Key Components of Immigration Reform

An Analysis of the Economic Effects of Creating a Pathway to Legal Status, Expanding High-Skilled Visas, & Reforming Lesser-Skilled Visas

July 17, 2013

Prepared by

Regional Economic Models, Inc. (REMI)

Frederick R. Treyz, Ph.D.
Corey Stottlemyer
Rod Motamedi

This report is funded by the Ford Foundation, Unbound Philanthropy, and the Carnegie Corporation of New York. All opinions and conclusions in this report are those of the authors and do not represent institutional views of Regional Economic Models, Inc., the Ford Foundation, Unbound Philanthropy, or the Carnegie Corporation of New York.

Acknowledgements

The analytical and research team on the project also included Elias Scheker, Brett Albert, Jeffrey Dykes, Ahmed Mostafa, Scott Nystrom, and Ali Zaidi.

Table of Contents

This page intentionally left blank.

Executive Summary

As the policy debate continues in Washington, DC and throughout the nation, this study shows the state- and national-level economic effects of key components of immigration policy reform. We evaluate the economic implications of the Path to Legal Status, high-skilled (H-1B) visa expansion, and changes in lesser-skilled visa programs (H-2A, H-2B, and W-1 Visas).

We use a REMI PI$^+$ model of all 50 states and the District of Columbia to show the macroeconomic effects of the policy changes over the period of 2014 to 2045. PI$^+$ is a multiregional macroeconomic model that has been used in thousands of national and regional economic studies, including studies of other elements of immigration reforms in the United States.

We report the macroeconomic effects of each policy on the national and state level. Key summary macroeconomic indicators include employment, gross domestic (state) product, and personal income. We also provide employment effects by industry for the United States, and a complete set of state-level fact sheets which present results for each policy and all 50 states and the District of Columbia.

We estimate that the Pathway to Legal Status policy will increase total United States employment by 123 thousand in 2014, increasing to 594 thousand net new U.S. jobs by 2018. Gross domestic product is expected to increase by $10.32 billion in 2014 and $49.93 billion in 2018. (All dollar figures presented in report are 2012 real dollars.) Employment and gross state product increase for all states and the District of Columbia.

As a result of the H-1B program expansion, we estimate that employment will increase by 227 thousand jobs in 2014, and will continue to expand, with a net increase of 1.3 million jobs by 2045. Gross domestic product will increase by $22 billion in 2014 and more than $158 billion by 2045. Employment and gross state product is estimated to increase for all states and in all years from 2014 to 2045 as a result of the H-1B program expansion.

The increase in H-2A visas results in total employment increases of almost 17 thousand jobs in 2014, 51 thousand jobs in 2017, and moderating slightly to a 39.6 thousand job increase by 2045.

Fully utilizing the H-2B visas up to the cap will increase total U.S. employment by 25 thousand in 2014, and cause employment to remain steady at about 24-25 thousand over the baseline forecast to 2045.

As a result of the W-1 Visa program, we estimate that there will be a net increase in U.S. jobs of more than 40 thousand in 2014, and a total gain of 365 thousand jobs by 2045. Gross domestic product is expected to increase by $2.67 billion in 2014 and to rise by $31 billion over the baseline by 2045.

The impact of these components of immigration reform is net positive on the state and national economies and the labor force.

Scope of the Analysis and Methods

Immigrants comprise a significant part of the labor force in the United States. Although many immigrants are naturalized U.S. citizens or permanent residents, many others are either undocumented or eligible to work due to various temporary visas. Therefore, it is likely that any policy change that affects the status of undocumented immigrants or the number of work visas will have important macroeconomic implications.

This study shows the comprehensive, state-by-state macroeconomic effects of potential reforms to immigration policy, including the creation of a pathway to legal status, an expansion of high-skilled visas, and an expansion of lesser-skilled visas. It extends the wide body of literature on the economic effects of immigration literature by estimating total macroeconomic impacts on a state level of nationwide policy changes. The study is also unique in its comprehensive scope, including employment, output and other concepts by detailed industry sectors; in capturing complete economic linkages, including economic interactions between states; and in showing the year-by-year dynamic policy effects from 2014 to 2045.

The scope of this study is limited to economic, not fiscal, impacts of immigration policy changes. A number of fiscal impact studies have been conducted on immigration policy. Although fiscal effects, either positive or negative, may have economic implications, we assume that these potential economic feedback effects of any changes in fiscal balance are relatively small compared to the overall economic effect of the policy change. In part, changes in fiscal balance and their effect on the economy depend on further legislative decisions on taxes and spending that are beyond the range of this analysis. A recent study by Douglas Holtz-Eakin, estimating the dynamic fiscal effects of immigration, suggests that fiscal benefits and costs of immigration may offset each other to a large extent. (Holtz-Eakin, 2013) This would suggest that the economic feedback caused by changes in the fiscal balance, if any, would be relatively small.

We used the PI$^+$ dynamic structural macroeconomic model to quantify the impacts of the identified components of immigration reform. REMI's models have been used in thousands of national and regional economic studies, including studies of immigration reforms in the United States. More information about the model is available in the appendix to this report.

For the analysis, we generate a *control forecast*, which is the expected economic forecast for all 50 states and the District of Columbia from 2014 to 2045. For each of the components of the analysis, we

then estimate the direct implications of policy changes. These changes include the number of people affected by the policy change and direct economic effects of the policy, including wage and productivity changes, increased temporary and/or permanent migration to the United States, and other factors. These direct effects are then implemented in terms of *policy variable* changes in the REMI PI^{+} macroeconomic model, such as changes in the wage bill policy variable, employment, and international migration. We then generate an *alternative forecast* that estimates economic activity after the policy change has been implemented. The difference between the alternative forecast is the policy effect.

Pathway to Legal Status Method

The Pathway to Legal Status policy proposal allows for the estimated 11.1 million undocumented residents in the U.S. to receive provisional legal status. (Passel & Cohn, 2011) This status would be granted only under certain criteria, including paying outstanding Federal taxes, and would be subject to a cutoff date. Those registered as provisional immigrants, however, would be able to work legally in the United States.

The Pathway to Legal Status applies to individuals who currently reside, and for the most part already work, in the United States. As such, it differs from immigration policy centered on changing the number of new immigrants, or in changing the number of new employment-based visas. By and large, the pathway policy changes the type of work that can be sought and obtained by a previously undocumented worker, without having a significant effect on either the overall size of the labor force or population residing in the United States.

Many undocumented workers are employed in the informal or underground economy, in which economic activities are outside of the bounds of government regulation or taxation. Employment in this sector tends to provide lower compensation (wages and benefits), than in the formal economy.

Applying for legal status is voluntary, although increased enforcement on employers' hiring practices is expected. To estimate the number of undocumented immigrants who will enroll in the pathway, we looked at participation rates in the Immigration Reform and Control Act of 1986. However, estimates of the undocumented immigrant population at the time vary widely from 2 to 8 million. The U.S. Department of Homeland Security cited a report by Michael D. Hoefer estimating the undocumented immigrant population being between 3 and 5 million people in 1986. (Hoefer, 1991) With approximately 3 million people applying for legal residency, we assumed a participation rate of 75 percent.

Compensation is likely to increase following the creation of a pathway to legal status. Following the Immigration Reform

and Control Act of 1986, the U.S. Department of Labor tracked 1.6 million undocumented workers. This survey showed a 15-percent increase in wage rates for undocumented workers legalized under section 245A of the Immigration and Nationality Act during the first five years following legalization. (Smith, 1996)

We attribute the increase in wages following legalization to two causes, which we categorize as compliance and productivity. The first category, compliance, represents an increase in wages, without any productivity gains, that results from employers more closely conforming to labor legislation such as minimum wage and overtime requirements. The second category, labor productivity, represents pay increases that occur in conjunction with increases in labor productivity.

Undocumented workers are limited to less-productive work in marginal positions. This is due to limited employment opportunities, as jobs are only available from employers operating outside of the law. Such employers tend to have small jobs, such as limited childcare or housekeeping needs, or marginally profitable operations, such as those found in small food service and other operations. Workers also may be restricted to positions, such as dishwashing, that employs only part of his or her skill set. Additionally, undocumented workers that obtain legal status may be more willing to invest in their skills, such as learning the English language and developing technical skills that will increase their human capital and productivity.

In general equilibrium economic theory, firms maximize profit and in equilibrium, the real wage is equal to the marginal product of labor so real wage increases imply increases in labor productivity. For the purpose of this study, we assume, however, that a proportion of the real wage increases that occur when undocumented workers enter the pathway to legal status are in fact "deadweight" losses to firms. That is, of the 15-percent increase in real wages over 5 years, there is a 12-percent increase or 2.4-percent increase per annum in labor productivity, and a three-percent increase or 0.6-percent per annum increase in labor costs that are not associated with labor productivity.

Increases in labor productivity are associated with worker-specific effects, such as those noted in the previous paragraph.

We allocated the 75 percent of the 11.1 million undocumented immigrants across the states and by industry group. (Passel & Cohn, 2011) Each of the aggregate industries was mapped to more detailed REMI industries using the percentage of the aggregate sector. For example, if 0.2 percent of undocumented immigrants are in the mining sector, then 0.2 percent are in Oil and Gas Extraction, Mining (except oil and gas), and Support Activities for Mining. These percentages were then normalized to

equal a total distribution of 100 percent. This distribution was further weighted to take account of each state's unique industry mix.

The values from REMI's baseline were used as the prevailing values for average compensation rate.

High-Skilled Workforce Method

The H-1B visa program allows employers to hire foreign workers in specialty occupations requiring the application of specialized knowledge. These can include, but are not limited to, positions in the fields of science, engineering, technology, and mathematics. These visas are capped each year. Congress is considering proposals to expand the cap on this program.

We allocated current H-1B visas across the states and across industries based on information from the Department of Labor. (OFLC, 2011) Currently, there are 65 thousand visas available. We include this number in the baseline for the simulation. In this scenario, the number of visas increases by 75 thousand in 2014 and goes up to 105 thousand by 2019. Due to labor market competition, we assume that only 80 percent of the visas issued result in new jobs. While the visas are intended for positions that cannot be filled from the current workforce, employers could be replacing a marginally lesser-skilled worker or workers with a highly-skilled visa recipient. We assumed that the total increase in migrants is 20 percent greater than the increase in visas due to the accompaniment of dependents.

We assumed that six years after each year of visa issuance that 18 percent of the immigrants would choose to not renew their visas and leave the country. The annual increase in visas does not include renewals and thus represents net new immigrants. We chose a conservative assumption of not continuously increasing employment while we did increase migration. This scenario largely represents the worse-case scenario. The change in employment entered the model using the variable Industry Employment. The change in population entered the model using the variable International Migration, All Ages, and All Groups.

Lesser-Skilled Workforce Method

We examined three different lesser-skilled visa programs. First, we modeled the expansion of the current H-2A visa program for agricultural workers. Second, we modeled the full use of the H-2B visa program for nonagricultural seasonal, peak load, or intermittent workers. Finally, we looked at the new W-1 visa program for non seasonal workers (created by S.744).

- H-2A Visas for Agricultural Workers

In addition to the more than 2.6 million people working in the agriculture sector in the United States, it is estimated that there are approximately one million migrant and undocumented employees in the agriculture workforce. There were approximately 65 thousand H-2A visas issued in Fiscal Year 2012. Using estimates from both S.744 and H.R. 1773 (The Agriculture Guestworker Act), we set the number of visas to increase to 337 thousand visas within three years. We assumed that those additional 272 thousand visas will likely come from the current migrant and undocumented agriculture workforce.

After a literature review and examination of current H-2A wage rates, we found a lack of consensus on both the wage disparity and productivity gap for documented and undocumented migrant workers. Peter B. Dixon and Maureen T. Rimmer produced a study looking at the productivity gap. (Dixon, 2009) They used an estimation of 14.3 percent, which they stated was half of the estimated gap. We conservatively assume these workers will be approximately 15 percent more productive than undocumented migrant workers.

Regarding the wage disparity, the Department of Labor study found that transitioning workers from undocumented to legal status resulted in a 15.1 percent increase in wages. (Smith, 1996) A recent study by Robert Lynch and Patrick Oakford put the gap at 25.1 assuming improvements in human capital such as increased education, improved language skills, and access to a broader range of jobs. (Lynch, 2013) We assume these workers will receive an increase in compensation of 25 percent of the current market wage resulting in an increase of approximately $1,800 per person based on the average agricultural worker wage. We believe this to be realistic based upon some projections that put agricultural wages at a higher rate.

The visas and workers were allocated across the states by each state's share of total farm output to account for larger numbers of undocumented workers on the west coast. The change in compensation entered the model using the variable Farm Compensation. The change in productivity entered the model using the variable Farm Output without Employment, Investment, and Compensation.

- H-2B Visas for Nonagricultural Seasonal, Peak Load, and Intermittent Workers

The H-2B visa program allows employers to hire foreign workers to come temporarily to the United States and perform nonagricultural services. H-2B visas are capped at 66 thousand, but in Fiscal Year 2012 only 50 thousand were used. (U.S. Department of State, 2013) We assume an increase in demand for H-2B visas and an increase of 16 thousand to the existing cap. We increase the number of

available H-2B visas by 16 thousand each year for the rest of the simulation run. We increased international migration allocated by state issuance for working age cohorts 16-64. We spread the employment over sectors within the arts, entertainment, and recreation, accommodations and food services; and other services industries. Since these are new people coming into the system, there are no wage or productivity changes.

- W-1 Visas for Nonseasonal Workers

The immigration reform bill recently passed in the Senate includes the creation of a new W-nonimmigrant classification. A W-1 visa holder may work in any occupation where the typical preparation is less than a four-year university degree. An employer may register a position for which it cannot find workers in the documented workforce. Employers located in areas of the country with high unemployment are prohibited from using these workers unless they are filling a position in a designated shortage occupation.

First, we allocated the visas across states using educational attainment by state from the U.S. Census Bureau. These visas target occupations in the Department of Labor's Job Zones 1-3, which are essentially those jobs for which a four-year college degree is not required. Thus we assume that the greater the number of people in a state with bachelors' degrees or higher, the greater the need would be for outside workers in lesser-skilled occupations.

Second, we allocated the visas across the following industries using a similar methodology as the H-2B visas: administrative and support services; waste management and remediation services; museums, historical sites, zoos, and parks; amusement, gambling, and recreation; accommodation; food services and drinking places; repair and maintenance; personal and laundry services; membership associations and organizations; and private households. We assumed that the majority of the W-1 visas would be issued in these sectors; although this is a new program and every sector would likely have eligible positions.

In this case we assumed that 100 percent of the visas issued would be net new jobs. The reason for the difference in this simulation is that the legal requirements that an employer must meet to hire someone under this program are far more stringent that previous programs. We assumed that the total increase in migrants is 20 percent greater than the increase in visas due to the accompaniment of dependents.

Results

After the methods were developed and the data was secured, we ran the simulations. The following information provides the results from the model runs.

Pathway to Legal Status

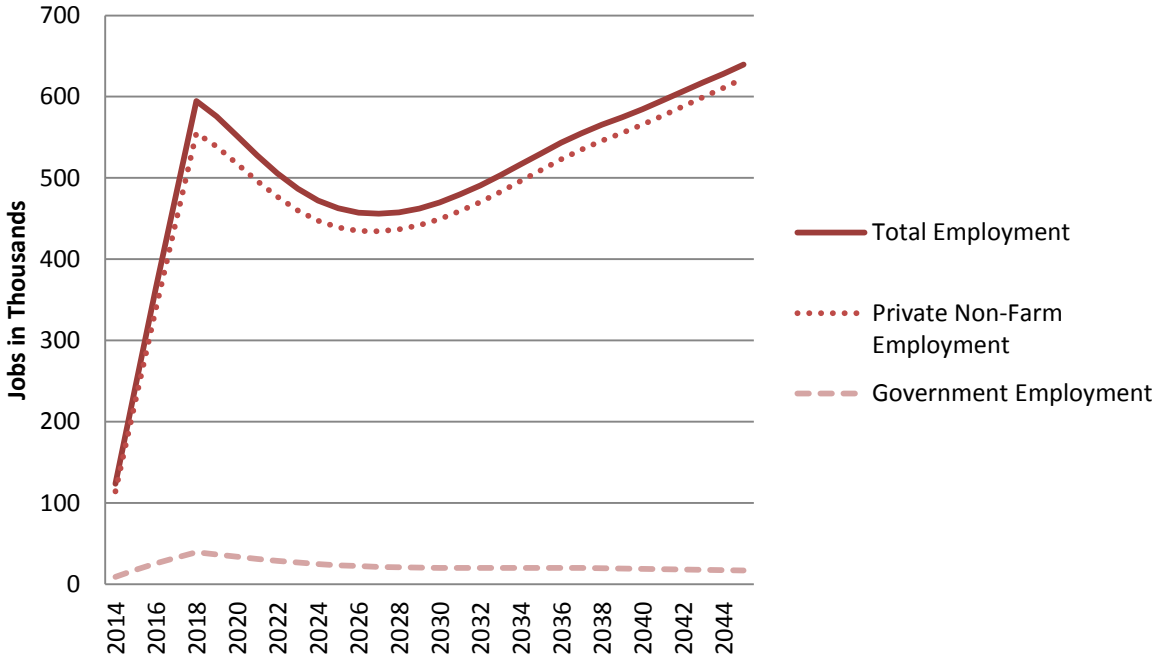
The economic effects of the Pathway to Legal Status policy are shown in Table 1. As the policy does not change the number of immigrants, but only affects the legal status of current, undocumented immigrants residing in the U.S., the total number of actual people living in the U.S. is not significantly affected by this policy. Employment increases as a result of the Pathway to Legal Status policy, as wage gains and corresponding productivity increases add to U.S. economic activity. In 2014, personal income rises by more than $19 billion, gross domestic product (GDP) goes up $10 billion, and employment increases by 123 thousand.

Table 1: Economic Effects of Implementing Pathway to Legal Status

Indicator	Total Employment	Total Employment as % of Nation	Gross Domestic Product	Gross Domestic Product (GDP) as % of Nation	Personal Income	Real Disposable Personal Income
Units	Thousands (Jobs)	Percent	Billions of Real (2012) Dollars	Percent	Billions of Real (2012) Dollars	Billions of Real (2012) Dollars
2014	123.69	0.07	10.32	0.06	19.43	11.32
2015	244.30	0.13	20.41	0.12	40.04	22.52
2016	363.81	0.19	30.46	0.17	61.95	34.30
2017	480.58	0.25	40.29	0.22	85.14	46.62
2018	594.84	0.30	49.93	0.26	109.66	59.60
2019	575.63	0.29	47.72	0.24	112.82	60.00
2020	551.66	0.27	45.10	0.22	115.38	60.63

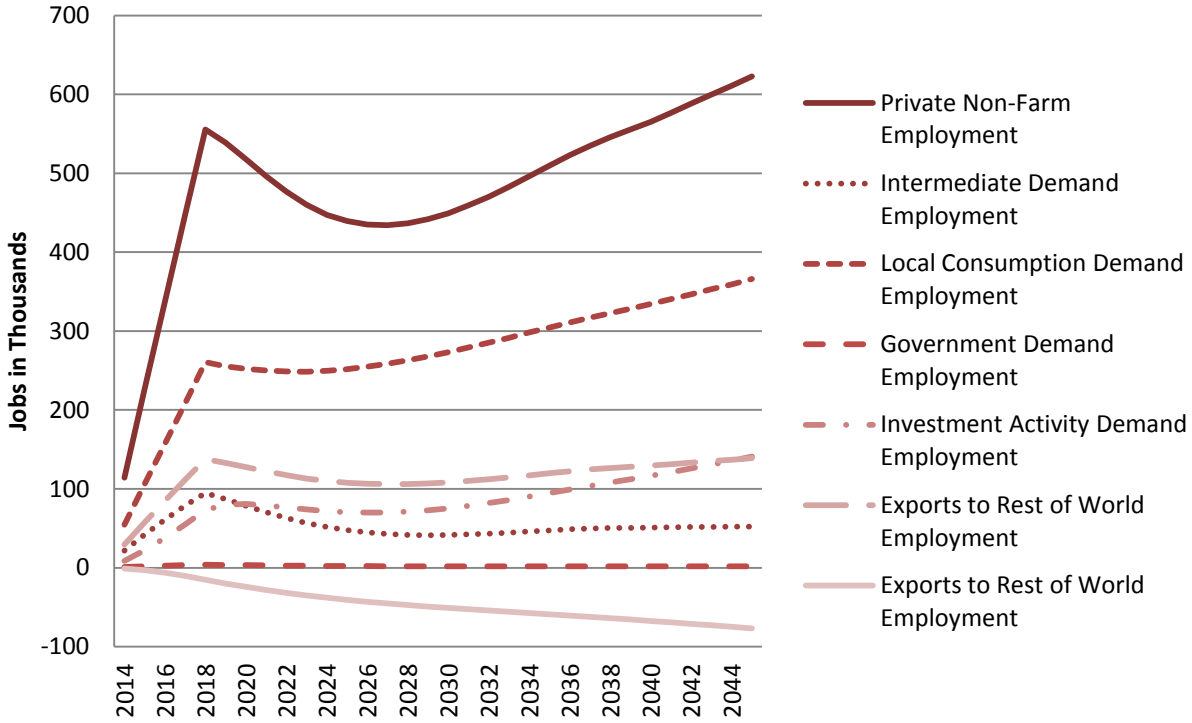
The first five years of the policy see large gains in employment, as the growth in wages and productivity due to the change in status is most rapid over this timeframe. By 2018, the Pathway to Legal Status policy is estimated to increase employment by almost 600 thousand jobs, with an increase in personal income of $109 billion and gross domestic product of almost $50 billion. As more than 11 million undocumented workers are eligible to participate, the creation of 600 thousand additional jobs represents the result of an expected 8.5 million undocumented workers entering the Pathway to Legal Status. The wage and productivity increases of these workers results in additional economic activity that expands overall total U.S. employment, while accounting for the employment of current undocumented workers.

Graph 1: Total Employment by Type for Pathway to Legal Status



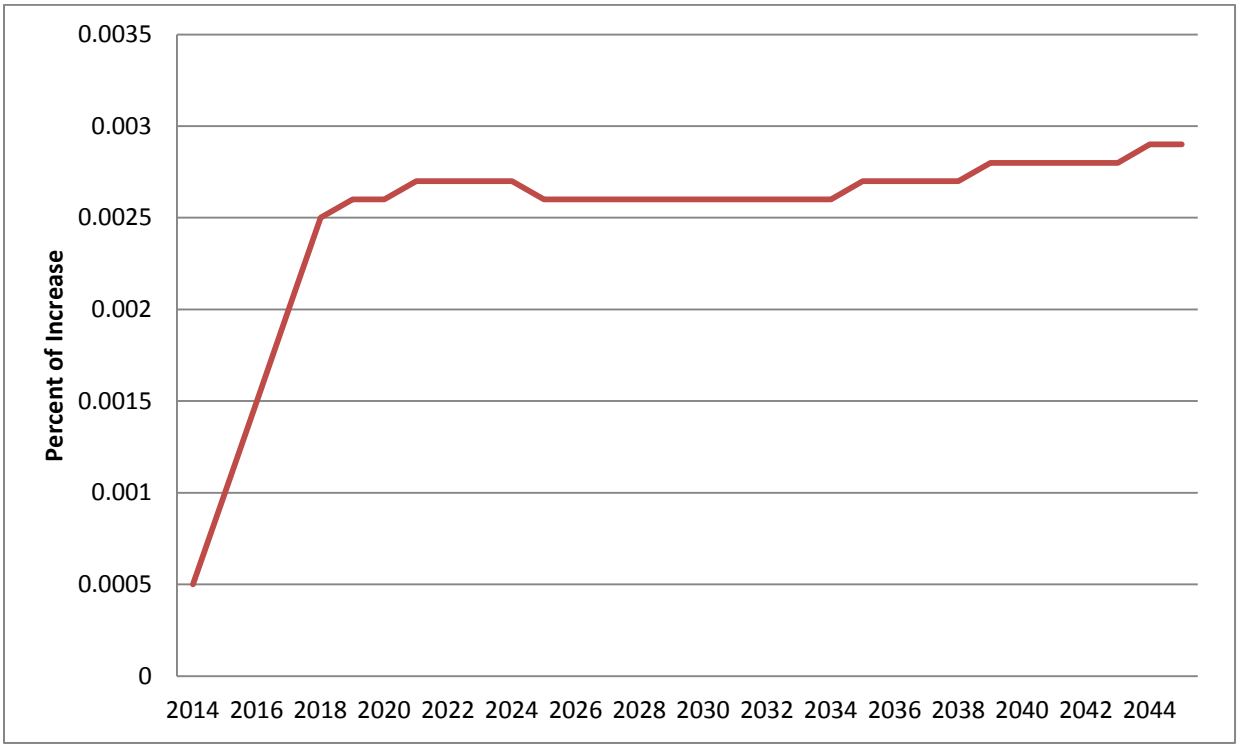
Graph 1 shows the total employment changes due to creation of a Pathway to Legal Status program. Most of the wage and productivity gains are assumed to occur in the first five years, after which employment gains drop slightly but then increase towards the end of the time horizon. Initial wage and productivity increases lead to a relatively rapid expansion in investment, particularly residential investment, as shown in Graph 2. This build-up in the capital stock moderates after the initial wage and productivity gains.

Graph 2: Employment Types by Demand Source for Pathway to Legal Status



The source of employment changes by demand source are shown in Graph 2. Private non-farm employment increases are caused by increases in consumption, interstate trade (labeled exports to multi-regions), investment activity, and intermediate demand. Some of these job gains are offset by losses due to decreased international exports, as wage increases are not fully offset by productivity gains and lead to a loss in industry competitiveness.

Graph 3: Relative Production Costs of Pathway to Legal Status



Graph 3 shows increases in production costs caused by the Pathway to Legal Status. As undocumented workers receive pay increases that are not offset by productivity gains, composite labor costs increase. These rise by about eight basis points per year for the whole U.S. economy to 2018, after which they level off, as we assume that most wage increases occur in the first five years following enrollment. The increase in labor costs raises total production costs, resulting in a long-term 0.25 percent increase in U.S. production costs. These production cost increases result in a slight loss of international competitiveness, which is offset in employment and gross domestic product terms by substantial gains in domestic demand.

On a state level, all states see job and gross state product gains due to the Pathway to Legal Status policy. These gains occur throughout the analysis period of 2014 to 2045. The ten states with the largest employment gains are California, Texas, Florida, New York, Illinois, New Jersey, Georgia, Arizona, North Carolina, and Pennsylvania, all with large numbers of currently undocumented workers. States least affected by the change include Alaska, Vermont, Wyoming, South Dakota, North Dakota and Hawaii, which have relatively small numbers of undocumented workers.

Industries with the most job creation due to the Pathway to Legal Status include retail, ambulatory health care services, construction, administrative support services, and professional, scientific and technical services. On a national level, the Pathway increases retail jobs by 16 thousand in 2014 and over 82 thousand in 2020. As the Pathway increases wages for a large number of workers, this adds to consumption and retail expenditures grow. As retail is a labor-intensive industry, this leads to a large increase in the

number of retail employees. Construction employment rises as housing, in particular, sees a rapid expansion as incomes increase. Ten thousand construction jobs are added in 2014, and job gains of over 80 thousand are expected in this industry by 2020.

High Skilled Labor

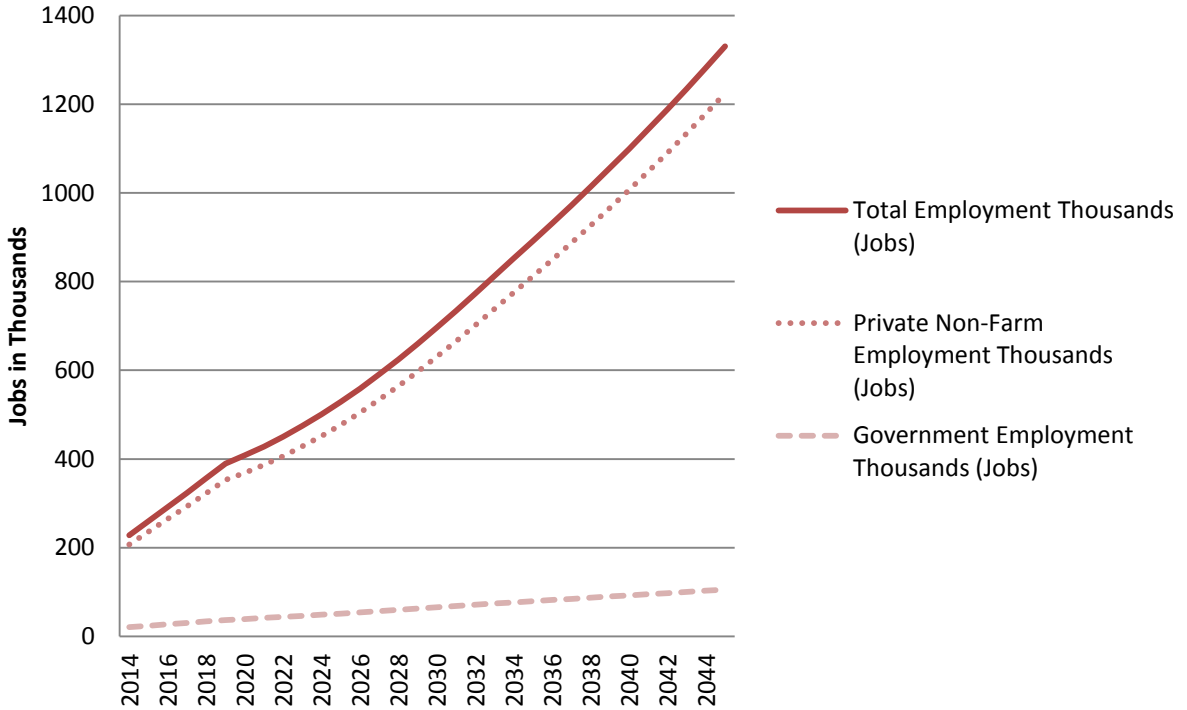
Table 2 shows the major economic effects of the expansion of the high-skilled (H-1B) visa program. Employment increases by 227 thousand in 2014, and continues to expand to over 1.3 million by 2045. Gross domestic product rises by $22 billion in 2014, and also continues to grow, increasing by $158 billion over the baseline economic forecast by 2045. Corresponding increases are also seen in personal income, which increases by $13.7 billion in 2014 and $146 billion in 2045, and real disposable personal income, which rises to $10.48 billion in 2014 and $115 billion in 2045. The total U.S. population increases as the visa program expansions allow new workers to enter the U.S., and also grows as the workers' dependents join and enter the U.S. As a result of the expansion of H1-B visa program, U.S. population increases by 91 thousand in 2014 and 4.6 million, or over one percent of the U.S. total, by 2045.

Table 2: Economic Effects of Expanding the H-1B Visa Program

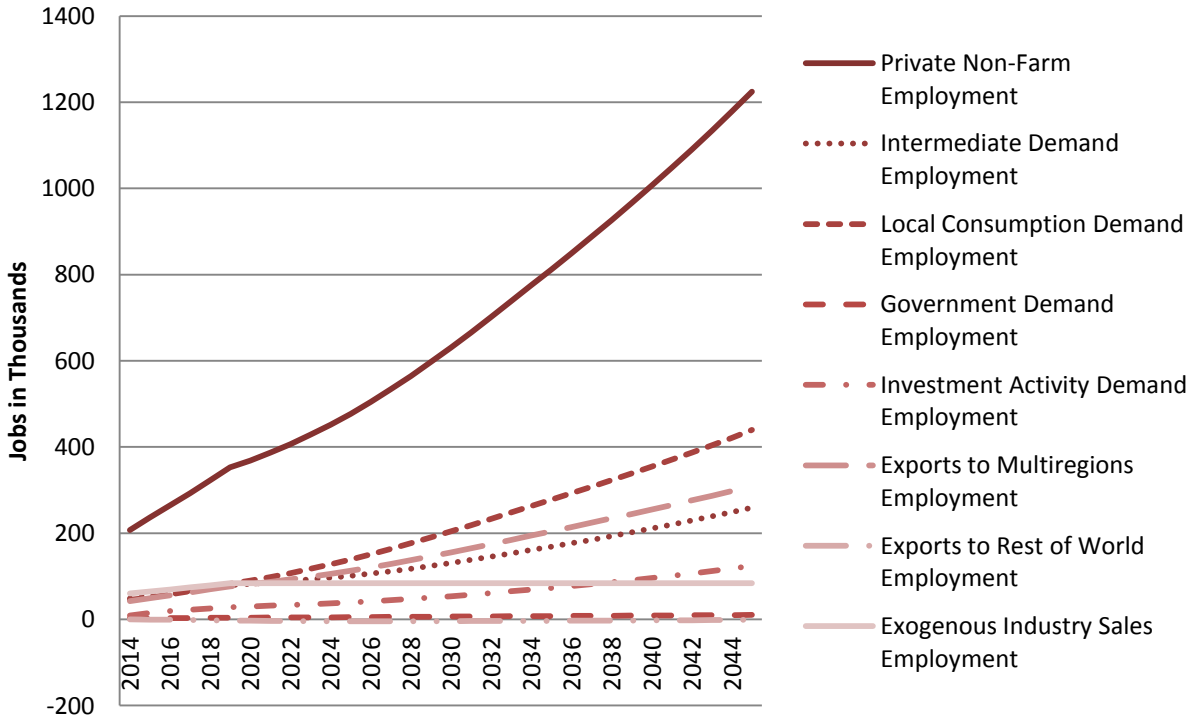
Indicator	Total Employment	Total Employ-ment as % of Nation	Gross Domestic Product	Gross Domestic Product (GDP) as % of Nation	Personal Income	Real Dispos-able Personal Income	Population	Popu-lation as % of Nation
Units	Thousands (Jobs)	Percent	Billions of Real (2012) Dollars	Percent	Billions of Real (2012) Dollars	Billions of Real (2012) Dollars	Thousands	Percent
2014	227.91	0.12	22.00	0.13	13.74	10.48	91.41	0.03
2015	259.94	0.14	25.34	0.15	17.33	12.16	192.75	0.06
2016	291.80	0.15	28.73	0.16	20.80	14.22	304.47	0.09
2017	323.17	0.17	32.14	0.17	24.21	16.40	426.75	0.13
2018	356.25	0.18	35.75	0.19	27.71	18.78	559.88	0.17
2019	389.77	0.19	39.48	0.20	31.02	21.09	687.50	0.21
2020	408.08	0.20	41.59	0.21	33.34	22.78	817.19	0.25
2025	528.63	0.25	55.45	0.24	46.05	33.20	1492.19	0.43
2030	696.25	0.31	75.29	0.29	63.11	47.23	2216.06	0.62
2035	891.11	0.39	99.19	0.35	84.75	64.68	2976.72	0.81
2040	1099.13	0.46	126.62	0.40	111.68	86.61	3771.94	1.00
2045	1330.16	0.53	158.98	0.45	146.39	115.18	4613.38	1.19

Graph 4 shows the increase in employment for H-1B visas. Job growth is continual throughout the 2014-2045 time period as the visa program expansion adds new workers every year. Most jobs are created in private non-farm sectors while some growth in government employment, based on the need to provide services for a larger population and business community, is also predicted. Employment by source of demand is shown in Graph 5. As consumption represents over three-quarters of the economy, employment associated with increases in consumption is the largest portion of the H-1B visa expansion employment increase. Increased trade, labeled exports to multi-regions and international exports, also increase as firms expand output due to greater high-skilled labor availability. Employment related to investment activity, both residential and non-residential, also increases as the overall economy expands. Graph 6 details the change in residential investment, which shows how rising population and income both lead to increased demand for housing.

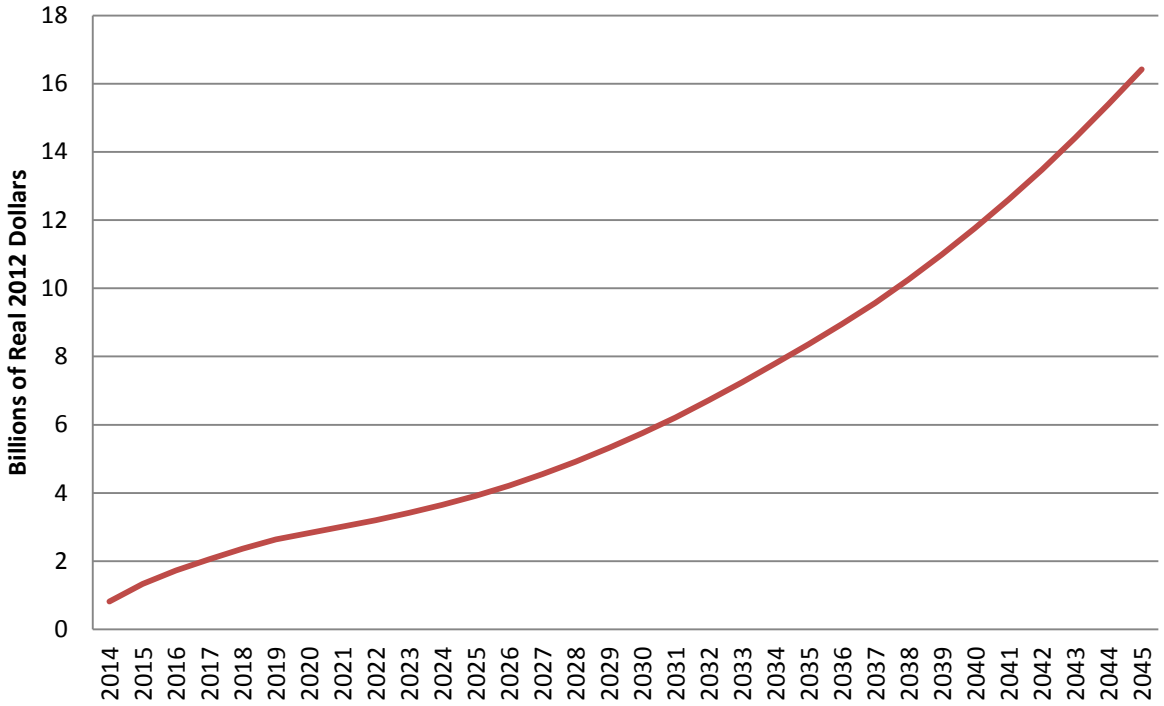
Graph 4: Total Employment by Type for Expansion of High-Skilled Visas



Graph 5: Employment Types by Demand Source for Expansion of High-Skilled Visas



Graph 6: Change in Residential Investment Resulting from Expansion of High-Skilled Visas



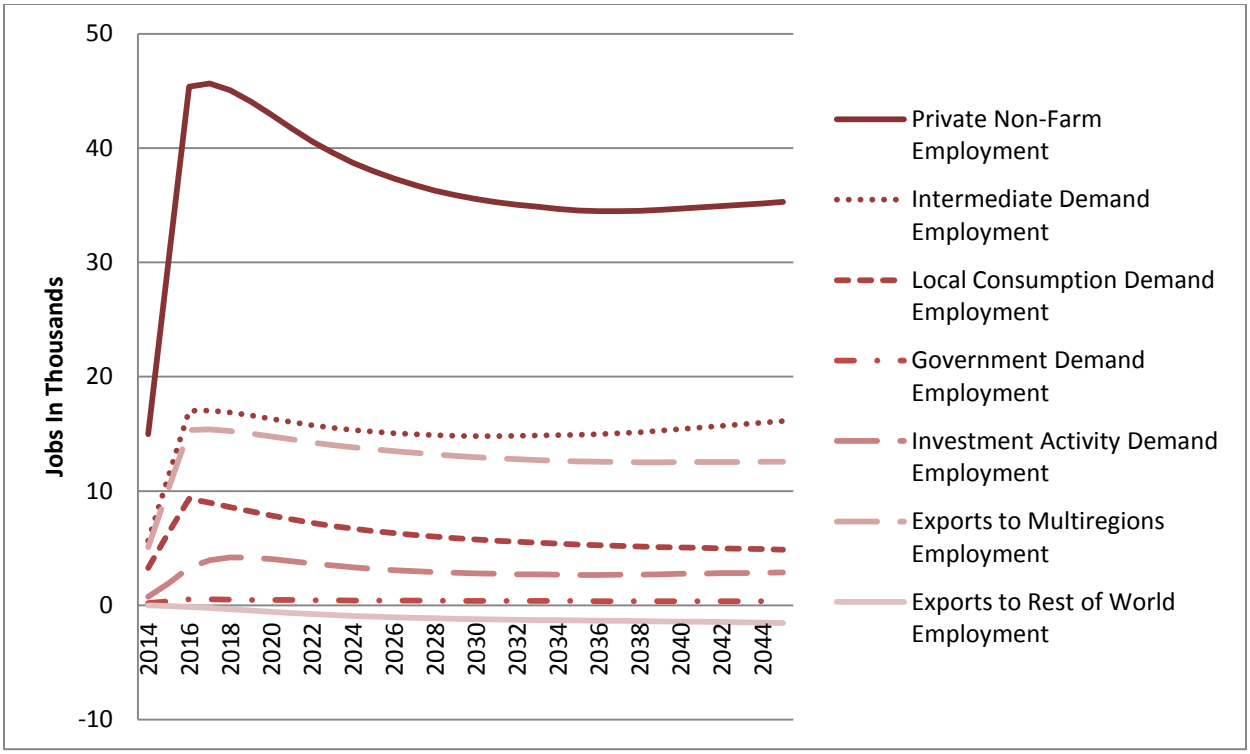
Lesser-Skilled: Agriculture Worker Visas

Table 3 shows the major economic effects of the expansion of the lesser-skilled agricultural worker (H-2A) visa program. The increase in visas for farm workers results in total employment increases of almost 17 thousand jobs in 2014, peaking at just over 51 thousand jobs in 2017, and declining slightly to 39.6 thousand net new jobs in 2045. Gross domestic product, personal income and real disposable personal income also increase. Increases in gross domestic product start at approximately $2 billion in 2014, increasing to $9.79 billion by 2045.

Table 3: Economic Effects of Expanding H-2A Visa Program

Indicator	Total Employment	Total Employment as % of Nation	Gross Domestic Product	Gross Domestic Product (GDP) as % of Nation	Personal Income	Real Disposable Personal Income
Units	Thousands (Jobs)	Percent	Billions of Real (2012) Dollars	Percent	Billions of Real (2012) Dollars	Billions of Real (2012) Dollars
2014	16.94	0.01	2.05	0.01	0.95	0.72
2015	34.08	0.02	4.21	0.02	1.99	1.42
2016	51.14	0.03	6.45	0.04	3.09	2.14
2017	51.33	0.03	6.59	0.04	3.28	2.13
2018	50.63	0.03	6.66	0.03	3.39	2.10
2019	49.53	0.02	6.69	0.03	3.45	2.07
2020	48.27	0.02	6.71	0.03	3.47	2.04
2025	42.86	0.02	6.90	0.03	3.45	1.92
2030	40.19	0.02	7.37	0.03	3.46	1.92
2035	39.06	0.02	8.02	0.03	3.54	1.96
2040	39.14	0.02	8.86	0.03	3.73	2.07
2045	39.66	0.02	9.79	0.03	3.97	2.20

Graph 7: Employment Components by Demand Source for Expansion of Lesser-Skilled Visas for Agricultural Workers



Graph 7 shows the distribution of job gains by demand source. Most of the new jobs are attributed to increases in intermediate demand, the goods and services purchased by farms from other firms for the production of agricultural output. Interstate trade (labeled exports to multi-regions) also increases. Jobs are created as well from additional consumption, as shown in Graph 7. Workers' consumption increases as pay increases, while farm output increases due to labor productivity gains. Both factors affect investment activity as well.

The agriculture and forestry support activities industry has the largest increase in jobs, due to the intermediate demand for this industry from the farm sector. Retail trade and construction also see job increases, as retail trade, a labor-intensive industry, sees gains from increase consumption, and construction grows as residential and non-residential investment increased in an expanding economy. Appendix B shows the employment gains by industry.

Lesser-Skilled Seasonal, Peak Load, and Intermittent Worker Visas: H-2B

As shown in Table 4, the increase in H-2B visas leads to employment, personal income, and population gains over the course of the policy analysis. Employment goes up by 25 thousand jobs in 2014, and remains steady at the 24-25 thousand job level through 2045. As these visas apply to new workers, population also rises, increasing by 16 thousand in 2014 to 27 thousand by 2045.

Table 4: Economic Effects of Increasing Number of H-2B Visas

Indicator	Total Employment	Total Employment as % of Nation	Gross Domestic Product	Gross Domestic Product (GDP) as % of Nation	Personal Income	Real Disposable Personal Income	Population	Population as % of Nation
Units	Thousands (Jobs)	Percent	Billions of Real (2012) Dollars	Percent	Billions of Real (2012) Dollars	Billions of Real (2012) Dollars	Thousands	Percent
2014	25.05	0.014	1.59	0.009	1.05	0.82	16.34	0.005
2015	24.86	0.013	1.60	0.009	1.12	0.75	17.03	0.005
2016	25.03	0.013	1.64	0.009	1.19	0.77	17.75	0.005
2017	24.94	0.013	1.65	0.009	1.24	0.77	18.41	0.006
2018	24.83	0.012	1.67	0.009	1.27	0.78	19.09	0.006
2019	24.77	0.012	1.69	0.009	1.31	0.78	19.75	0.006
2020	24.70	0.012	1.70	0.008	1.34	0.79	20.34	0.006
2025	24.44	0.011	1.79	0.008	1.46	0.84	22.91	0.007
2030	24.48	0.011	1.89	0.007	1.60	0.92	24.25	0.007
2035	24.19	0.010	1.96	0.007	1.70	0.98	24.81	0.007
2040	23.58	0.010	1.98	0.006	1.80	1.08	25.59	0.007
2045	24.34	0.010	2.17	0.006	2.07	1.30	27.03	0.007

H-2B visas are concentrated in industries such as administrative and support services, food services and drinking places, membership associations, retail trade, and construction, as shown in Appendix B. Administrative and food service industries employ a large number of workers impacted by H-2B visas, and retail and construction also grow due to overall increase in economic activity.

Lesser-Skilled Nonseasonal Worker Visas: W-1

The establishment of the W-1 Visa program adds to U.S. employment, gross domestic product, personal income, and population, as shown in Table 5. As the W-1 Visa program adds net new visas every year, total job gains for the U.S. are positive and increasing over the time period of the analysis. Jobs rise by over 40 thousand in 2014, and see a total gain of 365 thousand by 2045. Gross domestic product, in turn, goes up by 2.67 billion in 2014, and rises above the baseline forecast by $31 billion in 2045. Population increases as visas enable new workers and their dependents to enter the U.S. Population rises by 24 thousand in 2014, increasing steadily to 388 thousand by 2045. This population increase is about 0.1 percent of the projected U.S. population in 2045, a smaller percentage change than the 0.147 percent increase in employment by 2045.

Table 5: Economic Effects of Creating the W-1 Visas

Indicator	Total Employment	Total Employment as % of Nation	Gross Domestic Product	Gross Domestic Product (GDP) as % of Nation	Personal Income	Real Disposable Personal Income	Population	Population as % of Nation
Units	Thousands (Jobs)	Percent	Billions of Real (2012) Dollars	Percent	Billions of Real (2012) Dollars	Billions of Real (2012) Dollars	Thousands	Percent
2014	40.91	0.022	2.67	0.02	1.81	1.38	24.41	0.008
2015	70.75	0.038	4.65	0.03	3.29	2.29	43.44	0.014
2016	110.75	0.058	7.36	0.04	5.32	3.58	69.16	0.021
2017	150.02	0.077	10.08	0.05	7.42	4.84	95.63	0.029
2018	398.72	0.200	27.18	0.14	19.40	13.53	250.91	0.077
2019	395.83	0.196	27.15	0.14	20.41	12.74	258.56	0.078
2020	395.22	0.194	27.39	0.14	21.29	12.77	266.25	0.080
2025	375.30	0.177	26.96	0.12	22.96	12.50	302.94	0.088
2030	365.73	0.165	27.44	0.11	24.15	12.99	331.66	0.093
2035	364.73	0.158	28.65	0.10	25.67	13.96	351.00	0.096
2040	361.41	0.151	29.61	0.09	27.26	15.14	367.75	0.097
2045	365.42	0.147	31.40	0.09	29.97	17.26	388.88	0.100

Industries impacted by the W-1 Visa program are similar to those in the H-2B program. Administrative and support services and food services and drinking places see the largest gain, as these are both labor-intensive industries and employ many workers affected by the W-1 Visa program. Construction and retail trade also see a large number of job increases, a combined effect of a relatively large number of workers affected by the W-1 Visa, and the responsiveness of these industries to overall economic growth.

Employment gains by state are highest in California, Texas, New York, Florida and Illinois. These states are large employers and, additionally, relatively many workers would qualify under the W-1 Visa program as employers are required to prove that existing domestic workers are not available. In percentage terms, New Jersey, Massachusetts, New York, Connecticut and Maryland have the greatest job gains from the expansion of the W-1 Visa program. As workers are only hired in places without current domestic workers to fill jobs, these states will employ proportionally more of the W-1 Visa workers.

Conclusion

At the time of writing of this report, the United States Senate had passed an immigration reform bill that is up for review and debate by the House of Representatives. The economic effect of this legislation is paramount in an economy with a national unemployment rate of 7.6 percent and local

unemployment rates that are in many cases much higher. Thus, the state-level economic impacts of key legislative components that are discussed in this report are important to the legislative decision-making process.

In this study, we focus on three central elements of immigration legislation: the pathway to legal status, the expansion of high-skilled (H-1B) visas, and the expansion of lesser-skilled visas (H-2A [farm visas], H-2B [seasonal, peak load, and intermittent worker visas] and W-1 [lesser-skilled nonseasonal worker visas]). In each of the three cases, we show increases in employment and gross domestic product, on a state-by-state level, for the analysis period of 2014-2045. These results are reported for the United States as a whole and in summary, state-level fact sheets for each potential policy change.

While the Pathway to Legal Status and expansion of visa programs most directly benefit those who directly enroll in the Pathway program or receive visas, current U.S. citizens and documented immigrants also benefit from these programs. As previously undocumented workers enter the Pathway to Legal Status, they are able to contribute more to the U.S. economy. This additional economic contribution, measured as labor productivity, occurs as workers have more flexibility in the labor market and choose to invest in their own training and skills, for example by improving their English-language skills. Workers who enter the Pathway to Legal Status are also expected to see wage gains, and will spend their additional income in the economy, creating jobs for others.

By expanding high-skilled (H-1B) visas, businesses with labor shortages will be able to expand their operations. The business expansion encompasses not only the H-1B employees, but also additional positions within the firm that will employ the general workforce. An expansion in lesser-skilled visas, particularly as there are stringent new requirements to demonstrate the unavailability of domestic workers, will lead to increased economic productivity and output. The expansion of these visas will benefit not only those who receive them, but also the workers and consumers in the U.S. economy as a whole.

References

Dixon, Peter B. and Maureen T. Rimmer. (2009). “Restriction or Legalization? Measuring the Economic Benefits of Immigration Reform.” Cato Institute, Center for Trade Policy Studies.

Hoefer, Michael D. (1991). “Background of U.S. Immigration Policy Reform.” *U.S. Immigration Policy Reform in the 190s: A Preliminary Assessment*. Edited by Francisco L. Rivera-Batiz, Selig L. Sechzer, and Ira N. Gang.

Holtz-Eakin, Douglas. (2013). “Immigration Reform, Economic Growth, and the Fiscal Challenge.” American Action Forum.

Lynch, Robert and Patrick Oakford. (2013). “The Economic Effects of Granting Legal Status and Citizenship to Undocumented Immigrants.” Center for American Progress.

Office of Foreign Labor Certification (OFLC). (2011). “Performance Data.” U.S. Department of Labor. Employment and Training Administration.

Passel, Jeffrey and D’Vera Cohn. (2011). “Unauthorized Immigrant Population: National and State Trends, 2010.” Pew Research Center.

Peri, Giovanni. (2012). “The Effect of Immigration on Productivity: Evidence from U.S. States.” *The Review of Economics and Statistics*, MIT Press, vol. 94(1), pages 348-358.

Smith, Shirley, Roger Kramer and Audrey Singer. (1996). *Characteristics and Labor Market Behavior of the Legalized Population Five Years Following Legalization*, Immigration Policy and Research Division, Bureau of Intl. Labor Affairs, U.S. Dept. of Labor, Washington, D.C.

United States Department of State. "Worldwide NIV Workload by Visa Category FY 2012", last modified February 21, 2013. http://www.travel.state.gov/pdf/FY2012NIVWorkloadbyVisaCategory.pdf.

Appendix A: The PI+ Model

REMI's PI+ model is a structural economic forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to compensation, price, and other economic factors.

The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares. The blocks and their key interactions are shown in Figures 1 and 2.

The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block.

Models can be built as single region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas.

Figure 1: REMI Model Linkages

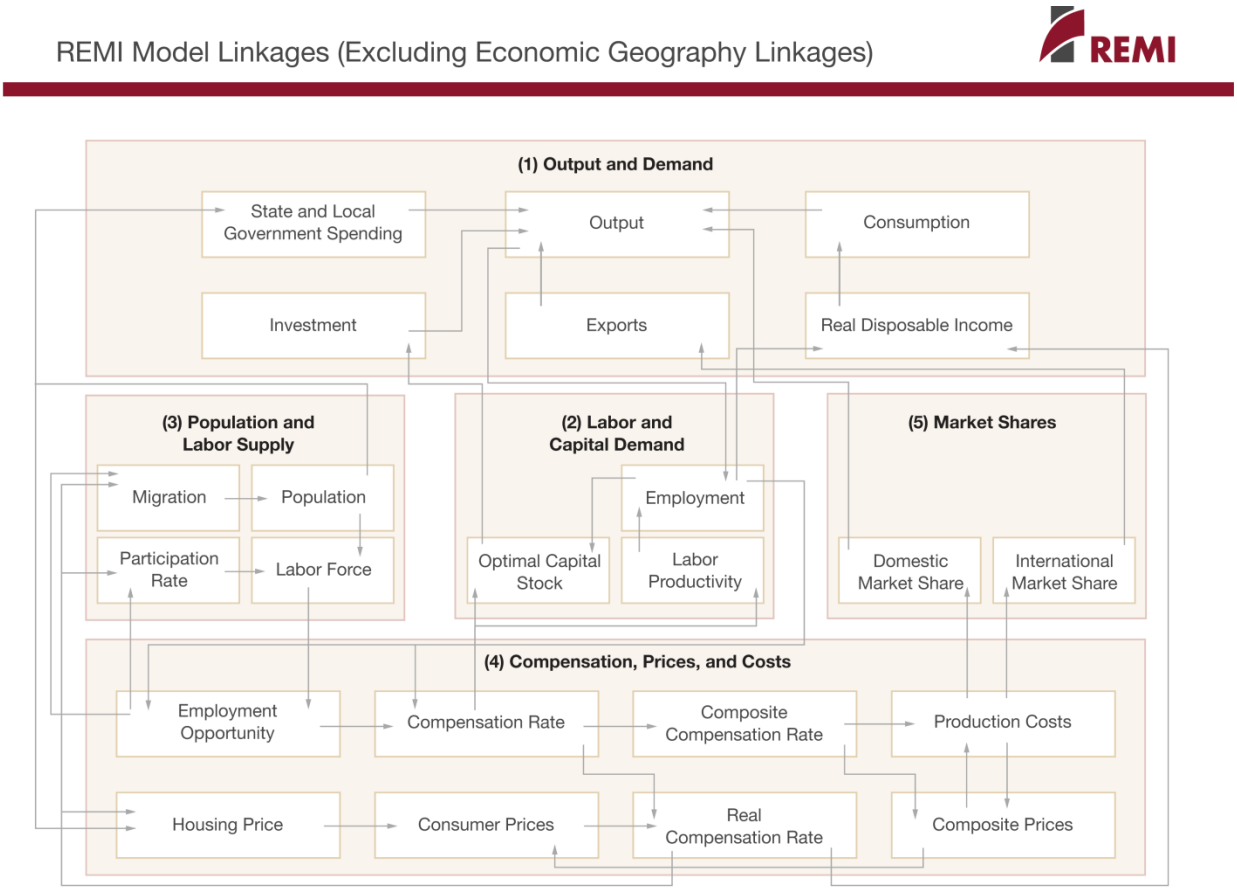
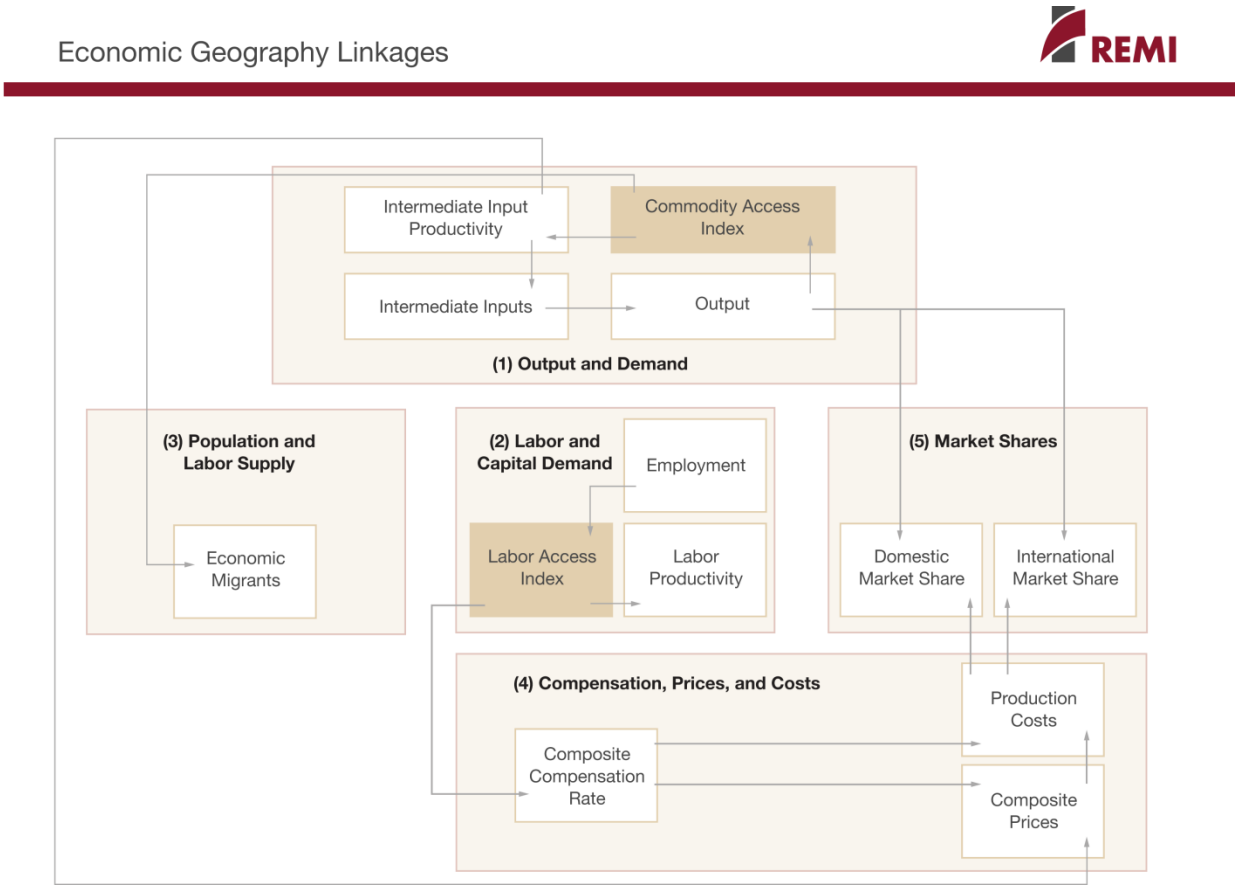


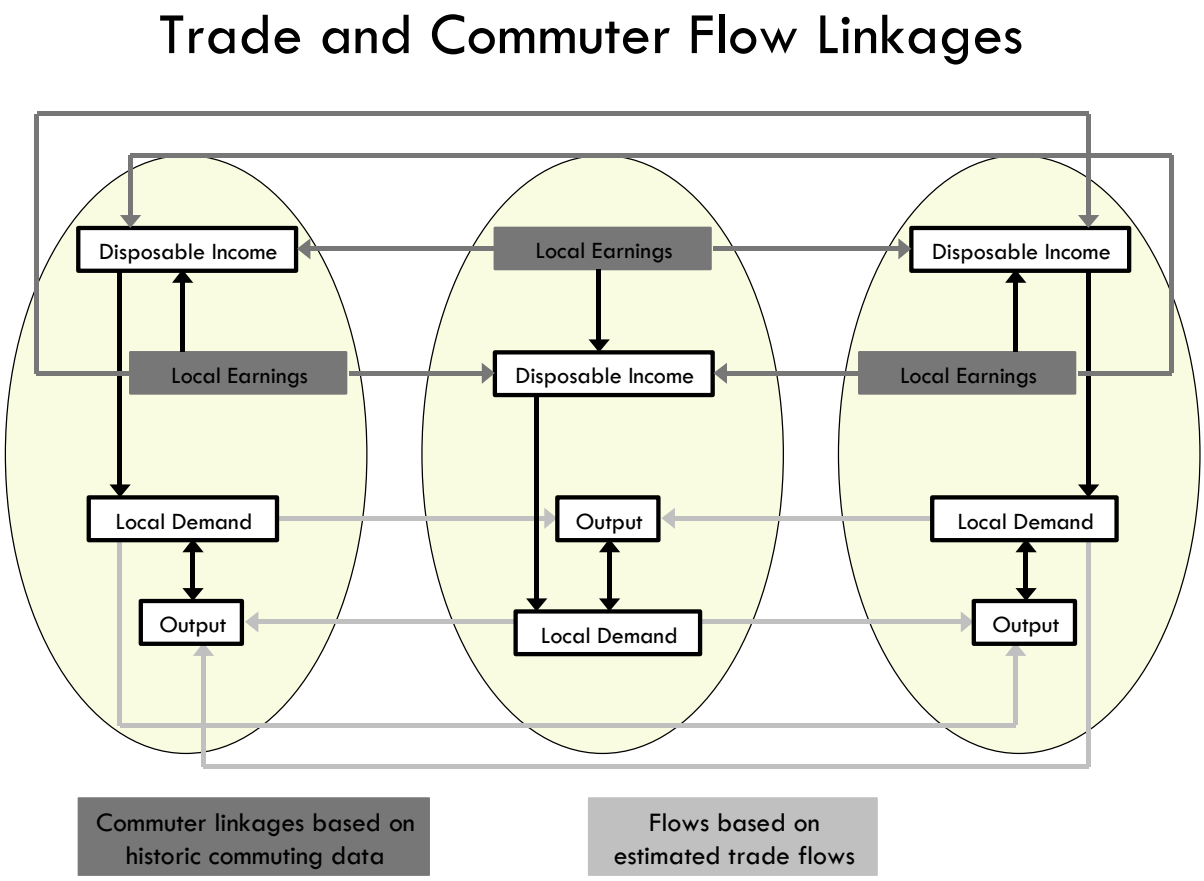
Figure 2: Economic Geography Linkages



Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, the changes in the region do not have an endogenous effect on the variables in the rest of the nation.

Multi-regional models have interactions among regions, such as trade and commuting flows. These interactions include trade flows from each region to each of the other regions. These flows are illustrated for a three-region model in Figure 3.

Figure 3: Trade and Commuter Flow Linkages



Block 1. Output and Demand

This block includes output, demand, consumption, investment, government spending, import, commodity access, and export concepts. Output for each industry in the home region is determined by industry demand in all regions in the nation, the home region's share of each market, and international exports from the region.

For each industry, demand is determined by the amount of output, consumption, investment, and capital demand on that industry. Consumption depends on real disposable income per capita, relative prices, differential income elasticities, and population. Input productivity depends on access to inputs because a larger choice set of inputs means it is more likely that the input with the specific characteristics required for the job will be found. In the capital stock adjustment process, investment occurs to fill the difference between optimal and actual capital stock for residential, non-

residential, and equipment investment. Government spending changes are determined by changes in the population.

Block 2. Labor and Capital Demand

The Labor and Capital Demand block includes the determination of labor productivity, labor intensity, and the optimal capital stocks. Industry-specific labor productivity depends on the availability of workers with differentiated skills for the occupations used in each industry. The occupational labor supply and commuting costs determine firms' access to a specialized labor force.

Labor intensity is determined by the cost of labor relative to the other factor inputs, capital and fuel. Demand for capital is driven by the optimal capital stock equation for both non-residential capital and equipment. Optimal capital stock for each industry depends on the relative cost of labor and capital, and the employment weighted by capital use for each industry. Employment in private industries is determined by the value added and employment per unit of value added in each industry.

Block 3. Population and Labor Supply

The Population and Labor Supply block includes detailed demographic information about the region. Population data is given for age, gender, and race, with birth and survival rates for each group. The size and labor force participation rate of each group determines the labor supply. These participation rates respond to changes in employment relative to the potential labor force and to changes in the real after-tax compensation rate. Migration includes retirement, military, international, and economic migration. Economic migration is determined by the relative real after-tax compensation rate, relative employment opportunity, and consumer access to variety.

Block 4. Compensation, Prices and Costs

This block includes delivered prices, production costs, equipment cost, the consumption deflator, consumer prices, the price of housing, and the compensation equation. Economic geography concepts account for the productivity and price effects of access to specialized labor, goods, and services.

These prices measure the price of the industry output, taking into account the access to production locations. This access is important due to the specialization of production that takes place within each industry, and because transportation and transaction costs of distance are significant. Composite prices for each industry are then calculated based on the production costs of supplying regions, the effective distance to these regions, and the index of access to the variety of outputs in the industry

relative to the access by other uses of the product.

The cost of production for each industry is determined by the cost of labor, capital, fuel, and intermediate inputs. Labor costs reflect a productivity adjustment to account for access to specialized labor, as well as underlying compensation rates. Capital costs include costs of non-residential structures and equipment, while fuel costs incorporate electricity, natural gas, and residual fuels.

The consumption deflator converts industry prices to prices for consumption commodities. For potential migrants, the consumer price is additionally calculated to include housing prices. Housing prices change from their initial level depending on changes in income and population density.

Compensation changes are due to changes in labor demand and supply conditions and changes in the national compensation rate. Changes in employment opportunities relative to the labor force and occupational demand change determine compensation rates by industry.

Block 5. Market Shares

The market shares equations measure the proportion of local and export markets that are captured by each industry. These depend on relative production costs, the estimated price elasticity of demand, and the effective distance between the home region and each of the other regions. The change in share of a specific area in any region depends on changes in its delivered price and the quantity it produces compared with the same factors for competitors in that market. The share of local and external markets then drives the exports from and imports to the home economy.

Appendix B: Employment by Industry Sector

Economic Impact of Key Provisions of Immigration Reform by Industry										
	Jobs Gain/Loss by Industry (in thousands) by 2014					Jobs Gain/Loss by Industry (in thousands) by 2020				
Category										
Industry	**Pathway**	**H-1B**	**H-2A**	**H-2B**	**W**	**Pathway**	**H-1B '20**	**H-2A '20**	**H-2B '20**	**W '20**
Forestry and logging; Fishing, hunting, and trapping	0.053	0.155	0.016	0.02	0.032	-0.485	0.266	0.023	0.013	0.248
Agriculture and forestry support activities	0.1	0.182	2.592	0.014	0.023	0.105	0.241	7.631	0.009	0.17
Oil and gas extraction	0.264	0.983	0.144	0.05	0.085	0.012	1.519	0.369	0.037	0.65
Mining (except oil and gas)	0.145	0.307	0.049	0.018	0.029	0.598	0.558	0.146	0.017	0.294
Support activities for mining	0.403	0.65	0.047	0.044	0.073	3.054	1.376	0.224	0.067	1.086
Utilities	0.28	0.611	0.076	0.041	0.068	0.87	1.151	0.209	0.038	0.572
Construction	10.274	12.919	1.095	1.073	1.714	80.731	34.264	4.43	1.4	24.244
Wood product manufacturing	0.291	0.484	0.049	0.038	0.063	1.032	1.03	0.163	0.042	0.724
Nonmetallic mineral product manufacturing	0.301	0.531	0.037	0.036	0.06	1.008	0.988	0.118	0.038	0.651
Primary metal manufacturing	0.06	0.48	0.022	0.016	0.028	-1.702	0.571	0.041	0.007	0.172
Fabricated metal product manufacturing	0.758	1.543	0.123	0.088	0.149	2.457	2.486	0.368	0.085	1.437
Machinery manufacturing	0.215	1.068	0.036	0.027	0.045	0.129	1.594	0.116	0.03	0.438
Computer and electronic product manufacturing	0.223	3.5	0.042	0.03	0.054	-2.758	4.183	0.049	0.005	0.185
Electrical equipment and appliance manufacturing	-0.039	0.439	0.017	0.015	0.026	-2.797	0.568	0.023	0.006	0.143
Motor vehicles, bodies and trailers, and parts manufacturing	0.573	0.848	0.052	0.034	0.062	1.947	0.902	0.149	0.033	0.534
Other transportation equipment manufacturing	0.02	0.256	0.01	0.007	0.012	-1.383	0.231	0.012	0.001	0.047
Furniture and related product manufacturing	0.338	0.426	0.035	0.023	0.043	0.105	0.378	0.09	0.018	0.338
Miscellaneous manufacturing	0.254	0.802	0.036	0.024	0.043	-1.18	0.771	0.054	0.008	0.204
Food manufacturing	0.61	1.057	0.247	0.12	0.198	1.699	2.92	0.756	0.119	1.833
Beverage and tobacco product manufacturing	0.03	0.166	0.007	0.016	0.026	-0.782	0.457	0.015	0.016	0.247
Textile mills; Textile product mills	0.065	0.174	0.017	0.012	0.021	-1.262	0.216	0.032	0.006	0.129
Apparel manufacturing; Leather and allied product manufacturing	-0.144	0.21	0.007	0.009	0.015	-3.439	0.401	-0.004	0.002	0.064
Paper manufacturing	0.123	0.386	0.029	0.026	0.044	-0.336	0.63	0.066	0.021	0.34
Printing and related support activities	0.279	0.736	0.038	0.045	0.077	0.549	1.008	0.089	0.037	0.584
Petroleum and coal products manufacturing	-0.01	0.126	0.023	0.007	0.012	-1.024	0.203	0.058	0.006	0.097
Chemical manufacturing	0.411	1.209	0.136	0.032	0.06	-0.848	1.208	0.305	0.01	0.285
Plastics and rubber product manufacturing	0.365	0.767	0.065	0.044	0.075	0.169	1.142	0.177	0.036	0.651
Wholesale trade	3.868	6.77	0.795	0.374	0.644	14.555	11.038	2.238	0.331	5.471
Retail trade	16.535	17.619	1.264	1.146	2.037	82.607	29.938	3.361	1.125	17.959
Air transportation	0.029	0.279	0.014	0.015	0.026	-0.758	0.43	0.02	0.006	0.159
Rail transportation	0.093	0.185	0.043	0.012	0.02	0.232	0.317	0.125	0.011	0.182
Water transportation	0.03	0.081	0.007	0.002	0.004	-0.022	0.092	0.021	0.001	0.029
Truck transportation	1.341	1.892	0.381	0.131	0.227	6.516	3.434	1.244	0.137	2.257
Couriers and messengers	0.436	0.912	0.074	0.059	0.101	1.72	1.495	0.212	0.056	0.912
Transit and ground passenger transportation	0.395	0.73	0.041	0.051	0.09	1.788	1.701	0.118	0.056	0.893
Pipeline transportation	0.012	0.04	0.005	0.003	0.004	-0.072	0.059	0.012	0.002	0.03
Scenic and sightseeing transportation; Support activities for transportation	-0.064	0.422	0.039	0.023	0.037	-1.671	0.88	0.082	0.011	0.246
Warehousing and storage	0.454	0.882	0.146	0.054	0.092	1.668	1.51	0.456	0.051	0.847
Publishing industries, except Internet	0.392	2.202	0.044	0.046	0.078	1.498	3.135	0.135	0.046	0.684
Motion picture and sound recording industries	0.331	0.666	0.031	0.03	0.051	0.761	0.749	0.066	0.021	0.355
Internet publishing and broadcasting; ISPs, search portals, and data processing; Other information services	0.156	1.009	0.026	0.039	0.061	0.146	1.603	0.064	0.034	0.495
Broadcasting, except Internet	0.194	0.611	0.028	0.037	0.061	0.308	0.98	0.074	0.035	0.545
Telecommunications	0.604	1.557	0.066	0.078	0.129	1.876	2.68	0.16	0.073	1.102
Monetary authorities - central bank; Credit intermediation and related activities; Funds, trusts, & other financial vehicles	3.121	4.444	0.57	0.267	0.458	11.702	5.669	1.533	0.216	3.546
Securities, commodity contracts, investments	3.338	5.396	0.413	0.299	0.507	9.995	6.014	0.973	0.21	3.743
Insurance carriers and related activities	1.989	3.072	0.186	0.203	0.352	7.938	5.333	0.469	0.191	3.032
Real estate	4.446	6.045	0.618	0.537	0.894	21.958	16.813	1.797	0.558	8.576
Rental and leasing services; Lessors of nonfinancial intangible assets	0.266	0.757	0.074	0.047	0.08	-0.751	1.111	0.182	0.034	0.631
Professional, scientific, and technical services	6.23	48.989	0.928	0.878	1.473	28.38	74.793	2.938	0.95	14.838
Management of companies and enterprises	0.763	2.46	0.144	0.137	0.231	-0.575	3.231	0.296	0.091	1.637
Administrative and support services	7.666	16.305	0.951	4.827	7.728	33.78	26.643	2.73	4.839	77.34
Waste management and remediation services	0.203	0.395	0.032	0.2	0.338	0.444	0.907	0.095	0.201	3.352
Educational services	2.454	8.044	0.169	0.277	0.463	12.5	18.298	0.489	0.308	4.755
Ambulatory health care services	13.027	10.229	0.738	0.415	0.839	64.254	7.363	1.846	0.329	6.317
Hospitals	2.943	3.765	0.152	0.197	0.37	15.786	10.798	0.451	0.272	4.05
Nursing and residential care facilities	1.849	1.849	0.106	0.137	0.255	9.403	6.337	0.284	0.167	2.556
Social assistance	2.056	2.352	0.125	0.191	0.336	10.891	9.089	0.346	0.24	3.565
Performing arts and spectator sports	1.11	2.463	0.13	0.186	0.306	4.397	4.827	0.351	0.184	2.843
Museums, historical sites, zoos, and parks	0.067	0.114	0.005	0.057	0.106	0.247	0.37	0.015	0.063	1.137
Amusement, gambling, and recreation	2.042	1.838	0.135	0.742	1.198	8.883	3.089	0.346	0.723	11.507
Accommodation	1.293	2.061	0.116	0.825	1.345	5.531	4.466	0.311	0.817	13.302
Food services and drinking places	5.683	8.705	0.455	4.569	7.151	27.627	27.621	1.241	4.504	70.312
Repair and maintenance	1.437	2.126	0.155	0.924	1.481	6.432	4.712	0.429	0.928	14.776
Personal and laundry services	4.013	2.92	0.242	0.955	1.576	17.526	1.813	0.547	0.839	13.864
Membership associations and organizations	1.788	2.624	0.17	1.488	2.371	8.859	8.105	0.479	1.517	23.798
Private households	5.556	3.362	0.302	0.992	1.537	24.853	0.023	0.674	0.87	13.527
Industry Totals	**114.388**	**207.187**	**14.967**	**23.359**	**38.194**	**517.681**	**368.728**	**42.919**	**23.154**	**371.537**