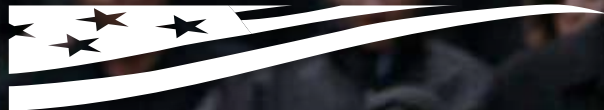


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Raising the Floor for American Workers

The Economic Benefits of Comprehensive Immigration Reform

by Dr. Raúl Hinojosa-Ojeda January 2010



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Executive summary

The U.S. government has attempted for more than two decades to put a stop to unauthorized immigration from and through Mexico by implementing “enforcement-only” measures along the U.S.-Mexico border and at work sites across the country. These measures have failed to end unauthorized immigration and placed downward pressure on wages in a broad swath of industries.

Comprehensive immigration reform that legalizes currently unauthorized immigrants and creates flexible legal limits on future immigration in the context of full labor rights would help American workers and the U.S. economy. Unlike the current enforcement-only strategy, comprehensive reform would raise the “wage floor” for the entire U.S. economy—to the benefit of both immigrant and native-born workers.

The historical experience of legalization under the 1986 Immigration Reform and Control Act, or IRCA indicates that comprehensive immigration reform would raise wages, increase consumption, create jobs, and generate additional tax revenue. Even though IRCA was implemented during an economic recession characterized by high unemployment, it still helped raise wages and spurred increases in educational, home, and small-business investments by newly legalized immigrants. Taking the experience of IRCA as a starting point, we estimate that comprehensive immigration reform would yield at least \$1.5 trillion in added U.S. gross domestic product over 10 years. This is a compelling economic reason to move away from the current “vicious cycle” where enforcement-only policies perpetuate unauthorized migration and exert downward pressure on already low wages, and toward a “virtuous cycle” of worker empowerment in which legal status and labor rights exert upward pressure on wages.

This report uses a computable general equilibrium model to estimate the economic ramifications of three different scenarios: 1) comprehensive immigration reform that creates a pathway to legal status for unauthorized immigrants in the United States and establishes flexible limits on permanent and temporary immigration that respond to changes in U.S. labor demand in the future; 2) a program for temporary workers only that does not include a pathway to permanent status or more flexible legal limits on permanent immigration in the future; and 3) mass deportation to expel all unauthorized immigrants and effectively seal the U.S.-Mexico border. The model shows that comprehensive immigration reform produces the greatest economic benefits:

- Comprehensive immigration reform generates an annual increase in U.S. GDP of at least 0.84 percent. This amounts to \$1.5 trillion in additional GDP over 10 years. It also boosts wages for both native-born and newly legalized immigrant workers.
- The temporary worker program generates an annual increase in U.S. GDP of 0.44 percent. This amounts to \$792 billion of additional GDP over 10 years. Moreover, wages decline for both native-born and newly legalized immigrant workers.
- Mass deportation reduces U.S. GDP by 1.46 percent annually. This amounts to \$2.6 trillion in lost GDP over 10 years, not including the actual cost of deportation.² Wages would rise for less-skilled native-born workers, but would reduce wages for higher-skilled natives, and would lead to widespread job loss.

Legalizing the nation's unauthorized workers and putting new legal limits on immigration that rise and fall with U.S. labor demand would help lay the foundation for robust, just, and widespread economic growth.

“Enforcement Only” is costly, ineffective, and counterproductive

“When you try to fight economic reality, it is at best an expensive and very, very difficult process and almost always doomed to failure.”³

– Michael Chertoff, Secretary of Homeland Security, March 2006

The current enforcement-only approach to unauthorized immigration is not cost effective and has not deterred unauthorized immigrants from coming to the United States when jobs are available. Rather, enforcement-only policies have wasted billions of taxpayer dollars while pushing unauthorized migration further underground. And these policies have produced a host of unintended consequences: more deaths among border crossers, greater demand for people smugglers, less “circular migration” in favor of more “permanent settlement” among unauthorized immigrants, and further depressed wages in low-wage labor markets.

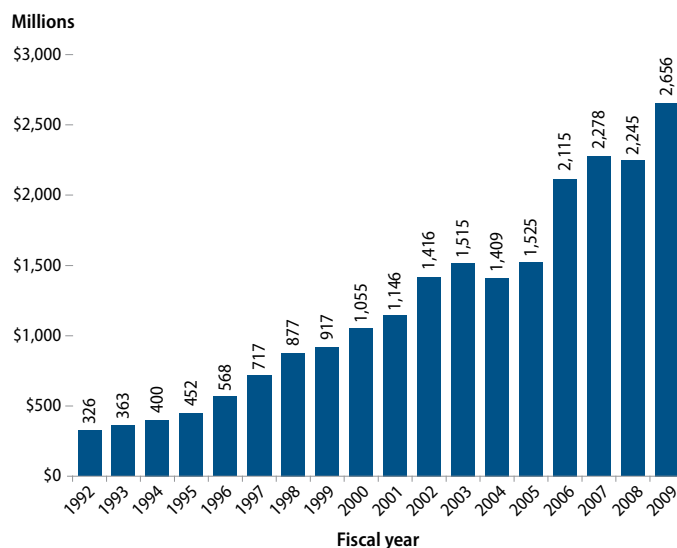
Significant declines in unauthorized immigration have historically occurred only during downturns in the U.S. economy when U.S. labor demand is dampened. And declining birth rates in Mexico will likely accomplish what tens of billions of dollars in border enforcement clearly have not: a reduction in the *supply* of migrants from Mexico who are available for jobs in the United States.

High costs and no benefits

The number of unauthorized immigrants in the United States has increased dramatically since the early 1990s despite equally dramatic increases in the amount of money the federal government spends on immigration enforcement. The U.S. Border Patrol’s annual budget has increased by 714 percent since 1992—the year before the current era of concen-

FIGURE 1
U.S. Border Patrol budget

Fiscal years 1992–2009



Source: U.S. Border Patrol Headquarters, Office of Public Affairs (2009).

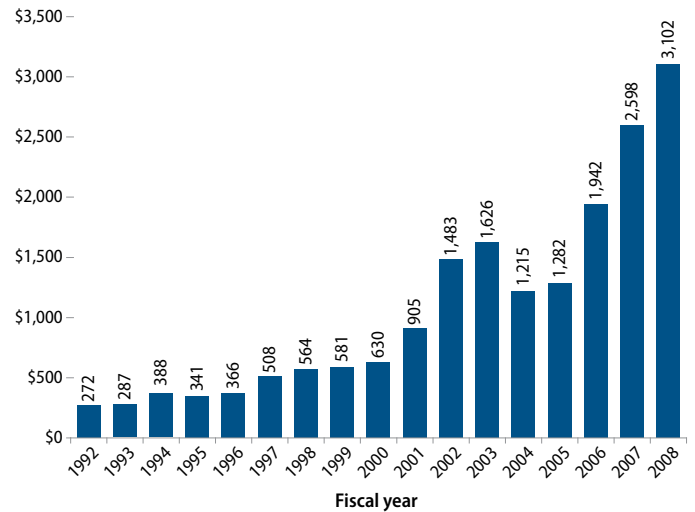
trated immigration enforcement along the U.S.-Mexico border—from \$326.2 million in Fiscal Year 1992 to \$2.7 billion in FY 2009 (Figure 1).⁴ And the cost ratio of Border Patrol expenditures to apprehensions has increased by 1,041 percent, from \$272 per apprehension in FY 1992 to \$3,102 in FY 2008 (Figure 2).⁵ At the same time, the number of Border Patrol agents stationed along the southwest border has grown by 390 percent, from 3,555 in FY 1992 to 17,415 in FY 2009 (Figure 3).⁶

The budget for U.S. Customs and Border Protection, the Border Patrol’s parent agency within the Department of Homeland Security, has also increased by 92 percent since DHS’ creation in 2003 from \$6.0 billion in FY 2003 to \$11.3 billion in FY 2009. And the budget for Immigration and Customs Enforcement, DHS’ interior-enforcement counterpart to CBP, has increased by 82 percent from \$3.3 billion in FY 2003 to \$5.9 billion in FY 2009 (Figure 4).⁷ Yet the unauthorized-immigrant population of the United States has roughly tripled in size over the past two decades, from an estimated 3.5 million in 1990 to 11.9 million in 2008 (Figure 5).⁸ The number of unauthorized immigrants in the country appears to have declined slightly since 2007 in response to the recession, which began at the end of that year.⁹

The fact is that nearly all unauthorized migrants still eventually succeed in entering the United States despite tens of billions of dollars of immigration-enforcement spending since the early 1990s. Wayne Cornelius and his colleagues at the University of California, San Diego, have conducted a long-term study of unauthorized migration and found that the vast majority of unauthorized immigrants—92 percent to 98 percent—keep trying to cross the border until they make it.¹⁰ Cornelius has concluded that “tightened border enforcement since 1993 has not stopped nor even discouraged migrants from entering the United States. Neither the higher probability of being apprehended by border patrol, nor the sharply increased danger of clandestine entry through deserts and mountainous terrain, has discouraged potential migrants from leaving home”—provided that

FIGURE 2
Cost per apprehension, U.S. Border Patrol

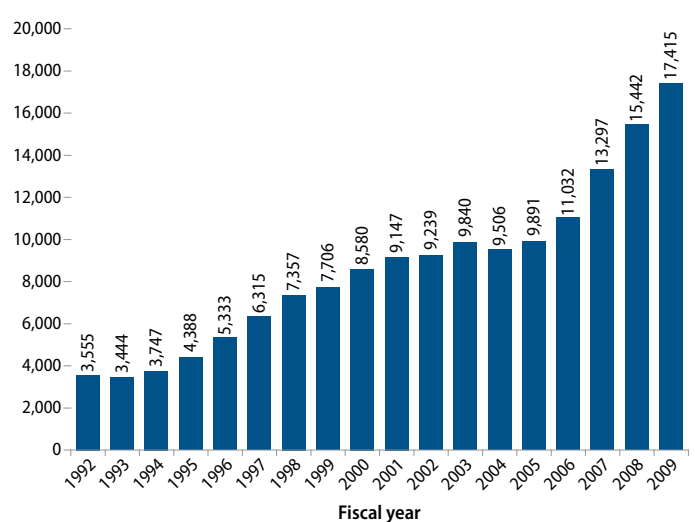
Fiscal years 1992–2008



Source: Budget data from U.S. Border Patrol; apprehension data from 2008 and 2004 Yearbook of Immigration Statistics.

FIGURE 3
U.S. Border Patrol agents stationed along southwest border

Fiscal years 1992–2009



Source: U.S. Border Patrol Headquarters, Office of Public Affairs (2009).

U.S. jobs are available.¹¹ Cornelius and his team have also found that far fewer Mexicans are coming to the United States due to the contraction of the job market in the United States with the onset of recession in December 2007.¹²

The unintended consequences of border enforcement

Enforcement-only border policies have not stopped or even slowed the pace of unauthorized immigration, but they have distorted the migration process in ways that produce unintended consequences that are detrimental to the U.S. economy, American workers, and unauthorized immigrants themselves, including:

Making the southwestern border more lethal.

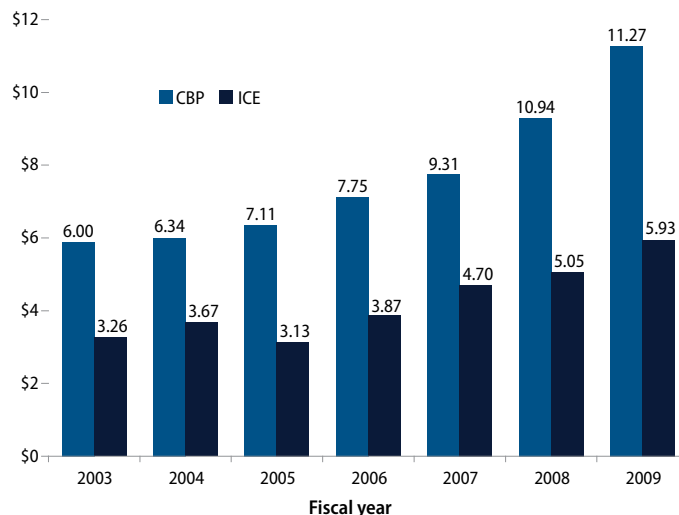
The concentrated border-enforcement strategy has contributed to a surge in migrant fatalities since 1995 by channeling unauthorized migrants through extremely hazardous mountain and desert areas, rather than the relatively safe urban corridors used in the past. The U.S. Government Accountability Office has estimated that the number of border-crossing deaths doubled in the decade following the beginning of enhanced border-enforcement operations.¹³ A report released in October 2009 by the American Civil Liberties Union of San Diego & Imperial Counties and Mexico's National Commission of Human Rights estimates that 5,607 migrants died while crossing the border between 1994 and 2008 (Figure 6).¹⁴

Creating new opportunities for people smugglers. Stronger enforcement on the U.S.-Mexico border has been a bonanza for the people-smuggling industry. Heightened border enforcement has closed safer, traditional routes and made smugglers essential to a safe and successful crossing. Wayne Cornelius' research in rural Mexico shows that more than 9 out of 10 unauthorized migrants now hire smugglers to get them across the border. Use of smugglers was the exception rather than the rule only a decade ago.¹⁵ And the fees that smugglers charge have tripled since 1993. The going rate for Mexicans was between \$2,000 and \$3,000 per head in January 2006, and there is evidence of a further rise since that time.¹⁶ Yet even at these prices it is economically rational for migrants—and, often, their relatives living in the United States—to dig deeper into their savings and go deeper into debt to finance illegal entry.

FIGURE 4
CBP and ICE budgets

Fiscal years 2003–2009

Billions

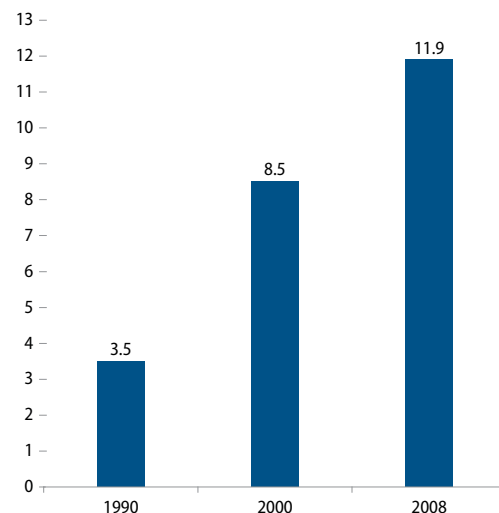


Source: U.S. Department of Homeland Security, "Budget-in-Brief" (FY 2005 through FY 2010).

FIGURE 5
Unauthorized immigrants in the United States

1990, 2000, and 2008

Millions



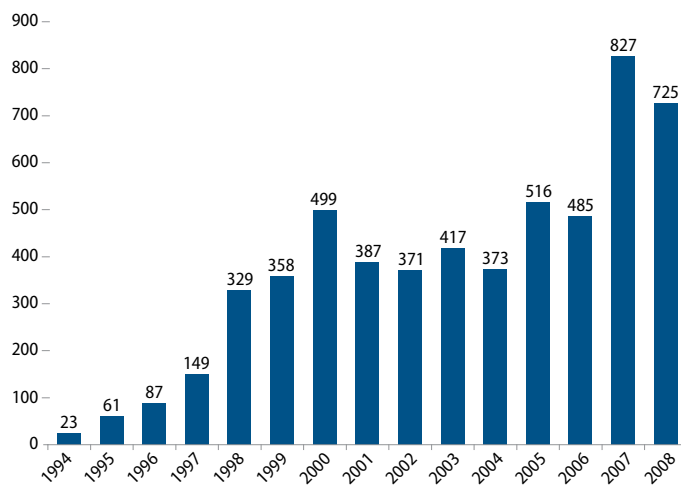
Source: Estimates by the Pew Hispanic Center; Office of Immigration Statistics (U.S. Department of Homeland Security); U.S. Immigration & Naturalization Service.

Breaking circular migration and promoting permanent settlement in the United States. The high costs and physical risks of unauthorized entry give immigrants a strong incentive to extend their stays in the United States; and the longer they stay, the more probable it is that they will settle permanently.¹⁷

Depressing low-wage labor markets. The enhanced enforcement regime moves unauthorized workers further underground, lowering their pay, and ironically, creating a greater demand for unauthorized workers. A 2008 report from the Atlanta Federal Reserve analyzes how this vicious cycle is activated and expands as firms find themselves forced to compete for the supply of cheaper, unauthorized labor. When a firm cuts costs by hiring unauthorized workers for lower wages, its competitors become more likely to hire unauthorized workers for lower wage, as well, in order to benefit from the same cost savings.¹⁸

FIGURE 6
Border-crossing deaths

1994–2008



Source: Maria Jimenez, "Humanitarian Crisis: Migrant Deaths at the U.S.-Mexico Border" (Washington: ACLU, 2009), p. 17.

Demographic trends in Mexico

Migration flows from Mexico to the United States can be explained in large part by differences in labor demand and wages between the two countries, but economists also estimate that about one-third of total immigration from Mexico over the past four decades is the result of higher Mexican birth rates.¹⁹ But Mexico has begun to experience what will soon be a major reduction in the supply of new entrants into the North American labor force.

The birth rate in Mexico has fallen from nearly seven children per mother in the mid-1960s to just 2.2 today, barely above replacement rate and only slightly higher than the U.S. level of 2.1. Mexico's birth rate is expected to fall below replacement level over the coming decade.²⁰ This is one of the fastest declines in fertility ever recorded in any nation. Mexico's working-age population was growing by 1 million each year in the 1990s, when unauthorized migration from Mexico reached record levels. But today that growth rate is only 500,000.²¹

The United States will continue to attract many Mexicans seeking higher wages and a better life, but the population pressures of the past two decades are already starting to recede, and a reduction in the pressures to immigrate to the United States will likely follow. An early indication of this shift is seen in the increasing age of apprehended migrants. The share of apprehended immigrants under the age of 25 was 3.0 percentage points lower in 2008 compared to 2005, while the share of those over the age of 35 was 2.5 percentage points higher.²²

Lessons from the Immigration Reform and Control Act of 1986

The recent history of U.S. immigration policy offers important insights into the economic benefits of providing unauthorized immigrants with legal status and the drawbacks of immigration reform efforts that are not sufficiently comprehensive in scope.

The 1986 IRCA granted legal status to 1.7 million unauthorized immigrants through its “general” legalization program, plus another 1.3 million through a “Special Agricultural Workers” program.²³ Even though IRCA was implemented during an economic recession characterized by high unemployment, studies of immigrants who benefited from the general legalization program indicate that they soon earned higher wages and moved on to better jobs—and invested more in their own education so that they could earn even higher wages and get even better jobs.

Higher wages translate into more tax revenue and increased consumer purchasing power, which benefits the public treasury and the U.S. economy as a whole. IRCA failed, however, to create flexible limits on future immigration that were adequate to meet the growing labor needs of the U.S. economy during the 1990s. As a result, unauthorized immigration eventually resumed in the years after IRCA, thereby exerting downward pressure on wages for all workers in low-wage occupations.

Legalized workers earn more and move on to better jobs

Surveys conducted by Westat, Inc. for the U.S. Department of Labor found that the real hourly wages of immigrants who acquired legal status under IRCA’s general legalization program had increased an average of 15.1 percent by 1992—four to five years after legalization in 1987 or 1988. Men experienced an average 13.2 percent wage increase and women a 20.5 percent increase during that period.²⁴ And economists Sherrie Kossoudji and Deborah Cobb-Clark found using the same survey data that 38.8 percent of Mexican men who received legal status under IRCA had moved on to higher-paying occupations by 1992.²⁵

Other researchers have also analyzed this survey data and supplemented it with data from additional sources—such as the 1990 Census and the National Longitudinal Survey of Youth—in an effort to determine how much of the wage increase experienced by IRCA beneficiaries was the result of legalization as opposed to the many other variables that

influenced wage levels for different workers in different occupations during the same period of time. The findings of these researchers vary according to their economic models, but the results show uniformly positive results for IRCA beneficiaries:

- Economist Francisco Rivera-Batiz estimated that the very fact of having legal status had resulted in a wage increase of 8.4 percent for male IRCA beneficiaries and 13 percent for female IRCA beneficiaries by 1992—independent of any increase in earning power they might have experienced as a result of acquiring more education, improving their mastery of English, or other factors.²⁶
- Economists Catalina Amuedo-Dorante, Cynthia Bansak, and Stephen Raphael estimated that real hourly wages had increased 9.3 percent for male IRCA beneficiaries and 2.1 percent for female IRCA beneficiaries by 1992—independent of broader changes in the U.S. economy that might have affected wage levels generally.²⁷
- Kossoudji and Cobb-Clark estimated that legalization had raised the wages of male IRCA beneficiaries 6 percent by 1992—independent of broader changes in the U.S. and California economies that might have affected wage levels generally.²⁸

Legal status yields increasing returns over time

The experience of IRCA also indicates that legalization greatly increases the incentives for formerly unauthorized workers to invest in themselves and their communities—to the benefit of the U.S. economy as a whole. As Kossoudji and Cobb-Clark explain, the wages of unauthorized workers are generally unrelated to their actual skill level. Unauthorized workers tend to be concentrated in the lowest-wage occupations; they try to minimize the risk of deportation even if this means working for lower wages; and they are especially vulnerable to outright exploitation by unscrupulous employers. Once unauthorized workers are legalized, however, these artificial barriers to upward socioeconomic mobility disappear.

IRCA allowed formerly unauthorized workers with more skills to command higher wages, and also provided a powerful incentive for all newly legalized immigrants to improve their English-language skills and acquire more education so they could earn even more. Kossoudji and Cobb-Clark estimate that if the men who received legal status under IRCA had been “legal” throughout their entire working lives in the United States, their wages by 1992 would have been 24 percent higher because they would have been paid in relation to their actual skill level since arriving in the country and would therefore have had an incentive to improve their skills to further increase their earning power.²⁹

A recent North American Integration and Development, or NAID research project on the 20-year impact of IRCA shows a number of important long-term improvements among previously unauthorized immigrants. The study illustrates that removing the uncertainty

of unauthorized status allows legalized immigrants to earn higher wages and move into higher-paying occupations, and also encourages them to invest more in their own education, open bank accounts, buy homes, and start businesses. These are long-term economic benefits that continue to accrue well beyond the initial five-year period examined by most other studies of IRCA beneficiaries.³⁰

Effective immigration reform must address future flows

Unauthorized immigration to the United States initially declined following the passage of IRCA.³¹ But IRCA failed to create flexible legal limits on immigration that were capable of responding to ups and downs in future U.S. labor demand. It attempted to stop unauthorized immigration through “employer sanctions” that imposed fines on employers who “knowingly” hire unauthorized workers. Yet it was unable to put an end to unauthorized immigration given the U.S. economy’s continuing demand for immigrant labor in excess of existing legal limits on immigration, as well as the ready availability of fraudulent identity documents and the inherent difficulty of proving that an employer has “knowingly” hired an unauthorized worker.

A new, easily exploited unauthorized population arose in the United States during the economic boom of the 1990s. And the costs of employer sanctions were passed along to all Latino workers in the form of lower wages—regardless of legal status or place of birth. This resulted from increased anti-Latino discrimination against job applicants who “looked” like they might be unauthorized, and from the increased use of labor contractors by employers who wanted to distance themselves from the risk of sanctions by having someone else hire workers for them—for a price which was ultimately paid by the workers.³²

Three immigration-policy scenarios

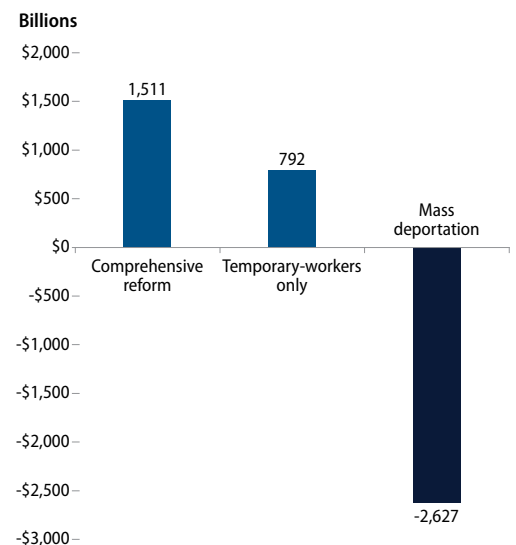
The federal government has three basic choices when it comes to immigration reform:

- 1. Comprehensive immigration reform:** Create a pathway to legal status for unauthorized immigrants already living in the United States, and establish new, flexible legal limits on permanent and temporary immigration that respond to changes in U.S. labor demand in the future.
- 2. A program for temporary workers only:** Develop a new temporary-worker program for currently unauthorized immigrants and future immigrants that does not include a pathway to permanent status for unauthorized immigrants or more flexible legal limits on permanent immigration in the future.
- 3. Mass deportation:** Expel all unauthorized immigrants from the United States and effectively seal the U.S.-Mexico border to future immigration. This is not a realistic scenario, but it is useful for comparison purposes.

We analyze the economic impact of each of these three scenarios over the course of 10 years by taking the historical experience of legalization under IRCA as a starting point and using a computable general equilibrium model (see Appendix 1).

The comprehensive immigration reform scenario yields the greatest benefits for the U.S. economy—roughly \$1.5 trillion in additional GDP growth over 10 years—while increasing wages for all workers. A program for temporary workers only produces half the economic gains of comprehensive immigration reform—\$792 billion over 10 years—and lowers wages for all workers. And mass deportation costs the U.S. economy \$2.6 trillion in lost GDP over 10 years and causes widespread job losses, although it increases wages only for less-skilled native-born workers.

FIGURE 7
Change in U.S. GDP under different scenarios, over 10 years



Congressional Budget Office, "The Budget and Economic Outlook: Fiscal Years 2009 to 2019" (2009) Table B-1, p. 44.

Scenario 1: Comprehensive immigration reform

The U.S. government in this scenario enacts immigration reform that allows unauthorized immigrants to come forward and register, pay an application fee and a fine, and—if they pass a criminal background check—earn legal status and eventually U.S. citizenship. Applicants would also be required to learn English and pay any back taxes owed. And future levels of permanent and temporary immigration to the United States would be based on the demand for labor.

All immigrant workers in this scenario have full labor rights, which results in higher wages—and higher worker productivity—for all workers in industries where large numbers of immigrants are employed. As wage and productivity levels rise, the U.S. economy's demand for new immigrant workers actually declines over time as the market shrinks for easily exploited, low-wage, low-productivity workers.

This comprehensive immigration reform scenario generates an annual increase in U.S. gross domestic product of at least 0.84 percent. This amounts to \$1.5 trillion in additional GDP over 10 years (see Figure 7 and Appendix 2). And both native-born and newly legalized immigrant workers would see their wages rise.

This scenario uses the parameters of the IRCA experience to simulate the effect of the higher wages that newly legalized workers would earn, as well as the higher worker productivity that would result from the movement of workers into new occupations and from increased investment by workers in their own education and skills. This model does not, however, capture a range of other economic benefits that have been documented among IRCA beneficiaries, such as increased household investments in the education of family members and increased rates of home ownership and small-business formation. The results of our modeling should therefore be viewed as a conservative, baseline estimate of the actual economic benefits that would flow from comprehensive immigration reform.

Scenario 2: A program for temporary workers only

The U.S. government in this scenario creates a new temporary-worker program that encompasses both currently unauthorized immigrants and future immigrants, but with limited labor rights and on a temporary basis only. Neither unauthorized immigrants nor future temporary immigrants would be granted a pathway to permanent status or U.S. citizenship.

Immigrant workers in this scenario have limited labor rights, which drives down wages and productivity for all workers in industries where large numbers of immigrants are employed. This legal immigration would respond to changes in U.S. labor demand, but at relatively low wages and without the build up of human capital and labor productivity that occurs over time among legalized workers. As a result, future levels of immigration are

actually higher under this scenario than under comprehensive immigration reform since more workers are needed to produce the same level of output under these low-wage, low-productivity conditions.

This scenario generates an annual increase in U.S. GDP of 0.44 percent, compared to the 0.84 percent GDP increase under comprehensive immigration reform. The temporary workers scenario amounts to \$792 billion of additional GDP over 10 years, compared to \$1.5 trillion under comprehensive immigration reform (see Figure 7 and Appendix 2). Wages also fall for both native-born and newly legalized immigrant workers under this scenario.

Scenario 3: Mass deportation

The U.S. government in this scenario would deport over 4 million immigrant workers and their dependents, or—if they are not already here—never allow them to enter the United States. This scenario is not a realistic policy option, but it serves as an extreme or boundary case against which we can evaluate the other two scenarios.

The mass deportation scenario reduces U.S. GDP by 1.46 percent annually, compared to comprehensive immigration reform, which increases it by 0.84 percent annually, and the temporary-workers program, which increases it by 0.44 percent annually. This amounts to \$2.6 trillion in lost GDP over 10 years, compared to \$1.5 trillion in additional GDP under comprehensive immigration reform and \$792 billion in additional GDP under the temporary worker program (see Figure 7 and Appendix 2).³³ Wages do rise for less-skilled native-born workers under this scenario, but they fall for higher-skilled natives and the U.S. economy loses large numbers of jobs.

It is important to note that, while this scenario estimates the broader economic impact of mass deportation, it does not take into account the actual cost of mass deportation. The Center for American Progress has pegged this cost at somewhere between \$206 billion and \$230 billion over five years.³⁴ The estimated cost to deport undocumented immigrants would be significantly higher under an updated analysis to be released in coming weeks by the Center for American Progress.

The economic benefits of comprehensive immigration reform

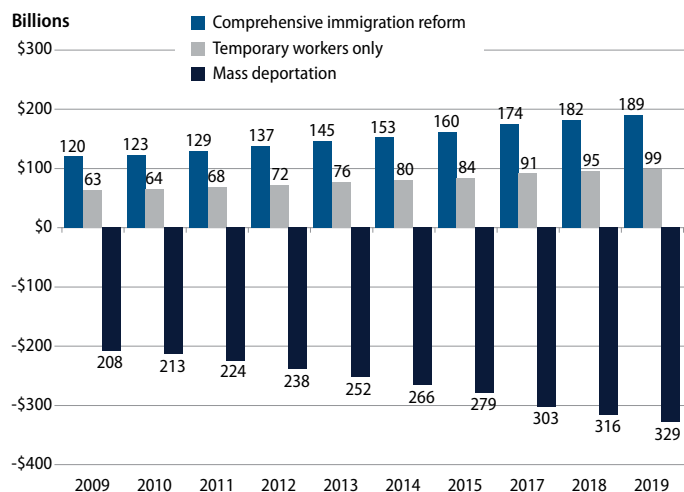
The results of our modeling (see Appendix 2) suggest that comprehensive immigration reform would increase U.S. GDP by at least 0.84 percent per year. Using 10-year GDP projections prepared by the Congressional Budget Office,³⁵ this translates into a steadily increasing amount of added annual GDP over the coming decade (see Figure 8 and Appendix 3). The 10-year total is at least \$1.5 trillion in added GDP over 10 years, which includes roughly \$1.2 trillion in additional consumption and \$256 billion in additional investment.

Comprehensive immigration reform brings substantial economic gains even in the short run—during the first three years following legalization. The real wages of newly legalized workers increase by roughly \$4,405 per year among those in less-skilled jobs during the first three years of implementation, and \$6,185 per year for those in higher-skilled jobs. The higher earning power of newly legalized workers translates into an increase in net personal income of \$30 to \$36 billion, which would generate \$4.5 to \$5.4 billion in additional net tax revenue. Moreover, an increase in personal income of this scale would generate consumer spending sufficient to support 750,000 to 900,000 jobs.

The wages of native-born workers also increase under the comprehensive immigration reform scenario because the “wage floor” rises for all workers—particularly in industries where large numbers of easily exploited, low-wage, unauthorized immigrants currently work. Wages for native-born U.S. workers increase by roughly \$162 per year for the less skilled and \$74 per year for the higher-skilled. Under the temporary worker program scenario, wages fall for both less-skilled and higher-skilled native-born U.S. workers. And under the mass deportation scenario, wages for less-skilled native-born workers actually rise, but only at the cost of significantly fewer jobs as the economy contracts and investment declines (see Appendix 2).

FIGURE 8
Annual change in U.S. GDP under different scenarios

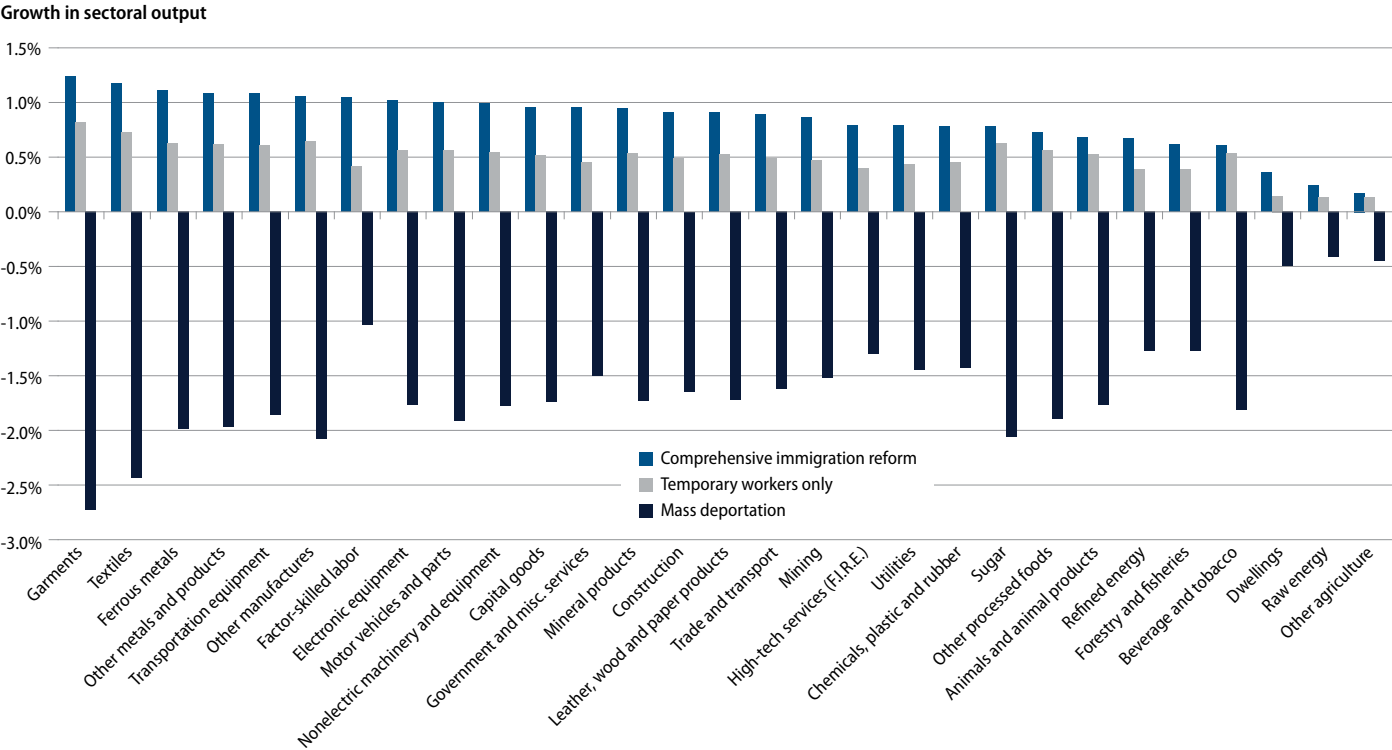
2009–2019



Congressional Budget Office, “The Budget and Economic Outlook: Fiscal Years 2009 to 2019” (2009) Table B-1, p. 44.

The benefits of additional U.S. GDP growth under the comprehensive immigration reform scenario are spread very broadly throughout the U.S. economy, with virtually every sector expanding. Particularly large increases occur in immigrant-heavy industries such as textiles, ferrous metals, transportation equipment, electronic equipment, motor vehicles and parts, non-electric machinery and equipment, capital goods, mineral products, and construction. In comparison, every sector experiences significantly smaller gains under the temporary worker scenario, while every sector contracts under the mass deportation scenario (see Figure 9 and Appendix 4).

FIGURE 9
Annual impact of different scenarios on U.S. economic sectors



Conclusion

The experience of IRCA and the results of our modeling both indicate that legalizing currently unauthorized immigrants and creating flexible legal limits on future immigration in the context of full labor rights would raise wages, increase consumption, create jobs, and generate additional tax revenue—particularly in those sectors of the U.S. economy now characterized by the lowest wages. This is a compelling economic reason to move away from the current “vicious cycle” where enforcement-only policies perpetuate unauthorized migration and exert downward pressure on already-low wages, and toward a “virtuous cycle” of worker-empowerment in which legal status and labor rights exert upward pressure on wages.

Legalization of the nation’s unauthorized workers and new legal limits on immigration that rise and fall with U.S. labor demand would help lay the foundation for robust, just, and widespread economic growth. Moving unauthorized workers out of a vulnerable underground status strengthens all working families’ ability to become more productive and creates higher levels of job-generating consumption, thereby laying a foundation for long-term community revitalization, middle-class growth, and a stronger, more equitable national economy.

Appendix 1: Methodology

Computable general equilibrium modeling

This study presents the results of a computable general equilibrium modeling project on the United States and Mexico in the context of a multi-regional world economy. It is designed to analyze scenarios of alternative immigration policies, as well as alternative trade policies.³⁶ The results of this integrated CGE model allow us to analyze how these migration and trade policies affect differently skilled labor within a common comparative framework.

As is typical in CGE models of this type, trade is motivated by both price differentials and regional characteristics of goods.³⁷ Services trade is included, such that none of the 29 sectors in the models are “purely non-traded.” Trade liberalization can consist of reducing or eliminating manufacturing tariffs, all tariffs, or all barriers, including non-tariff barriers. Immigration is motivated by real wage differentials and influenced by immigration policies. Migrant remittances are explicitly modeled, and are affected by any policy that affects migration levels or migrant earnings.

CGE models are typically used to run “comparative static” experiments. An experiment is constructed by changing key variables and observing how the equilibrium adjusts. This gives the researchers an approximate picture of how the economy in the base year would have looked if the changes being simulated in a particular scenario had occurred years ago and the economy had fully adjusted to the change. A more accurate dynamic model would simulate how the economies would adjust over a period of time to policy changes made in the model’s base year. This would allow the incorporation of important factors such as savings and investment, demographic change, and human capital formation.

Our model simulates the effect of immigration policies primarily through two variables:

1. Raising or lowering the level of domestic wages earned by migrants. For example, wages and productivity of legalized migrants increase with immigration reforms that grant those workers additional rights and encourage investments in their human capital.
2. Altering the responsiveness (elasticity) of migration with respect to any given wage differential. For example, additional enforcement lowers immigration for a given wage differential.³⁸

Immigration and trade interact in the model in several important ways. The presence or absence of immigrants in a country affects the relative price of goods, and thus trade flows. Openness to trade affects wage levels, and thus immigration incentives. Remittances affect the balance of payments and thus trade flows. Remittances further fuel investment and growth in migrant-sending regions, thus affecting wages, prices, trade, and migration.

This report uses a global applied general equilibrium model that has been adjusted to take into account bilateral labor flows.³⁹ The model, termed GMig2, represents a significant improvement on the model developed in Terrie L. Walmsley and Alan L. Winters.⁴⁰ The GMig2 model takes advantage of the recent bilateral migration database developed by Christopher R. Parsons, Ronald Skeldon, Terrie L. Walmsley, and L. Alan Winters, which can track bilateral labor movements.⁴¹ The global migration model (GMig2) is documented by Terrie Walmsley, Alan Winters, Syud Amer Ahmed, and Christopher Parsons.⁴²

The GMig2 database

The database used with the bilateral labor migration model (GMig,) is based on the GTAP 6 Data Base,⁴³ and is augmented with the bilateral migration data base developed by Parsons et al,⁴⁴ skill data from Frédéric Docquier and Hillel Rapoport,⁴⁵ and remittance data from the World Bank.⁴⁶ Terrie Walmsley, S. Amer Ahmed, and Christopher R. Parsons document the GMig2 database construction process.⁴⁷ Table 1 shows the configuration of the GMig2 database as aggregated for this report. Panel A shows the nine regions, and Panel B shows the 29 commodities.

The GMig2 model

The GMig2 model tracks both the “home” and “host” region of each person and worker. The home region is defined as the country of origin of the person/worker—this is their place of birth in the database. The host region is the region in which the person resides/works. The labor force of skill *i*, located in region *r* ($LF_{i,r}$), and available to firms for production, is therefore the sum across home regions *c* of all workers located in the *host* region *r*, as shown in equation 1. This is the same for population in equation 2.

$$LF_{i,r} = \sum_c LF_{i,c,r} \quad (1)$$

$$POP_r = \sum_c POP_{c,r} \quad (2)$$

An increase in the number of migrant workers from region *c* to region *r* would reduce the number of workers in the labor supplying region ($LF_{i,c,c}$ would fall) and increases the labor force of the labor importing region ($LF_{i,c,r}$ would rise). The populations would change in a similar way, since it is assumed that migrant workers move with their families.

Table 1: GMig2 database configuration

Panel A: Nin Region	
1	USA
2	Canada
3	Mexico
4	China
5	India
6	Rest of South America
7	Rest of OECD
8	Asian Newly Industrialized Countries (Singapore, Taiwan and Hong Kong)
9	Rest of World
Panel B: 29 commodities	
1	Irrigated agriculture in Mexico (vegetables and fruit, and sugar cane)
	Traditional agriculture in Mexico
2	(cereal grains, oil seeds, and plant based fibers)
3	Animals and animal products
4	Other agriculture
5	Forestry and fisheries
6	“Raw” energy
7	Mining
8	Other processed foods
9	Sugar
10	Beverage and tobacco
11	Textiles
12	Garments
13	Leather, wood, and paper product
14	“Refined” energy
15	Chemicals, plastic, rubber
16	Mineral products
17	Ferrous metals
18	Other metals and products
19	Motor vehicles and parts
20	Transport equipment
21	Electronic equipment
22	Non-electric machinery and equipment
23	Other manufactures
24	Utilities
25	Construction
26	Trade and transport
27	High tech services (finances, insurance, recreation)
28	Government and miscellaneous services
29	Dwellings

Changes in the number of migrants can occur in two ways in the GMig2 model: as an exogenous change in the supply and/or demand for migrant workers, such as changes in quotas; or as endogenous movements of migrant workers in response to wage differentials. Movements in migrant workers occur endogenously in this report, except in the zero Mexican migration scenario, where a hypothetical enforceable quota of zero migrants from Mexico is set without allowing compensating flows based on changing wage differentials.

Migrants are assumed to respond to differences in the real wages between the home ($RW_{i,c,c}$) and host ($RW_{i,c,r}$) region. $ESUBMIG$ is a parameter reflecting the extent to which migrants respond to differences in real wages; this parameter would also reflect any restrictions on migration flows imposed by the host or home country policies.

$$LF_{i,c,r} = A_{i,c,r} \times \left[\frac{RW_{i,c,r}}{RW_{i,c,c}} \right]^{ESUBMIG_{i,r,s}} \quad (3)$$

Note that with endogenous movements responding to changes in real wages, migrants can either migrate or return home depending on the trade and/or migration policy's effect on real wages. Policies that increase real wage differentials lead to higher levels of migration, while those which reduce the wage differential lead to lower migration levels.⁴⁸

Migrant workers are assumed to gain a portion of the difference between their nominal wages at home and the nominal wages in the host region, reflecting the fact that their productivities have also changed as they move from the home to the host region and interact with the resources and technology of that host region. Changes in real wages and incomes are also considered, since different purchasing power between regions is also an important factor in the immigrant's decision on whether to migrate.⁴⁹

Changes in migration policies are implemented in two ways in this report:

1. The responsiveness of migration to real wage differentials ($ESUBMIG$) can be shocked to reflect changes in migration policy, which increase or decrease people's ability to migrate in response to wages.
2. The ratio of a migrant's wage in the host country to their home country wage can be altered to reflect changes in the productivities of migrants resulting from changes in migration policy. This ratio is referred to as $BETA$.

A tightening or loosening of migration policy involves reducing or increasing the responsiveness of migrants to wage differentials ($ESUBMIG$), and/or reducing or increasing the productivity, or lowering the ratio of migrant wages to home wages ($BETA$). The model

is also consistent with standard trade theory—countries benefiting from inward migration experience a decline in the marginal product/wage of labor as they move down their marginal product curves, and production increases as firms gain greater access to cheaper labor. Returns to capital also increase as capital becomes scarce relative to labor. The reverse is true for those countries experiencing outward migration.

Remittances are also an important feature in the model. Remittances are assumed to be a constant proportion of the income received by migrant workers and flow out of the host country back to the permanent residents of the home country. Total remittances, therefore, increase as the number of new migrants or their wages increase. Remittances reduce the income of the migrants and increase the incomes of permanent residents back home. These remittances can have an important offsetting effect on the home economies (labor suppliers), on the incomes of permanent residents remaining at home, and on the current account balances of both the home and host countries. Thus migration works to narrow real wage differentials between countries in two ways: raising labor productivity in the sending country and lowering it in the receiving country (“leveling down”) and promoting improvements in living standards in sending regions through remittances (potentially “leveling up”).

Appendix 2: Macro-economic results of different scenarios

	Mass deportation	Program for temporary workers only	Comprehensive reform
Annual change in GDP			
U.S.	-1.46%	0.44%	0.84%
Mexico	2.75%	-0.41%	-0.2%
Annual migration			
Mexico - Unskilled	-3,500,000	571,000	249,000
- Skilled	-570,000	54,000	41,000
Annual change in remittances			
Mexico	-99.21%	14.49%	27.68%
Annual changes in wages			
Unskilled			
U.S.: Natives	\$399	-\$102	\$162
U.S.: Mexican immigrants	\$364	-\$93	\$4,405
Mexico	-\$254	\$47	\$23
Skilled			
U.S.: Natives	-\$73	-\$7	\$74
U.S.: Mexican immigrants	-\$68	-\$6	\$6,185
Mexico	-\$800	\$83	\$100
Annual change in real returns to			
U.S.: Capital	-1.1%	0.33%	0.64%
Land	-5.12%	1.67%	2.19%
Resources	-4.33%	1.4%	2.62%
Mexico: Capital	1.59%	-0.24%	-0.07%
Land	12.17%	-1.69%	-0.45%
Resources	6.3%	-0.68%	-0.59%

Appendix 3: Different scenarios' annual effect on GDP, 2009-2019

Change in GDP under...

Year	Total projected U.S. GDP* (in millions)	Comprehensive reform (0.84% per year) (in thousands)	Program for temporary workers only (0.44% per year)(in thousands)	Mass deportation (-1.46% per year) (in thousands)
2009	\$14,241	\$119,624,400	\$62,660,400	-\$207,918,600
2010	\$14,591	\$122,564,400	\$64,200,400	-\$213,028,600
2011	\$15,347	\$128,914,800	\$67,526,800	-\$224,066,200
2012	\$16,293	\$136,861,200	\$71,689,200	-\$237,877,800
2013	\$17,280	\$145,152,000	\$76,032,000	-\$252,288,000
2014	\$18,211	\$152,972,400	\$80,128,400	-\$265,880,600
2015	\$19,077	\$160,246,800	\$83,938,800	-\$278,524,200
2017	\$20,749	\$174,291,600	\$91,295,600	-\$302,935,400
2018	\$21,617	\$181,582,800	\$95,114,800	-\$315,608,200
2019	\$22,500	\$189,000,000	\$99,000,000	-\$328,500,000
Cumulative total		\$1,511,210,400	\$791,586,400	-\$2,626,627,600

Source: Congressional Budget Office, *The Budget and Economic Outlook: Fiscal Years 2009 to 2019* (Washington, DC: January 2009), Table B-1, p. 44.

Appendix 4: Different scenarios' effect on economic sectors

	Mass Deportation	Temporary-Workers Only	Comprehensive immigration reform
Garments	-2.73%	0.81%	1.24%
Textiles	-2.43%	0.72%	1.17%
Ferrous metals	-1.98%	0.62%	1.11%
Other metals and products	-1.97%	0.61%	1.08%
Transportation equipment	-1.86%	0.60%	1.08%
Other manufactures	-2.08%	0.64%	1.05%
Factor-skilled labor	-1.03%	0.41%	1.04%
Electronic equipment	-1.76%	0.56%	1.02%
Motor vehicles and parts	-1.91%	0.56%	1.00%
Nonelectric machinery and equipment	-1.77%	0.54%	0.99%
Capital goods	-1.74%	0.51%	0.95%
Government and miscellaneous services	-1.50%	0.45%	0.95%
Mineral products	-1.73%	0.53%	0.94%
Construction	-1.64%	0.48%	0.91%
Leather, wood, and paper products	-1.72%	0.52%	0.91%
Trade and transport	-1.62%	0.48%	0.89%
Mining	-1.52%	0.47%	0.86%
High-tech services (F.I.R.E.)	-1.30%	0.39%	0.79%
Utilities	-1.44%	0.43%	0.79%
Chemicals, plastic, and rubber	-1.42%	0.45%	0.78%
Sugar	-2.06%	0.62%	0.78%
Other processed foods	-1.89%	0.56%	0.72%
Animals and animal products	-1.76%	0.52%	0.68%
Refined energy	-1.27%	0.38%	0.67%
Forestry and fisheries	-1.27%	0.38%	0.61%
Beverage and tobacco	-1.81%	0.53%	0.60%
Dwellings	-0.49%	0.14%	0.36%
Raw energy	-0.41%	0.13%	0.24%
Other agriculture	-0.45%	0.13%	0.17%

Endnotes

- 1 Dr. Raúl Hinojosa-Ojeda is Founding Director of the North American Integration and Development (NAID) Center at the University of California, Los Angeles. Dr. Hinojosa-Ojeda wishes to thank Dr. Robert McCleery and Dr. Fernando De Paolis of the Monterrey Institute for International Studies, and Dr. Paule Cruz Takash and Juan Contreras of the NAID Center, for their assistance on this paper.
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