1965 immigrants have

higher education levels and wages than their native counterparts.

Card considered a more specific example of the relationship between immigration and unemployment in a 1989 paper, in which he examines the impact of the Mariel Boatlift on the Miami labor market. During about a five month period in 1980, some 125,000 Cubans fled a declining economy and internal tensions in their native country. The data suggest about half of these immigrants, most of whom were relatively unskilled, settled permanently in Miami, Card writes. This drove up the city’s population by about 7 percent. It had no discernable effect on the wage rates for less skilled non-Cuban workers, Card found, nor did Miami’s unemployment rate rise disproportionately to state and national averages.

The growing body of research ought to contribute to a more informed debate about U.S. immigration policy. Although other political considerations play a role in this conversation, the bulk of evidence seems to suggest that immigrants — of varying skill levels — have a net positive effect on the American economy. **RF**

www.richmondfed.org/publications/research/region_focus/2010/q2/pdf/research_spotlight.pdf



Heard over the P.A.

The SE Educator features information on upcoming workshops, competitions, new resources from the Fed and other topics of interest.

Staff Development Opportunities

www.richmondfed.org/conferences_and_events/education/

The Fed Experience

www.fedexperience.org

Conferences	Date	Location
South Carolina Association of Family & Consumer Sciences Conference	2/24/2011 - 2/25/2011	Columbia, S C
North Carolina Social Studies Conference	2/24/2011 - 2/25/2011	Greensboro, N C
National Association of Economic Educators Conference	2/25/2011 - 2/26/2011	Charlotte, N C
Competitions	Date	Location
LifeSmarts	3/4/2011	Richmond, VA
Economics Challenge	4/6/2011	Charlotte, N C



Beyond the Textbook

Lesson Plan Ideas:

Elementary School

Ten Mile Day

This story is about the building of the Transcontinental railroad to connect the East Coast with the West Coast of the U.S. The building of the railroad brought goods, services, and people back and forth between the East and West. Economic concepts covered include human capital, capital goods, incentives and division of labor. This is a good lesson to use for discussing U.S. migration.

www.philadelphiafed.org/education/teachers/lesson-plans/TenMileDay.pdf

Middle School

Why Do People Move?

This lesson plan provides activities to assist students with reviewing the many benefits and costs of moving. For most students a move means new surroundings, new friends and new teachers. For the family as a whole there are more factors to consider. This lesson helps students see destinations of movers, ages of movers, regions of moves and the costs and benefits of moving or push/pull factors.

www.councilforeconed.org/resources/lessons/focusmswg_lesson483.pdf
Lesson 4 - *Middle School World Geography: Focus on Economics*, Council on Economic Education, pages (61-74)

See also, "America: The Land of Career Opportunity", and "The Demographics of Immigration" Grade Level: 8-12, listed in the High School section below.

High School

Entrepreneurship

Students will assess important entrepreneurs over time and determine the characteristics that contribute to entrepreneurial success.

www.stlouisfed.org/education_resources/assets/lesson_plans/04ITV_Entrepreneurship.pdf

Know Your Dough

Human Capital

Students are divided into different groups to highlight various degrees of educational attainment. They are then asked to create name tents given certain limitations. This hands-on activity

highlights the value of education. www.stlouisfed.org/education_resources/assets/lesson_plans/pay-check/IYP_lesson1.pdf

America: The Land of Career Opportunity

This PBS lesson examines how immigrants seeking economic opportunity face certain "language, education and cultural" obstacles in their efforts to obtain financial stability.

www.pbs.org/independentlens/newamericans/foreducators_lesson_plan_07.html

The Demographics of Immigration

Another great PBS lesson that uses census data to compare and contrast immigration trends over time. www.pbs.org/independentlens/newamericans/foreducators_lesson_plan_04.html