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America's Economic Crisis

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The Impact of the Pending Fiscal Crisis on Jobs and Economic Growth

Analysis Using the LIFT Model

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Introduction

As we head toward the end of 2012, policymakers, the media and even the general public are talking more about the "fiscal cliff," when a number of current U.S. fiscal policies will expire. If allowed to expire, these policy changes will reduce aggregate demand by more than 3 percent of GDP starting in the first quarter of 2013.[1] Several recent reports[2] that have addressed the short-term effects of the fiscal cliff conclude, almost unanimously, that a fiscal contraction of such magnitude will strongly curtail economic and employment growth and probably push the economy back into a recession in 2013.

Empirical economic models are useful in estimating the magnitude of the aggregate fall in activity because they can account for the direct, indirect and multiplier effects of a given change in fiscal policy. These models also can provide a framework to illustrate how the impacts might evolve through time. This paper provides model-based scenarios concerning the fiscal cliff using Inforum's LIFT model of the U.S. economy. It compares a baseline forecast of moderate economic growth without a dramatic fiscal contraction to an alternative scenario where the fiscal cliff takes place. Comparing the alternative with the baseline provides an estimate of the magnitude and timing of the economic impact of allowing the scheduled spending cuts and tax increases to go into effect.

The analysis attempts to clarify three issues concerning the fiscal cliff. First, policy-induced swings in economic growth are often moderated to the extent that consumers and businesses anticipate policy changes and respond accordingly. The scenario presented here illustrates that if consumers and businesses smooth expenditures in anticipation of fiscal contraction, then economic growth in 2012 has already been significantly and negatively impacted. Moreover, expenditure smoothing also implies that rather than falling off the proverbial cliff, economic output and employment will slide down a rather steep slope that would last three to four years.

Second, to show how the economy would react in the long run, the simulation horizon extends through 2022. From 2015 onward, the LIFT model shows the economy recovering from recession. After about a decade, economic activity and employment recover to levels similar to those that would have been reached without a fiscal shock. The model also shows how expenditures across the economy change. Initially, government spending levels fall, and higher taxes reduce disposable income and household consumption levels. However, lower wages and interest rates encourage higher levels of private investment in equipment and construction and

[1] Congressional Budget Office. (May 2012). *Economic Effects of Reducing the Fiscal Restraint Scheduled to Occur in 2013,* http://www.cbo.gov/sites/default/files/cbofiles/attachments/FiscalRestraint_0.pdf.

[2] Several references are listed in the Bibliography.

higher levels of exports. While the spending cuts and tax increases reduce the federal deficits and debt, the substantial negative short-run consequences of going over the cliff suggest that a more gradual and well-planned policy course is much preferred.

Finally, the report addresses the differential impacts of the fiscal cliff across industries. The LIFT model contains production and employment accounting across 87 production sectors. Examining the differential impact across sectors provides a more detailed account of structural change. While equipment manufacturers and exporters could see some long-term improvement in production and employment after years of decline, manufacturers of consumer goods and defense contractors likely would see large and durable contractions in their industries.

The Fiscal Cliff

The pending changes in fiscal policy set for January 1 are both large and sudden. The Budget Control Act (BCA) of 2011 calls for across-the-board cuts in defense and nondefense spending (sequestration) starting in the new calendar year, the same day that a number of temporary tax relief provisions expire. In other words, large spending cuts combined with large tax increases will hit the economy at the same time. Just as layoffs of federal employees and contractors begin, many U.S. taxpayers, including investors, employees and businesses, will see an immediate increase in their tax liability. Moreover, businesses of all sizes will quickly feel the economic impact, and private investment will fall.

Table 1 illustrates the extent of the fiscal contraction from 2013 to 2022. This table is developed from several reports and associated data files from the Congressional Budget Office (CBO). On the revenue side, current law calls for the expiration of temporary tax relief enacted in 2001 to 2003. These changes include the application of the alternative minimum tax (AMT) to a much larger number of taxpayers; the restoration of pre-2001 estate tax rules and pre-2001 individual marginal tax rates; the continued expiration of a number of other temporary tax provisions, many of which benefit businesses (e.g., the research and development (R&D) tax credit); the expiration of temporary cuts to payroll taxes; and the imposition of new taxes included in the Affordable Care Act. For fiscal year (FY) 2013, these tax policy changes are expected to raise about $400 billion in new revenues compared to FY 2012.

The *January 2012 CBO Budget Outlook* provides the basis for framing the nondefense and defense spending cut assumptions implied by sequestration.[3] As required under the BCA, automatic reductions in discretionary spending (sequestration) will begin on January 1. On an *outlay* basis (which is most relevant for economic activity), sequestration will impose automatic across-the-board cuts of about $1 trillion over 10 years divided equally between defense and

[3] Congressional Budget Office. (January 31, 2012). *The Budget and Economic Outlook: Fiscal Years 2012 to 2022,* https://www.cbo.gov/sites/default/files/cbofiles/attachments/01-31-2012_Outlook.pdf.

Table 1: Static Score of Fiscal Policy Change, FY 2013–2022
(Billions of Current Dollars)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013-2022
Change in Specified Revenue Policies											
Expiration of Income and Other Tax Cuts[4]	221	301	343	368	392	418	443	473	505	540	4,004
Other Expiring Provisions[5]	65	103	87	72	62	55	49	46	47	48	634
Expiration of Payroll Tax Reduction	95	25	–	–	–	–	–	–	–	–	120
Affordable Care Act Payroll Tax	18	20	26	31	37	43	48	54	59	65	401
Total Revenue Increases	399	449	456	471	491	516	540	573	611	653	5,158
Changes in Specified Spending Policies	–	–	–	–	–	–	–	–	–		
BCA Sequestration	66	90	100	102	104	103	103	104	104	105	981
Defense	33	46	52	53	55	54	54	54	54	55	510
Nondefense Discretionary	23	33	36	36	36	35	35	35	34	34	337
Medicare	5	6	7	8	8	9	10	11	12	12	88
Other Mandatory Reductions	5	5	5	5	5	5	4	4	4	4	46
Reduction of Unemployment Benefits	26	5	–	–	–	–	–	–	–	–	31
Reduction of Medicare Pay to Physicians	11	20	22	24	26	29	31	33	35	37	268
Total Spending Decrease	103	115	122	126	130	132	134	137	139	142	1,279
Total Static Fiscal Contraction	**502**	**564**	**578**	**597**	**622**	**648**	**674**	**710**	**749**	**795**	**6,437**
GDP (CBO Baseline)	15,914	16,575	17,618	18,704	19,708	20,661	21,616	22,603	23,614	24,655	201,666
Percent of GDP	3.2	3.4	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.2	3.2

[4] Expiration of certain income tax (predominantly the Bush tax cuts) and estates and gift tax provisions scheduled to expire on December 31, 2012, and of indexing the AMT for inflation.
[5] Expiration of "tax extenders," mostly business tax concessions such as the R&D tax credit and investment expensing provisions.

Sources:
Congressional Budget Office. (May 2012). *Economic Effects of Reducing the Fiscal Restraint Scheduled to Occur in 2013.* Table 1.
Congressional Budget Office. (January 2012). *The Budget and Economic Outlook: Fiscal Years 2012 to 2022*. Table 3.5.
Committee for a Responsible Federal Budget. (July 2012). *Between a Mountain of Debt and a Fiscal Cliff: Finding a Smart Path Forward.* Figure 1.

nondefense (discretionary and mandatory) spending. If it occurs, automatic sequestration will eliminate at least $66 billion of federal spending in FY 2013. Table 1 shows that these nominal reductions grow from 2013 to 2015 when they reach slightly more than $100 billion per year.[6] Sequestration cuts from 2015 onward are roughly constant in nominal dollars, so the impact of the cuts in real terms diminishes over time with inflation. The cuts are spread more or less evenly across defense and nondefense spending, which in this context includes both new Medicare cuts and other mandatory reductions.

For FY 2013, and compared to the previous fiscal year, current law changes to fiscal policies will increase tax revenues by almost $400 billion and cut federal spending by slightly more than $100 billion for a total fiscal contraction of $500 billion, or about 3.2 percent of GDP. Note, however, that the actual amounts are uncertain since the outcome for revenues and expenditures will depend on economic growth. Nevertheless, a sudden and durable fiscal contraction of more than 3 percent of GDP is unprecedented for the United States. Indeed, it is similar to some of the "big bang" fiscal adjustments experienced by developing nations beset by balance-of-payments crises, or to the austerity programs recently experienced by several euro-area economies.

The Baseline Macroeconomic Projection

In general, fiscal policy analysis using economic models compares a "status quo" or baseline simulation with a scenario that contains the changes to government spending and/or taxation. This exercise uses a baseline LIFT scenario calibrated to Inforum's most recent U.S. economic forecast. The resulting "baseline" projection shown in Table 2 reflects an economy slowly recovering from the deep recession of 2008–2009. The tepid growth of 1.7 percent in 2011 accelerates only slightly to 2.3 percent in 2012 and to 2.6 percent in 2013. Interest rates and inflation remain very low into 2014.

In this scenario, recovery quickens from 2014 through 2019, with GDP growing more than 3 percent each year. Employment also grows, and the unemployment rate descends steadily. These growth rates are a bit larger than what economists might consider as trend growth, but they are consistent with an economy recovering at least part of the GDP lost in the recession. Nonetheless, the economy remains below the level of potential output until about 2019 when the unemployment rate finally comes down to about 5.3 percent. After 2019, GDP growth moderates to a trend-growth pace between 2 and 3 percent.

[6] In particular, the report uses figures taken from Table 3.5 in *CBO's Projection of Discretionary Spending Under Selected Policy Alternatives.*

Table 2: LIFT Model—Baseline Forecast Summary
(First Line Is Magnitude, Second Line Is Percent Change)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Gross Domestic Product	13,312	13,618	13,979	14,391	14,837	15,323	15,865	16,432	16,919	17,386	17,802	18,219
Billions of Chained 2005 $	1.7	2.3	2.6	2.9	3.1	3.3	3.5	3.6	3.0	2.8	2.4	2.3
Federal Nondefense	354	344	339	336	336	336	337	337	337	337	336	336
	-1.2	-2.7	-1.6	-0.7	-0.1	0.1	0.1	0.1	0.1	-0.1	-0.2	0.0
Federal Defense	707	682	658	645	637	633	627	622	623	622	621	623
	-2.4	-3.6	-3.5	-2.0	-1.2	-0.6	-1.0	-0.8	0.2	-0.2	-0.1	0.4
Real Disposable Income	10,174	10,322	10,449	10,661	10,912	11,311	11,735	12,177	12,550	12,869	13,146	13,462
Billions of Chained 2005 $	-2.3	1.5	1.2	2.0	2.4	3.7	3.7	3.8	3.1	2.5	2.2	2.4
Employment												
Total Employment	141,970	143,354	145,238	147,272	149,618	152,225	155,269	158,500	160,862	162,988	164,540	165,980
(Thousand Jobs)	0.6	1.0	1.3	1.4	1.6	1.7	2.0	2.1	1.5	1.3	1.0	0.9
Manufacturing Employment	12,700	12,820	12,858	12,931	12,987	13,056	13,184	13,318	13,428	13,498	13,543	13,545
(Thousand Jobs)	2.0	0.9	0.3	0.6	0.4	0.5	1.0	1.0	0.8	0.5	0.3	0.0
Federal Employment	2,084	2,049	2,018	2,002	1,997	1,996	1,991	1,986	1,988	1,987	1,986	1,987
(Thousand Jobs)	-0.1	-1.7	-1.5	-0.8	-0.2	-0.1	-0.2	-0.2	0.1	0.0	-0.1	0.1
Unemployment Rate	9.0	8.2	7.9	7.7	7.5	7.2	6.5	5.6	5.3	5.1	5.1	5.3
Federal Balance												
Total Revenues (Bil. $)	2,528	2,686	2,993	3,298	3,635	3,885	4,149	4,414	4,666	4,922	5,199	5,496
As Percent of GDP	16.7	17.1	18.2	19.1	20.0	20.3	20.5	20.7	20.8	20.9	21.2	21.4
Total Expenditures (Bil. $)	3,923	3,909	3,979	4,215	4,460	4,684	4,912	5,160	5,430	5,686	5,994	6,321
As Percent of GDP	26.0	24.8	24.2	24.4	24.6	24.5	24.3	24.2	24.2	24.2	24.4	24.6
Federal Net Borrowing	-1,396	-1,223	-986	-917	-825	-798	-763	-747	-764	-765	-795	-825
As Percent of GDP	-9.2	-7.8	-6.0	-5.3	-4.5	-4.2	-3.8	-3.5	-3.4	-3.3	-3.2	-3.2

Modeling the Fiscal Cliff

Once the baseline scenario is defined, the alternative "fiscal contraction" LIFT model simulation is prepared by implementing the federal government expenditure reductions and tax rate increases as implied by the fiscal cliff described in Table 1. This process requires several assumptions and simplifications. In the case of federal spending (including transfers), it is relatively straightforward to reduce spending in the LIFT model by the appropriate category in nominal terms. To the extent that reduced federal spending included domestic grants-in-aid, state and local government spending is reduced accordingly.

To calibrate the increase in personal income, payroll, corporate tax rate increases and corresponding tax revenue increases over time, the study used a supplemental worksheet provided by the CBO for *The Budget and Economic Outlook: Fiscal Years 2012 to 2022.*[7] To boost tax revenue, changes in the LIFT model tax rates are adjusted at the same proportion for the increase in implied tax rates from the CBO data shown in Table 1.

Anticipatory Behavior

The fiscal contraction now contemplated by current law is both large and sudden, but it is not unexpected. Economic theory and empirical evidence imply that forward-looking consumers, businesses and even government agencies will attempt to smooth expenditures over time. If they anticipate the possibility of significant reductions to income, they will reduce expenditures immediately. Given the specter of a sharp fiscal contraction starting in 2013, and notwithstanding the considerable uncertainty over whether the contraction will occur, consumers and businesses should have already reduced consumption and investment expenditures across 2012.

There is plenty of anecdotal evidence that precautionary decreases to spending have already occurred. According to a recent story in *The New York Times,* an increasing number of manufacturers are canceling new investments and putting off new hires because of the fiscal stalemate.[8] In addition to defense industry executives, a variety of nondefense industry chief executives have decided to postpone hiring and investments. These companies range from electrical components and power systems to automotive parts manufacturers. Smaller companies that serve both military and civilian customers also are pulling back.

[7] CBO, www.cbo.gov/doc.cfm?index=12699.

[8] Schwartz, N. (August 5, 2012). "Fearing an Impasse in Congress, Industry Cuts Spending." *The New York Times.*

In an interview this summer,[9] Scott Davis, chairman and CEO of United Parcel Service, says he anticipates lower growth for the second half of the year and expects customers to reduce investment spending, hiring and inventories. According to Davis, companies make decisions over a three- to five-year horizon, and business planning is disrupted by congressional failures to set clear policy.

Companies face further uncertainty because of apparent conflicts between federal legal requirements and directives from the Department of Labor (DoL). In particular, the DoL recently issued guidance that, despite the Worker Adjustment and Retraining Notification (WARN) Act, which requires employees be given notice at least 60 days before layoffs begin, employers do not have to warn employees of pending layoffs in anticipation of federal spending cuts.[10] However, the DoL is not responsible for enforcing the WARN Act, thus leaving companies with legal uncertainty about their obligations in addition to the economic policy uncertainties they already face.

Figure 1 displays the Consumer Sentiment Index published by Thomson Reuters/University of Michigan,[11] which summarizes information from the Surveys of Consumers to indicate consumers' feelings about the economy. Data are displayed from January 2005 to August 2012. The graph also includes the Economic Policy Uncertainty Index published by Baker, Bloom and Davis[12] from January 2005 to August 2012. The index measures economic policy uncertainty and has three components: newspaper coverage of topics related to policy-driven uncertainty; the number of federal tax code provisions that are scheduled to expire; and the dispersion of projections made by economic forecasters. While it has come down most recently, the current level of economic policy uncertainty remains very high, with post-2008 levels about twice the average of the previous 23 years. Such increases in uncertainty typically foreshadow falling GDP and employment.

[9] Swanson, Ian. (July 24, 2012). "Congress just mails it in, according to UPS." *The Hill,* http://thehill.com/blogs/on-the-money/economy/239899-congress-mails-it-in-says-ups.

[10] Crabtree, Susan, and Stephen Dinan. (July 31, 2012). "GOP: White House pressuring defense industry not to warn of layoffs." *The Washington Times.*

[11] Thomson Reuters/University of Michigan Surveys of Consumers, http://thomsonreuters.com/products_services/financial/financial_products/a-z/umichigan_surveys_of_consumers/#tab3.

[12] *Economic Policy Uncertainty,* http://policyuncertainty.com.

Figure 1: Consumer Sentiment and Economic Policy Uncertainty

Figure 1 also illustrates the inverse correlation between consumer sentiment and economic policy uncertainty. Between 2005 and 2007, consumer sentiment was good and uncertainty was low, except during the months after the hurricanes and oil supply disruptions in the summer of 2005. The data reveal effects of the rapid unraveling of the construction industry and the following financial crisis. Conditions improved somewhat through 2010 and into 2011, but Congress's inability to take decisive action in the summer of 2011 caused uncertainty to soar and sentiment to plunge. Conditions began to stabilize until the middle of 2011 but worsened in the middle of 2012. A continued stalemate surrounding such a large change in federal tax and expenditure policy will weigh heavy on consumer and business confidence as the year winds down. Even if the Administration and Congress resolve the uncertainty before the end of the year, economic growth has already sustained significant damage.

The LIFT model simulation results show this assumption of anticipatory behavior is evident in three ways, especially from 2012 to 2015. First, some small amount of government spending—about a half percent in real terms—is already reduced for calendar year 2012. This results from an assumption that government agencies have already moderated hiring and contracting in 2012 in anticipation of large budget cuts with sequestration. Second, approximately 15 percent of fiscal cliff associated consumption and investment reduction that would have occurred in 2013 is pulled forward to 2012. Finally, expenditure smoothing means that consumers and businesses also borrow from spending in 2014 and subsequent years to maintain some expenditure over the near term. This effect is endogenous to the model.

Together, backward and forward smoothing implies that the sudden change in fiscal policy does not produce a dramatic contraction at the outset of 2013. Rather than falling off a "cliff," the economy actually slides down a "steep slope," but a slope that started sometime in 2012. While the loss of activity and employment in 2013 might not be as large in the absence of smoothing behavior, the negative output and employment effects become more protracted and grow well into 2014.

Scenario Results: Growth and Unemployment

In a dynamic model such as LIFT, the production, income and employment responses to any given fiscal shock will vary over time. Moreover, they will also be sensitive to the phase of the business cycle. The current economic environment is characterized by an unemployment rate exceeding 8 percent and historically low interest rates. Therefore, because product and employment demand elsewhere in the economy is weak, additional and sharp reductions in government spending will trigger relatively large and lingering reductions of GDP and employment.

Table 3 presents the comparison of GDP growth rates and unemployment rates between the baseline and fiscal contraction scenarios. In the baseline scenario, GDP growth for 2012 is 2.3 percent. The fiscal contraction rate is 1.7 percent. This comparison suggests that fiscal policy uncertainty and expenditure smoothing has already reduced growth significantly by around 0.6 percentage points in 2012. Unemployment for the year is 0.3 percent higher given the uncertainty around the fiscal cliff.

Growth is hit hard in 2013 and 2014. For 2013, the baseline scenario shows the economy would grow by 2.6 percent. With fiscal contraction, the economy grows by only 0.2 percent, a difference of 2.4 percentage points. Indeed, to reach such a low growth rate for 2013 implies that the first two to three quarters of 2013 would experience negative growth, which is one of the common measures of a recession.[13] Especially given current weak conditions, the initial multiplier effect on employment would be particularly large because firms and workers would have limited opportunities to redirect sales and labor. In 2013, unemployment rises to 10.2 percent, more than two percentage points higher than the baseline rate. Dismal growth continues into 2014 with GDP posting a 1 percent increase, which is 1.9 percentage points lower than the baseline. The unemployment rate rises to 11.4 percent for the year.

[13] Given current (2012) levels of GDP and the assumption of 0.2 percent growth for the year as a whole, the 2013 quarterly rates (SAAR) of growth are about negative 0.4 over each of the first two quarters and negative 0.2 percent for the third quarter. By the fourth quarter, GDP would be growing again.

After this sizable negative shock across 2013 and 2014, faster growth begins in 2015. Figure 2 shows that GDP growth in the fiscal contraction alternative significantly exceeds baseline growth from 2016 through 2018. Such a pattern is a typical response to aggregate demand shocks. As the economy adjusts to the shock, the demand impact of lower fiscal spending dissipates over time because of strong responses from the private sector for consumption, housing, investment goods and net trade. Workers laid off because of the initial spending shock will find jobs in other industries, and the unemployment rate falls as illustrated in Figure 3.

Table 3: Real GDP Growth and Unemployment Rates, 2012–2022 (Percent)

	2012	2013	2014	2015	2016	2018	2020	2022
GDP Growth Rate								
Baseline Rate (%)	2.3	2.6	2.9	3.1	3.3	3.6	2.8	2.3
Fiscal Contraction Rate (%)	1.7	0.2	1.0	3.5	4.6	4.4	2.8	2.2
Difference	-0.6	-2.4	-1.9	0.4	1.3	0.8	0.1	-0.1
Unemployment Rate								
Baseline Rate (%)	8.1	7.8	7.7	7.5	7.2	5.6	5.1	5.3
Fiscal Contraction Rate (%)	8.4	10.2	11.4	10.9	9.4	6.1	5.5	5.7
Difference	0.3	2.4	3.7	3.4	2.2	0.5	0.4	0.4

Figure 2: Annual GDP Growth Rates, 2011–2022 (Percent)

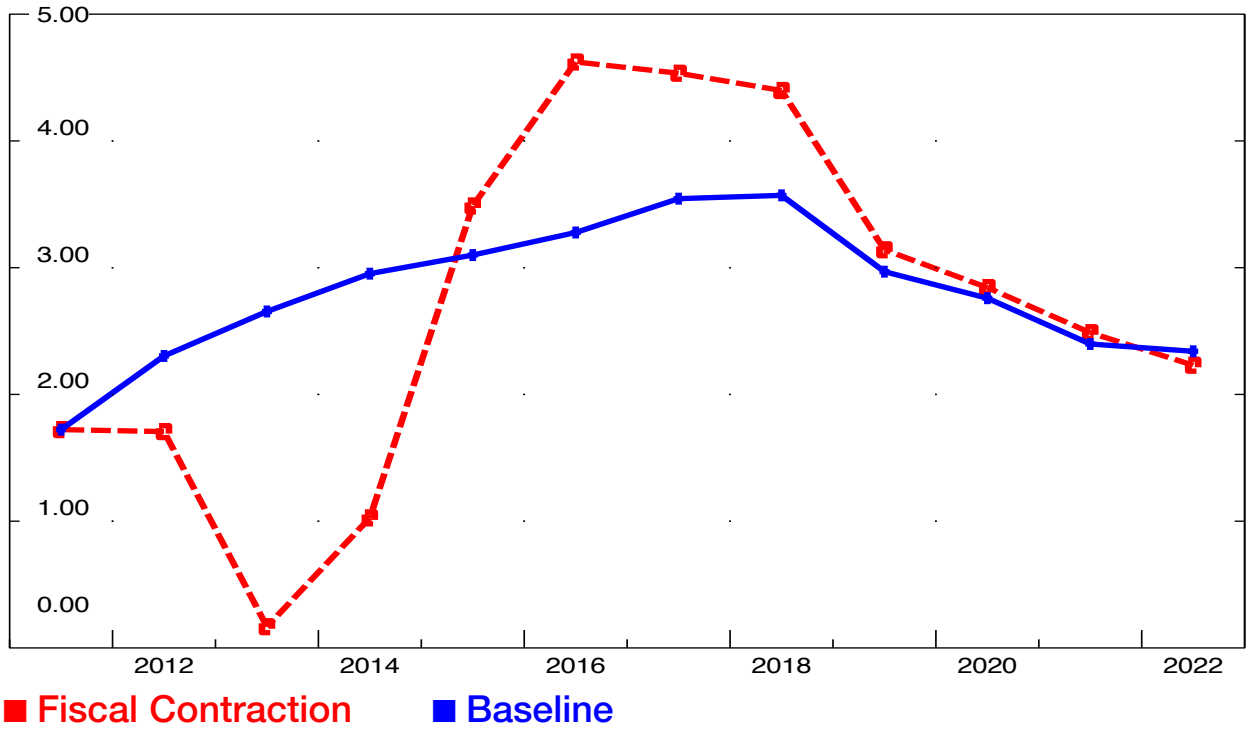
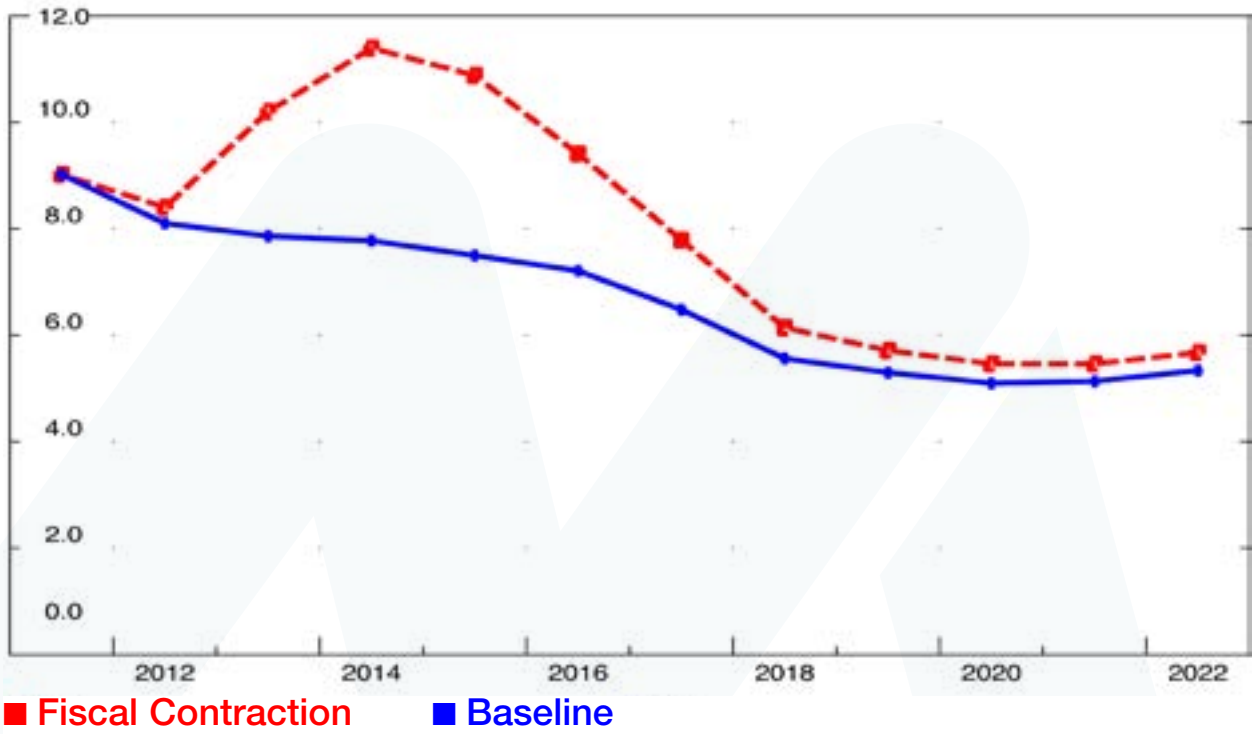


Figure 3: Long-Run Fiscal Contraction, 2011–2022 (Annual Unemployment Rate)



Scenario Results: Activity Level

The focus on growth rates, however, obscures the fact that the immense growth and job losses from 2012 to 2014 may not be regained even after several years of solid growth. This fact is best seen in Table 4, which shows the percent difference in the level of various macroeconomic indicators in the fiscal contraction case relative to the baseline. Figure 4 shows the loss of GDP relative to the baseline, and Figure 5 shows the course of employment.

Compared to the baseline, the short-term trauma of fiscal contraction peaks in 2014, when GDP reaches a low of 4.8 percent below the baseline scenario. Adding across the four years from 2012 to 2015, the economy loses a cumulative 12.8 percent of average annual real GDP compared to the baseline scenario. The damage to consumers is even greater. Because of lower real personal income and higher federal taxes, the fall in real personal disposable income exceeds the fall in GDP by a large margin, peaking at almost 10 percent in 2015. Across four years, the cumulative loss in real disposable income is almost 26 percent of an average year's income. After 11 years, the cumulative loss is a whopping 48.5 percent.

The employment loss also is dramatic. Compared to the baseline, the economy loses 3.6 million jobs by 2013. In 2014, the peak year of loss, employment is 5.7 million jobs lower relative to the baseline. The unemployment rate rises sharply at the beginning of the shock and reaches almost 12 percent in 2014. The unemployment situation remains dire throughout 2015, as job loss remains above 5 million compared to the baseline. In cumulative terms (a figure known as job years), the losses over the decade exceed 20 million.

As mentioned above, economic recovery takes hold by the end of 2015, and activity and employment gradually recoup lost ground from 2015. Figure 4 shows that compared to 4.8 percent in 2014, the GDP level is only 1.3 percent below the baseline by 2020. Figure 5 shows that employment recovers as well. The unemployment rate falls from 11.4 percent in 2014 to 5.7 percent in 2022, only 0.3 points above the baseline rate of 5.4 percent, and close to full employment in the LIFT model. This outcome is typical of a dynamic general equilibrium model that is structured with a strong tendency to return to full employment after any given fiscal shock (positive or negative).

Still, 10 years after the original fiscal contraction, economic performance remains significantly lower than the baseline. The outcome for real disposable income is even more severe. Even after a decade of adaptation, real household income remains 5 percent below its baseline level in 2022. Real personal consumption is still 3.5 percent below the baseline. The model results suggest that long-run losses to GDP, productivity and real income could be a durable consequence of a large and sudden short-term fiscal contraction in 2013.

It is important to note that the long-term recovery portrayed here depends on a vigorous upswing in private equipment and structures investment to help pace the recovery. Eventually, federal deficit reduction will lead to lower capital and labor costs, a lower fiscal burden and lower interest rates. Businesses will respond by unlocking funds recently reserved for deleveraging. In addition, businesses should become more competitive in international trade, especially in export activity. Consumers will also feel more confident about the future, promoting higher spending on goods, services and housing.

Table 4: Long-Term Economic Impact
(Differences from Baseline, in Percent and as Noted)

	2012	2013	2014	2015	2016	2018	2020	2022
Gross Domestic Product	-0.6	-3.0	-4.8	-4.4	-3.2	-1.5	-1.3	-1.3
Cumulative Percentage Loss	-0.6	-3.6	-8.4	-12.8	-16.0	-17.5	-18.8	-20.0
Real Government Expenditures	-0.4	-2.3	-3.2	-3.1	-2.7	-2.2	-2.3	-2.1
Federal Nondefense	-0.5	-2.8	-3.8	-3.7	-3.4	-2.8	-2.7	-2.4
Federal Defense	-1.1	-4.9	-6.8	-7.3	-7.1	-6.9	-6.9	-6.7
State and Local	-0.1	-1.0	-1.6	-1.4	-0.8	-0.3	-0.5	-0.5
Real Disposable Income (Bil. 05$)	-0.6	-6.1	-9.4	-9.8	-8.1	-5.3	-4.5	-4.7
Cumulative Percentage Loss	-0.6	-6.8	-16.1	-25.9	-34.1	-39.3	-43.9	-48.5
Baseline Avg. Fed Inc. Tax Rate (%)	11.00	11.47	12.57	13.64	13.94	14.40	14.92	15.69
Difference in Percentage Points	–	3.24	3.80	3.91	3.56	2.91	2.72	3.19
Civilian Employment	-0.6	-2.5	-3.9	-3.6	-2.3	-0.6	-0.4	-0.4
Difference in Thousands	-839	-3,617	-5,759	-5,348	-3,532	-946	-611	-581
Cumulative (Job Years)	-839	-4,456	-10,215	-15,563	-19,095	-20,040	-20,651	-21,233
Manufacturing Employment	12,840	12,858	12,931	12,987	13,056	13,318	13,498	13,545
Difference in Thousands	-48	-227	-429	-411	-200	181	282	307
Direct Federal Employment	2,049	2,018	2,002	1,997	1,996	1,986	1,987	1,987
Difference in Thousands	-22	-87	-112	-118	-119	-111	-102	-96
Fed Net Borrowing Reduction (Bil. $)	1	372	508	630	653	604	562	702
Baseline Deficit as Percent of GDP	-7.8	-6.0	-5.3	-4.5	-4.2	-3.5	-3.3	-3.2
Reduction in Percent of GDP	0.0	2.2	2.9	3.4	3.4	2.8	2.4	2.7
Current Acct. Deficit Reduction (Bil. $)	19	129	232	224	119	44	133	188
Baseline Deficit as Percent of GDP	-3.4	-3.6	-3.5	-3.4	-3.4	-3.7	-3.6	-3.4
Reduction in Percent of GDP	0.1	0.7	1.3	1.2	0.5	0.1	0.5	0.7

Figure 4: Long-Run Fiscal Contraction, 2012–2022
(Percent Difference in GDP and Real Disposable Income)

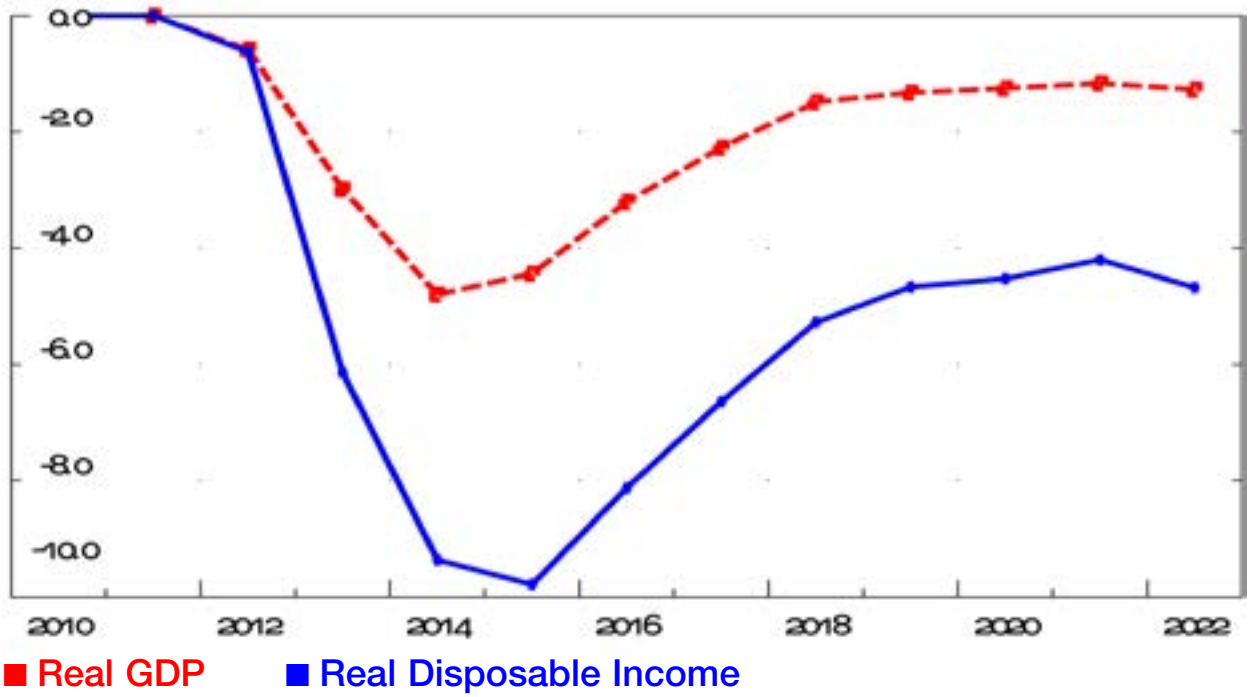
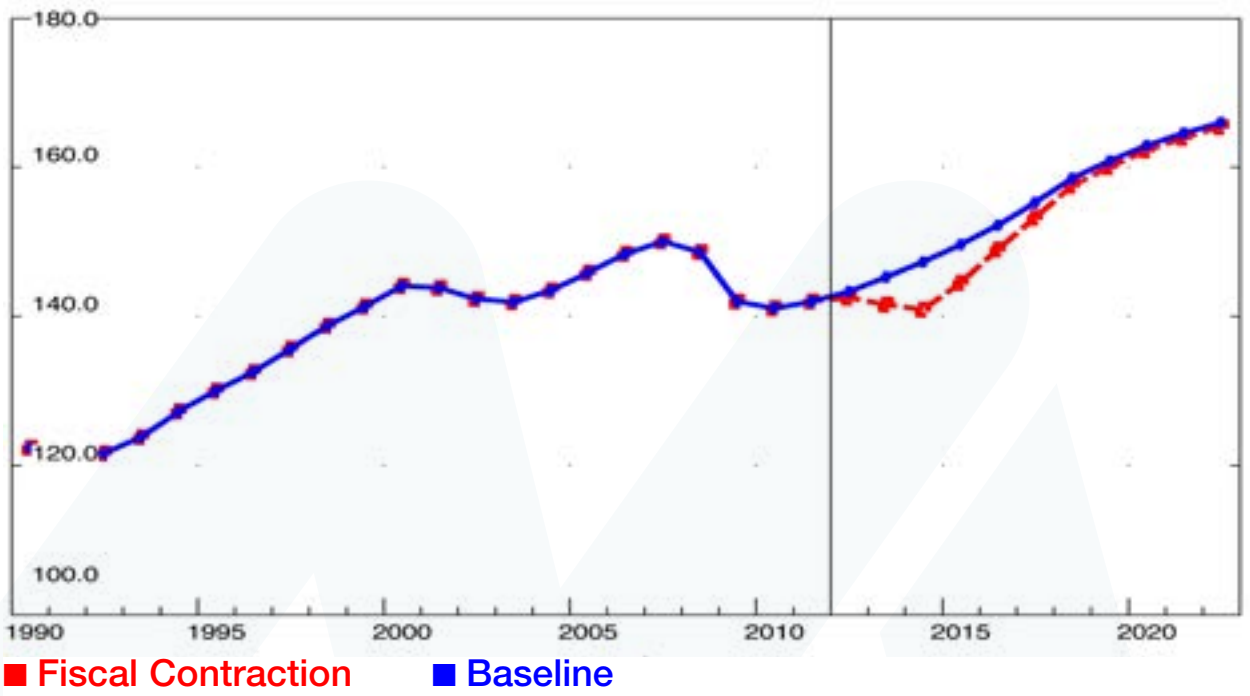


Figure 5: Long-Run Fiscal Contraction Employment, 1990–2022
(Millions of Jobs)



But the economic damage could even be larger. The LIFT model scenarios described here incorporate only moderate "hysteresis" effects over the long term. Hysteresis occurs when deep recessions degrade the labor participation or productivity of the potential worker pool, and consequently, it reduces potential economic production. In the long-term scenario presented here, labor participation does not react to fiscal policy changes, and the level of labor productivity falls only slightly more than 1 percent relative to the baseline. This reduction is mirrored by the similar reduction of GDP by 2022.

In fact, there are several reasons to believe that negative hysteresis impacts could be much larger:

- First, spells of unemployment tend to reduce both the long-term employability and productivity of workers. Highlighting the already high rates of long-term unemployment, some economists believe that the Great Recession has already had large negative consequences for potential output. Another large and long-running jobs recession could produce additional lasting damage.
- Second, another form of hysteresis occurs with lower investment levels, especially for infrastructure and human capital. Under the sequestration mandated by the BCA, government spending is reduced across-the-board. A more rational fiscal retrenchment would tread more gradually and lightly on education, infrastructure, defense and other government programs that are vital to the productive and human capital of the nation.
- Third, as noted above, after the initial trauma extending through the middle of 2013, economic recovery will depend on a positive reaction in private business activity and exports. The nature of the LIFT model implies that a second relatively strong recession will not badly harm the economic vitality of the enterprises that survived the first recession. We also posit economic growth abroad and the benign global financial environment. It would be prudent to allow that these assumptions might not prove true.
- Finally, realization of the worst-case fiscal cliff scenario in January 2013 would probably be associated with highly visible paralysis in federal policymaking. A government failure of such consequence could land another large and lasting blow to consumer and business confidence, reducing aggregate demand by more than indicated in this analysis.

It has been four years since the financial crisis induced a steep recession that was followed by an anemic recovery. The extent of hysteresis from this episode is unknown. A second deep recession following so closely on the first would compound the effect on potential growth. Indeed, the possibility of additional large hysteresis impacts provides a principle argument against a "big bang" fiscal contraction.

Effects Across Industries

Table 5 displays the effects on industry output through 2022 for each of the 87 private sectors and two government sectors of the LIFT model. Data are presented as percentage differences from the baseline level of industry gross output levels. Table 6 illustrates the impact of the fiscal cliff scenario in terms of industry employment. Projections are presented as differences in industry employment relative to the baseline, where units are thousands of jobs.

While equipment manufacturers and exporters could see some long-term improvement in production and employment, manufacturers of consumer goods and defense contractors likely would see large and durable contractions in their industries.

The LIFT model makes clear the connections between federal fiscal policy and the effects of private sector activity. Cuts to defense spending directly affect production in search and navigation equipment, instruments, communications and other electronic equipment, as well as aerospace industries. Weakening economic activity further slows demand in these sectors (e.g., airlines reduce investment spending on aerospace and communications equipment). Construction sectors also suffer directly as road and highway projects are scaled back. These reductions are compounded because reduced employment and wages and higher tax rates leave consumers less able to invest in residential structures.

The agriculture and forestry sector is expected to suffer relatively small declines in output and employment, with output losses peaking at about 2.6 percent in 2014, but with production nearing baseline levels by 2018. Mining sector output declines as demand weakens similarly as construction and industrial production fall and as demand for coal, crude oil and natural gas diminish with economic activity. Output in the construction industry eventually returns to baseline levels, but construction spending is hit hard through 2015, and afterward, never substantially exceeds baseline levels to make up for earlier losses. Construction employment eventually does exceed baseline levels, however, due to diminished productivity rates. Declines in the manufacturing of nondurable goods are similar to the declines in GDP, and these reductions likewise remain through 2022, led by declines in the apparel; printing and publishing; and food manufacturing sectors. By 2022, employment remains more than 12,000 below the baseline level. Production of durable materials does experience a moderate rebound in later years, with overall production more than 1 percentage point above the baseline level. Production of nonelectrical machinery ultimately fares better than most other industries, with gains in later years of more than 5 percent over baseline. Production of electrical machinery follows close behind. While manufacturing of transportation equipment and miscellaneous goods also eventually experience relative gains, the improvements are more modest.

Effects on production among service sectors are more uniform. Declines in transportation are substantial and long lasting, and though output does not recover fully, declines in productivity imply higher employment requirements. Production and employment for utilities and trade sectors remain lower, and because retail trade in particular employs many workers, the contribution to total job losses is very large. Similar declines are expected for other service sectors, including business services, education and healthcare. Finance, insurance and real estate activities fare worse, with 2014 output losses of more than 6 percent, declining only to about 3 percent by 2022, and with employment remaining more than 125,000 below baseline levels.

Finally, government employment cuts are dramatic and persist throughout the forecast horizon. Declines in total government employment peak in 2014 as federal aid to state and local governments force swift cuts. Declines in federal defense and nondefense employment occur a year or two later. By 2022, total civilian government employment remains nearly 150,000 below the baseline level, and the military sheds another 92,000 jobs. Together with the 437,000 private sector jobs lost by 2022, the loss of these civilian government and military jobs leave total employment losses of 673,000.

Table 5: Long-Term Economic Impact, 2012–2022
(Percent Difference in Industry Gross Output Compared to the Baseline)

	2012	2013	2014	2015	2016	2018	2020	2022
1 Agriculture, Forestry and Fisheries	-0.3	-1.9	-2.6	-1.9	-1.0	-0.2	0.0	-0.2
Mining	-0.3	-1.5	-2.4	-2.0	-1.2	0.1	1.0	2.0
2 Metal Mining	0.2	-1.0	-1.0	0.3	2.0	4.1	5.0	5.9
3 Coal Mining	-0.5	-3.0	-4.5	-4.1	-2.9	-1.6	-1.3	-1.3
4 Natural Gas Extraction	-0.4	-1.9	-2.9	-2.4	-1.3	0.3	1.9	3.9
5 Crude Petroleum	-0.2	-1.1	-1.7	-1.5	-1.0	-0.4	-0.3	-0.3
6 Nonmetallic Mining	-0.4	-1.3	-3.2	-3.6	-2.7	0.1	0.5	0.2
7–8 Construction	-1.0	-3.1	-6.5	-6.3	-4.4	0.6	0.9	-0.5
Nondurable Manufacturing	-0.5	-2.7	-4.1	-3.6	-2.4	-1.1	-0.7	-0.6
9 Meat Products	-0.2	-1.3	-1.9	-1.7	-1.2	-0.8	-0.7	-0.7
10 Dairy Products	-0.2	-1.5	-2.3	-2.1	-1.7	-1.4	-1.3	-1.5
11 Canned and Frozen Foods	-0.2	-1.2	-1.5	-1.4	-1.3	-1.3	-1.1	-1.2
12 Bakery and Grain Mill Products	-0.2	-1.5	-2.1	-1.8	-1.3	-0.9	-0.7	-0.8
13 Alcoholic Beverages	-0.2	-1.1	-1.6	-1.4	-1.1	-0.9	-0.7	-0.8
14 Other Food Products	-0.3	-1.4	-1.7	-1.3	-1.0	-0.8	-0.6	-0.7
15 Tobacco Products	-0.1	-0.7	-1.0	-0.9	-0.7	-0.4	0.2	0.8

	2012	2013	2014	2015	2016	2018	2020	2022
16 Textiles and Knitting	-1.8	-10.1	-14.7	-12.4	-7.0	-2.0	-1.4	-1.5
17 Apparel	-4.3	-22.6	-33.9	-29.6	-19.5	-10.8	-10.8	-12.6
18 Paper	-0.6	-3.8	-5.7	-5.0	-3.1	-1.0	-0.6	-0.4
19 Printing and Publishing	-1.2	-7.2	-11.8	-11.2	-8.1	-4.4	-3.6	-3.5
20 Ag. Fertilizers and Chemicals	-0.2	-1.0	-1.4	-1.0	-0.4	0.3	0.6	0.6
21 Plastics and Synthetics	-0.4	-2.0	-2.7	-2.0	-0.7	0.9	1.4	1.6
22 Drugs	-0.5	-2.6	-3.8	-3.4	-2.3	-1.4	-1.1	0.7
23 Other Chemicals	-0.4	-2.0	-2.9	-2.6	-1.6	-0.2	0.3	0.5
24 Petroleum Refining	-0.3	-1.7	-2.7	-2.4	-1.7	-0.8	-0.6	-0.6
25 Fuel Oil	-0.3	-1.9	-2.9	-2.6	-1.7	-0.8	-0.6	-0.6
26 Rubber Products	-0.7	-4.0	-5.3	-3.8	-1.9	0.1	0.5	0.6
27 Misc. Plastics Products	-0.7	-3.5	-5.4	-4.5	-2.4	0.5	1.0	1.2
28 Shoes and Leather	-2.3	-13.4	-16.5	-12.0	-9.3	-6.2	-4.9	-5.1
Durable Materials and Products	-0.6	-3.0	-4.6	-3.5	-1.4	1.4	1.6	1.3
29 Lumber	-1.1	-5.2	-8.0	-5.5	-1.9	1.3	1.0	0.0
30 Furniture	-0.8	-5.9	-10.0	-8.3	-3.4	1.6	1.5	1.9
31 Stone, Clay and Glass	-0.8	-4.1	-6.5	-5.3	-2.7	0.9	1.0	0.2
32 Primary Ferrous Metals	-0.3	-1.5	-2.1	-1.4	-0.2	1.7	1.9	1.9
33 Primary Nonferrous Metals	-0.1	-0.6	-0.8	-0.5	0.1	1.1	1.4	1.5
34 Metal Products	-0.6	-3.0	-4.5	-3.5	-1.6	1.6	1.9	1.7
Non-Electrical Machinery	-0.1	-1.4	-2.6	-2.0	0.6	5.2	5.6	6.1
35 Engines and Turbines	-0.2	-1.4	-1.5	-0.8	0.4	2.0	2.5	2.9
36 Ag., CMO, Matl. Handling Equip.	0.1	-0.6	-0.5	0.4	2.4	6.0	6.7	7.4
37 Metalworking Machinery	-0.1	-1.7	-2.8	-2.0	1.4	8.3	9.0	9.3
38 Special Industry Machinery	0.0	-1.3	-2.3	-2.1	-0.2	5.9	6.6	7.0
39 General and Misc. Industrial Equip.	-0.2	-1.0	-1.4	-1.1	-0.3	1.8	2.2	2.4
40 Computers	0.0	-2.4	-5.6	-4.9	0.4	7.4	7.3	8.2
41 Office Equipment	0.2	-1.4	-4.7	-4.3	0.4	6.9	6.7	8.1
42 Service Industry Machinery	-0.3	-2.0	-4.1	-3.6	-0.9	4.6	4.3	4.7

	2012	2013	2014	2015	2016	2018	2020	2022
Electrical Machinery	-0.4	-3.1	-4.9	-4.6	-2.3	2.2	4.2	5.0
43 Elec. Indl. Apparatus, Dist. Equip.	-0.2	-1.5	-2.2	-1.3	0.5	3.8	4.5	5.2
44 Household Appliances	0.0	-0.2	-0.3	-0.4	-0.2	0.3	0.7	0.8
45 Elec. Lighting and Wiring Equip.	-0.3	-1.4	-2.1	-1.9	-1.0	0.7	1.4	1.4
46 TV, VCR, Radios, Phonographs, etc.	-4.2	-26.0	-39.6	-34.7	-21.4	-2.3	2.4	1.3
47 Communications Equipment	-0.6	-3.9	-7.2	-9.0	-7.2	1.9	9.1	12.0
48 Electronic Components	-0.4	-3.2	-4.9	-4.2	-1.3	2.8	3.7	4.4
Transportation Equipment	-0.8	-4.5	-6.0	-4.4	-1.7	1.4	1.8	2.2
49 Motor Vehicles	-1.1	-6.3	-8.3	-5.9	-1.7	2.7	2.9	3.5
50 Motor Vehicle Parts	-0.5	-2.8	-3.7	-2.0	0.6	2.7	1.7	1.3
51 Aerospace	-0.5	-2.7	-3.7	-3.6	-2.7	-0.9	0.4	1.2
52 Ships and Boats	-1.4	-8.1	-12.6	-12.1	-8.7	-5.4	-5.0	-4.8
53 Other Transportation Equipment	-0.6	-3.1	-3.6	-2.0	0.5	2.7	3.0	3.3
Instruments and Miscellaneous	-0.3	-2.3	-3.4	-2.7	-0.9	1.8	2.4	3.2
54 Search and Navigation Equipment	-1.1	-6.0	-8.7	-8.9	-7.1	-4.4	-3.1	-2.2
55 Medical Instruments and Supplies	0.0	-0.5	-0.8	-0.7	-0.2	1.5	1.8	2.7
56 Ophthalmic Goods	-0.3	-2.1	-3.4	-3.4	-2.9	-2.2	-1.8	-0.8
57 Other Instruments	-0.2	-2.2	-3.3	-1.7	1.3	5.8	6.6	7.9
58 Miscellaneous Manufacturing	-0.3	-3.1	-4.9	-3.8	-1.5	0.9	1.4	1.4
Transportation Services	-0.6	-3.5	-5.2	-4.7	-3.1	-1.1	-0.6	-0.5
59 Railroads	-0.4	-2.4	-3.6	-3.1	-1.9	-0.3	0.1	0.1
60 Trucking, Hwy. Passenger Transit	-0.6	-3.3	-5.1	-4.7	-3.2	-1.1	-0.7	-0.7
61 Water Transport	-0.9	-4.9	-7.1	-5.9	-3.2	0.0	0.5	0.7
62 Air Transport	-0.7	-4.1	-5.8	-5.0	-3.3	-1.5	-0.9	-0.9
63 Pipeline	-0.5	-2.8	-4.4	-3.9	-2.6	-0.7	-0.1	0.0
64 Transportation Services	-0.5	-2.7	-4.3	-4.3	-3.3	-1.5	-0.7	-0.8
Utilities	-0.5	-2.7	-4.5	-4.8	-4.3	-2.5	-1.8	-2.0
65 Communications Services	-0.4	-2.2	-4.2	-5.4	-5.4	-3.1	-1.9	-2.3
66 Electric Utilities	-0.7	-3.5	-5.3	-4.8	-3.7	-2.5	-2.3	-2.4
67 Gas Utilities	-0.5	-2.7	-4.2	-3.7	-2.3	-0.9	-0.7	-0.5
68 Water and Sanitary Services	-0.5	-2.8	-4.4	-4.1	-3.1	-2.0	-1.8	-1.7

	2012	2013	2014	2015	2016	2018	2020	2022
Trade	-0.7	-4.0	-6.3	-5.6	-3.6	-1.6	-1.2	-1.2
69 Wholesale Trade	-0.4	-2.3	-3.6	-3.1	-1.5	0.7	1.1	1.4
70 Retail Trade	-1.2	-6.3	-9.6	-8.6	-5.8	-3.3	-3.0	-3.3
71 Restaurants and Bars	-0.6	-3.4	-5.4	-5.1	-4.0	-3.1	-2.9	-3.1
Finance, Insurance and Real Estate	-0.7	-4.1	-6.5	-6.1	-4.6	-3.0	-2.8	-2.9
72 Finance and Insurance	-0.7	-4.1	-6.4	-5.9	-4.4	-2.9	-2.6	-2.7
73 Real Estate and Royalties	-0.5	-2.9	-4.8	-4.7	-3.4	-1.5	-1.2	-1.2
74 Owner-Occupied Housing	-1.0	-5.6	-8.8	-8.3	-6.5	-5.2	-5.2	-5.6
Other Services	-0.6	-3.3	-5.4	-5.1	-3.5	-1.7	-1.5	-1.0
75 Hotels	-0.7	-3.8	-6.1	-5.7	-4.3	-2.6	-2.3	-2.2
76 Personal and Repair Srv., Ex. Auto	-0.7	-4.1	-6.4	-5.8	-4.4	-2.9	-2.7	-2.9
77 Professional Services	-0.6	-2.9	-4.7	-4.2	-2.9	-0.9	-0.5	-0.4
78 Computer and Data Processing	-0.2	-1.7	-3.3	-3.2	-1.1	2.0	2.2	2.7
79 Advertising	-0.6	-3.4	-5.3	-4.8	-3.2	-1.4	-1.1	-1.0
80 Other Business Services	-0.8	-4.2	-6.6	-6.0	-4.1	-1.8	-1.4	-1.2
81 Automobile Services	-1.3	-7.3	-11.8	-10.4	-7.0	-4.2	-4.1	-4.5
82 Movies and Amusements	-0.7	-3.7	-5.4	-4.5	-2.6	-1.4	-1.5	-1.8
83 Private Hospitals	-0.3	-1.8	-2.9	-2.9	-2.4	-2.3	-2.5	-0.6
84 Physicians	-0.4	-2.0	-3.2	-3.3	-3.0	-3.1	-3.2	-1.0
85 Other Med. Srv. and Dentists	-0.8	-4.6	-9.4	-10.8	-9.4	-7.3	-6.6	-4.1
86 Nursing Homes	-0.4	-2.3	-3.7	-3.9	-3.6	-3.8	-4.2	-2.2
87 Education, Social Services, NPO	-0.8	-5.0	-7.7	-6.9	-4.8	-2.9	-2.7	-3.2
Miscellaneous								
88 Government Enterprises	-0.6	-3.3	-5.4	-5.1	-3.9	-2.5	-2.3	-2.1
89 Government Industry	-0.5	-3.1	-4.8	-4.5	-3.5	-2.5	-2.8	-2.6

Table 6: Long-Term Economic Impact, 2012–2022 (Difference in Industry Employment Compared to the Baseline, Thousands of Jobs)

	2012	2013	2014	2015	2016	2018	2020	2022
1 Agriculture, Forestry and Fisheries	2.1	-18.1	-25.6	-15.3	6.0	27.3	33.7	30.0
Mining	-1.8	-4.6	-5.6	-4.3	0.0	8.4	13.6	19.1
2 Metal Mining	0.1	0.0	0.3	0.8	1.5	2.6	3.1	3.7
3 Coal Mining	-0.4	-1.8	-2.4	-2.1	-1.3	-0.4	-0.2	-0.2
4–5 Crude Petroleum and NG	-1.2	-2.5	-2.4	-1.4	1.1	5.2	9.1	14.4
6 Nonmetallic Mining	-0.3	-0.3	-1.0	-1.7	-1.3	1.0	1.6	1.2
7–8 Construction	-90.1	-90.2	-297.8	-240.2	-104.8	507.4	545.4	276.6
Nondurable Manufacturing	-25.0	-129.3	-233.1	-222.4	-153.0	-50.4	-21.3	-12.6
9 Meat Products	-1.2	-2.5	-1.3	-0.3	1.0	1.8	2.6	2.0
10 Dairy Products	-0.1	0.3	-0.1	-0.7	-0.7	-0.4	-0.3	-0.3
11 Canned and Frozen Foods	-0.2	0.1	0.6	0.4	0.2	-0.4	-0.2	-0.2
12 Bakery and Grain Products	-0.4	-0.1	-0.4	-1.1	-0.5	0.4	1.0	1.2
13 Alcoholic Beverages	-0.1	0.8	0.8	0.2	0.2	0.2	0.4	0.4
14 Other Food Products	-0.4	0.1	0.3	0.3	0.8	0.8	1.2	1.4
15 Tobacco Products	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2
16 Textiles and Knitting	-2.2	-11.5	-19.6	-18.8	-10.7	-2.2	-0.6	-0.6
17 Apparel	-2.2	-27.5	-46.4	-38.4	-30.8	-14.9	-11.5	-11.4
18 Paper	-1.2	-5.1	-20.6	-15.6	-11.2	-1.7	1.5	2.6
19 Printing and Publishing	-13.6	-73.2	-118.2	-113.2	-79.6	-40.0	-31.9	-31.1
20 Agric. Fertilizers and Chemicals	0.0	0.2	0.2	0.1	0.2	0.4	0.5	0.5
21 Plastics and Synthetics	-0.2	-0.4	-0.6	-0.5	0.1	1.4	1.8	1.8
22 Drugs	-0.8	-2.5	-5.4	-6.8	-4.9	-1.8	-0.5	3.7
23 Other Chemicals	-0.7	-1.1	-3.1	-4.8	-3.0	2.6	5.4	6.7
24–25 Petroleum Refining	-0.1	0.0	-0.5	-1.0	-0.7	0.1	0.4	0.4
26 Rubber Products	-0.4	-1.8	-4.4	-4.5	-2.3	0.9	2.0	2.3
27 Plastic Products	-1.1	-4.1	-11.7	-14.8	-9.1	3.7	7.8	8.4
28 Shoes and Leather	-0.2	-1.1	-2.8	-3.0	-2.2	-1.4	-1.0	-0.8

	2012	2013	2014	2015	2016	2018	2020	2022
Durables Materials and Products	-12.2	-49.1	-95.2	-97.0	-40.2	69.7	88.8	80.5
29 Lumber	-3.4	-14.3	-28.8	-28.2	-11.6	12.5	14.1	8.5
30 Furniture	-2.3	-14.8	-28.1	-26.5	-11.2	9.8	11.0	12.8
31 Stone, Clay and Glass	-1.2	-4.9	-13.6	-18.1	-12.1	6.3	10.6	7.4
32 Primary Ferrous Metals	0.2	2.0	1.7	-1.1	-0.1	6.1	8.6	8.9
33 Primary Nonferrous Metals	0.3	2.6	3.5	1.4	1.2	4.2	6.3	7.0
34 Metal Products	-5.8	-19.7	-29.9	-24.5	-6.4	30.9	38.2	35.9
Non-Electrical Machinery	0.9	2.6	-4.1	-7.6	21.4	95.3	117.6	126.5
35 Engines and Turbines	0.1	0.6	0.6	0.1	0.4	1.2	1.9	2.2
36 Ag., CMO, Matl. Handling Equip.	0.9	3.9	5.6	5.4	9.9	22.3	28.3	31.2
37 Metalworking Machinery	0.3	0.2	-1.5	-1.9	4.4	21.8	27.2	28.7
38 Special Industry Machinery	0.3	1.0	0.1	-1.4	0.4	9.2	12.0	12.6
39 Gen. Industrial Machinery	-0.4	0.7	2.0	2.0	4.4	13.6	18.5	20.5
40 Computers	0.0	-2.9	-7.7	-6.2	3.3	15.3	14.6	15.3
41 Office Equipment	0.0	0.1	-0.3	-1.7	-0.4	2.1	2.8	3.0
42 Service Industry Machinery	-0.3	-0.9	-2.9	-4.0	-1.0	9.9	12.4	13.0
Electrical Machinery	-2.8	-13.0	-19.4	-17.4	-3.4	23.6	34.3	37.8
43 Elec. Indust. App. and Dist. Equip.	-0.2	0.0	-0.3	-0.2	1.4	5.2	7.0	7.7
44 Household Appliances	0.0	0.4	0.8	0.8	0.7	0.7	0.9	0.9
45 Elec. Lighting and Wiring Equip.	-0.5	-0.8	-0.6	-0.4	0.5	2.7	3.6	3.6
46 TV, VCR, Radios and Phonographs	-0.3	-1.6	-2.7	-2.4	-1.9	-1.0	0.3	0.5
47 Communication Equipment	-0.5	-2.1	-3.9	-5.0	-3.8	1.0	4.2	4.8
48 Electronic Components	-1.5	-8.9	-12.7	-10.2	-0.3	14.9	18.3	20.4
Transportation Equipment	-7.2	-28.7	-60.6	-51.9	-23.0	21.3	33.7	40.8
49 Motor Vehicles	-2.6	-14.5	-30.9	-23.8	-9.2	14.9	21.5	25.1
50 Motor Vehicle Parts	-0.3	-0.4	-6.5	-2.7	1.4	6.1	5.0	3.9
51 Aerospace	-1.9	-6.0	-8.1	-8.8	-6.4	0.4	6.0	9.4
52 Ships and Boats	-1.8	-4.9	-12.0	-15.9	-12.0	-7.3	-6.7	-6.5
53 Other Transportation Equipment	-0.6	-3.0	-3.1	-0.8	3.2	7.2	8.0	8.8

	2012	2013	2014	2015	2016	2018	2020	2022
Instruments	-1.4	-5.9	-7.9	-6.5	1.0	15.3	19.5	23.5
54 Search and Navigation Equipment	-0.9	-4.1	-7.1	-8.4	-7.2	-3.9	-2.0	-1.2
55 Medical Instruments and Supplies	0.0	1.3	2.6	2.3	2.8	5.7	6.9	8.1
56 Ophthalmic Goods	0.0	-0.2	0.1	-0.2	-0.2	-0.1	-0.1	-0.1
57 Other Instruments	-0.5	-3.0	-3.5	-0.2	5.6	13.6	14.7	16.6
58 Miscellaneous Manufacturing	-0.2	-4.1	-8.6	-8.4	-2.8	6.3	9.3	10.2
Transportation	-28.3	-120.3	-173.0	-157.4	-94.7	-2.2	23.5	25.2
59 Railroads	-0.9	-3.3	-4.1	-3.3	-1.2	1.9	2.6	2.8
60 Trucking, Hwy. Passenger Transit	-16.7	-69.0	-100.1	-90.3	-53.2	1.1	13.3	13.0
61 Water Transport	-1.7	-8.5	-13.0	-11.6	-5.9	2.6	4.7	5.6
62 Air Transport	-7.6	-34.2	-45.2	-38.0	-22.3	-4.1	1.6	1.8
63 Pipeline	0.0	-0.2	-0.3	-0.3	-0.1	0.0	0.1	0.1
64 Transportation Services	-1.4	-5.1	-10.3	-14.0	-12.1	-3.8	1.2	2.0
Utilities	-9.1	-34.5	-56.8	-71.2	-68.5	-36.3	-19.7	-24.3
65 Communications Services	-3.9	-14.4	-28.6	-45.6	-50.3	-26.9	-11.6	-15.8
66 Electric Utilities	-2.9	-11.5	-15.6	-13.8	-10.1	-6.1	-5.7	-6.2
67 Gas Utilities	-0.7	-2.4	-3.6	-3.0	-1.5	0.2	0.5	0.8
68 Water and Sanitary Services	-1.7	-6.2	-9.0	-8.8	-6.5	-3.5	-3.0	-3.0
Trade	-264.9	-1,227.4	-1,806.8	-1,602.8	-1,013.4	-453.7	-389.6	-442.8
69 Wholesale Trade	-25.8	-102.3	-143.2	-109.0	-7.1	143.6	171.9	192.9
70 Retail Trade	-180.2	-870.0	-1,288.2	-1,132.9	-731.7	-383.1	-350.6	-396.6
71 Restaurants and Bars	-58.8	-255.1	-375.5	-361.0	-274.6	-214.2	-211.0	-239.1
Finance, Insurance and RE	-58.1	-263.1	-388.7	-359.9	-249.7	-138.3	-120.6	-126.1
72 Finance and Insurance	-49.0	-222.5	-327.0	-297.3	-207.8	-130.1	-117.8	-123.5
73 Real Estate and Royalties	-9.0	-40.6	-61.7	-62.6	-41.8	-8.3	-2.8	-2.6
74*								

* Sector 74 is Owner-Occupied Housing, which has no employment and is left out.

	2012	2013	2014	2015	2016	2018	2020	2022
Other Services	-319.5	-1,476.2	-2,382.0	-2,286.8	-1,609.0	-856.1	-814.1	-501.2
75 Hotels	-12.6	-54.1	-87.4	-84.4	-62.0	-32.6	-26.8	-26.8
76 Personal and Repair Services	-16.0	-71.6	-105.3	-94.3	-67.8	-41.2	-40.0	-46.6
77 Professional Services	-34.8	-128.7	-186.2	-163.8	-96.5	18.2	40.3	46.2
78 Computer and Data Process	-4.4	-19.8	-40.8	-38.6	7.7	78.3	83.0	96.0
79 Advertising	-1.6	-6.9	-10.0	-8.8	-5.1	-0.7	0.0	0.2
80 Other Business Services	-63.7	-286.1	-436.7	-404.7	-259.6	-65.8	-35.0	-18.2
81 Automobile Services	-17.9	-93.4	-152.3	-135.9	-88.2	-51.4	-49.9	-56.2
82 Movies and Amusements	-10.4	-63.1	-125.1	-92.6	-57.5	-14.1	-13.5	-15.1
83 Private Hospitals	-15.9	-48.2	-64.9	-67.4	-52.1	-61.8	-81.2	26.2
84 Physicians	-7.6	-25.0	-32.9	-35.9	-34.6	-44.4	-49.2	0.6
85 Other Medical Services	-38.0	-193.4	-421.1	-513.6	-459.3	-375.8	-366.7	-214.1
86 Nursing Homes	-9.0	-31.8	-46.6	-53.2	-49.8	-62.0	-74.9	-31.0
87 Education, Social Services	-87.6	-454.0	-672.7	-593.7	-384.2	-202.8	-200.2	-262.4
Private Sector Jobs	-817.8	-3,461.8	-5,565.2	-5,149.1	-3,334.1	-762.3	-446.1	-436.7
Civilian Government	-21.5	-155.3	-193.9	-198.5	-197.6	-183.3	-164.9	-144.4
Federal Defense	-8.8	-38.2	-49.1	-52.8	-52.6	-50.2	-47.0	-45.1
Federal Nondefense	-12.7	-48.4	-62.7	-65.3	-66.2	-60.4	-55.2	-50.4
State and Local	0.0	-68.7	-82.0	-80.4	-78.8	-72.7	-62.7	-48.8
Civilian Jobs	-839.3	-3,617.1	-5,759.1	-5,347.6	-3,531.8	-945.6	-611.0	-581.1
Active Military	-17.8	-77.5	-99.7	-107.3	-106.9	-102.3	-95.9	-92.3
Total Jobs	-857.0	-3,694.6	-5,858.8	-5,454.9	-3,638.6	-1,047.9	-707.0	-673.3

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