Center for American Progress Action Fund

Working Against Economic Headwinds

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Testimony to the Consensus Revenue Hearing

Senate and House Ways and Means Committees
State House
Boston, Massachusetts
December 12, 2011

I. Introduction

The U.S. economic recovery remains weak. Economic growth returned in the middle of 2009, reversing course after the worst recession since the Great Depression, but the economic recovery has been remarkably weak.

U.S. economic growth currently seems insufficient to substantially lower the unemployment rate in 2011 and 2012 because it faces several headwinds.[1] First, consumption growth is comparatively low for this recovery since households are still burdened by crushing debts. Household deleveraging could continue into the second half of this decade, slowing consumption and economic growth, unless income growth accelerates. Second, all governments—federal, state, and local—face large budget deficits, which have already reduced government spending and employment and hence economic growth. Governments at all levels seem poised to continue their spending cuts in key areas, thus further holding back growth in the near term. Additionally the ongoing economic crisis in Europe could slow U.S. exports in the coming years, thus further dampening economic growth.

A number of policy measures are possible to soften the impact of some of these headwinds. Congress is debating measures to raise personal after-tax income, such as lowering the payroll tax and extending unemployment-insurance benefits. But Congress has missed an opportunity to balance short-term challenges to boost economic growth with the need to rein in long-term budget deficits, when the super committee charged with devising a plan to reduce long-term deficits admitted failure just before Thanksgiving. Furthermore, there is little the U.S. government can do to handle the economic crisis that roils Europe. The economic headwinds will remain although some policy steps are possible to lessen the effects of these obstacles to faster economic growth.

Since the crisis began the Massachusetts economy has performed comparatively better than the rest of the country. Its growth has been stronger in the crisis and its unemployment rate has stayed below the national average since the crisis began in 2007. But some of the economic headwinds, especially declining exports to the European Union and defense spending cuts, could have a disproportionate effect on the Massachusetts economy, which depends more heavily on EU exports and on defense spending than the rest of the country.

II. The national economic recovery struggles to maintain momentum

In June 2009 the U.S. economy officially emerged from the worst recession since the Great Depression.[2] Positive economic growth has characterized the economy since then. The economy expanded by a total of $696.7 (in 2005 dollars) between June 2009 and September 2011—the equivalent of an average annualized growth rate of 2.4 percent for these 27 months.[3]

The speed of the recovery, however, has not been fast enough to substantially lower the unemployment rate. The national unemployment rate stood at 8.6 percent in November 2011.[4] The unemployment rate has budged little in 2010 and 2011, even though private employers added 2.9 million jobs between February 2010, when private-sector job growth turned positive, and November 2011.[5]

Economic growth is not fast enough to generate a strong, self-sustaining recovery because of a vicious cycle of high household debt, low consumer demand, and slow investment.[6] Slow job growth keeps households from reducing their crushing debts more quickly. Consumption, thus, stays lower than it otherwise would since households focus on repaying their debts. Businesses are holding back on investment since they can fill the slowing growing orders with much of their existing capacity. The result is economic growth and job creation staying lower than they otherwise would, once again hindering household deleveraging and slowing consumption growth, and putting the economy into a vicious cycle of high debt and slow growth.

Consumption and investment growth held back by massive consumer debt

Consumption is the single largest component of the economy. Consumer spending, outside of spending on owner-occupied housing, makes up about 70 percent of the entire economy.[7] Consumption, however, has grown by only 5 percent in real terms from June 2009 to September 2011. This is the slowest consumption growth for any economic recovery of this length since World War II.[8]

Household debt remains high even though households have undergone an unprecedented period of deleveraging. Households owed a record high 130.2 percent of their after-tax income in June 2007 but only 114.3 percent of their after-tax income in June 2011.[9] This reflects an unprecedented drop in the ratio of debt to after-tax income, but the total debt burden in June 2011 was still higher than at any point before the middle of 2004, dating back to 1952.

Without policy intervention it would take years, perhaps decades, to reach sustainable household debt levels. There is no clear measure of what level of debt will be sustainable. One reasonable threshold may be the point at which debt equals after-tax income again, meaning when the ratio of debt to after-tax income is 100 percent. Another possible threshold for sustainable debt levels may be the average debt level of the late-1990s. The interest rate levels then were comparable to what we can expect in non-crisis times, when economic distress among households was manageable, although often high, and economic growth throughout the period from December 1994 to March 2001 was solid. The average debt to after-tax income ratio for this period was 89.1 percent, and any debt level below this ratio could potentially be considered sustainable. We are far away from any of the thresholds discussed here since the ratio of debt to after-tax income stood at 114.3 percent in June 2011.

Table 1 shows a few simple simulations for possible paths for deleveraging. The simulations use three different scenarios to model the ratio of debt to after-tax income in the future. This ratio in the future will depend on how fast after-tax income and debt will grow. There are three different sets of assumptions for debt growth, but all of them assume that average after-tax income growth rate remains the same across all three scenarios, with an annual growth rate of four percent. There currently is little reason to believe that without sustained policy interventions, which are briefly discussed below, household income growth will accelerate beyond that level.

This 4 percent growth rate is well below the historic average growth rate of 6.8 percent, but it is equal to the slow income growth of the past year, from June 2010 to June 2011.[10] The assumed average debt growth rate is -1 percent in the first example to capture the continuation of rapid deleveraging.[11] The second scenario assumes zero debt growth going forward to capture some easing of credit market conditions in the near term. And the third scenario allows for some debt growth to return by assuming that debt will increase annually by 4 percent, although this debt growth rate is well below the historic average before the crisis of 9 percent.[12]

Table 1 shows that it could take years, if not decades, to reach sustainable debt levels. At the rate of debt declines of the past few years—about 1 percent annually—it will take until June 2016 before the ratio of debt to after-tax income falls again to the average of the 1990s. This is the best-case scenario.

All other scenarios show that it could take a lot longer before household leverage falls to sustainable levels, particularly if debt starts to grow again, even if just modestly.

Table 1
Deleveraging under different income and debt growth assumptions

Assumptions	After-tax income growth	Debt growth	Quarter when debt to after-tax income falls below 100 percent for the first time	Quarter when debt to after-tax income falls below 89.1 percent for the first time
Rapid deleveraging	4.0	-1.0	March 2014	June 2016
Flat debt	4.0	0.0	December 2014	December 2017
Returning debt growth	4.0	3.0	December 2024	September 2036

Notes: All figures are in percent. Sources: Calculations are based on Board of Governors, Federal Reserve System. (2011). Release Z.1 Flow of Funds Accounts of the United States, Washington, DC: BOG and on Bureau of Economic Analysis. (2011). National Income and Product Accounts. Washington, DC: BEA.

The bottom line of these simple calculations is that consumers are clearly struggling with their debt. They are doing whatever is necessary to reduce their debt burden: repaying debt, defaulting on their credit cards, and letting banks foreclose on their homes. Even with these massive efforts sustainable debt levels are years away. Consumption and investment growth will stay subdued until then unless policy steps in to accelerate deleveraging, such as through faster income growth in the form of more infrastructure jobs, temporary decreases in the payroll tax, and higher unemployment-insurance benefits.

Government budgets put a drain on economic and job growth

All three levels of government—federal, state, and local—put a drag on economic growth in 2011. Federal government spending on consumption and investment sharply dropped at the end of 2010 as large parts of the American Recovery and Reinvestment Act of 2009 came to an end. Federal government spending gradually increased throughout much of 2011, but inflation-adjusted federal spending in September 2011 was still less than a year earlier.[13] Federal government spending hence played substantially less of a role in supporting the economy in 2011 than in 2009 and 2010.

The federal government, however, lent a helping hand through a temporary reduction of the payroll tax for employees by 2 percentage points and through the continuation of extended unemployment-insurance benefits in 2011. Both temporary measures are set to expire on December 31, 2011, unless Congress acts to extend them. Most proposals for a temporary payroll tax holiday would limit the extension to 2012, but would increase the tax break from 2 percentage points to 3.1 percentage points for employees. No final decision has been reached yet and there is also no decision on the continuation of extended unemployment-insurance benefits.

The end of the payroll tax holiday and the extended unemployment-insurance benefits would pose a substantial drag on the economy in 2012. Several experts—PIMCO, Goldman Sachs, and Moody's economy.com—had initially estimated in 2010 that the payroll tax holiday and the continued unemployment-insurance benefits would boost economic growth in 2011 by about 1 percentage point, with some additional ripple effects from the personal income boosts in 2012 as households continue to spend the extra money next year.[14] Similarly, experts estimate that the end of the payroll tax holiday and the extended unemployment-insurance benefits would slow economic growth by about half a percentage point in 2012 (Table 2).

Table 2
Select growth projections with and without the bipartisan tax agreement

	GDP growth projection with tax agreement (in 2012)	GDP growth projection without tax agreement (in 2012)
Blue Chip economic consensus forecasts	+ 2.1%	n.a.
Goldman Sachs	+ 2.1%	+ 1.5%
NABE; Economy.com	+ 2.4%	+ 1.9%

Sources: National Association for Business Economics. (2011). Below Trend Recovery Continues, Hindered by Policy Uncertainty. November 21. Washington, DC: NABE. Goldman Sachs Global Economics. (2011). A Less Friendly World: Cutting our Global Forecasts. Global Viewpoint, Issue 11/11. August 5. New York, NY: GS. Swiss Life Asset Management. (2011). Global Economic Scenario, December 2011. Zurich, Switzerland: Swiss Life Asset Management AG. Weisenthal, J. (2011). Goldman Explains Why A Payroll Tax Hike Just Got More Likely. Business Insider, November 22. Accessed on December 8, 2011 at http://www.businessinsider.com/goldman-on-the-payroll-tax-cut-extension-2011-11#ixzz1fxn61wVc.

Changes in federal tax and spending have reduced benefits to economic growth in 2011 and could further slow economic growth in 2012 if Congress doesn't act.

The long-term fiscal picture could pose additional challenges to economic growth after 2012. The Joint Select Committee on Deficit Reduction, also known as the super committee, was supposed to arrive at a proposal to reduce the federal budget deficit by November 23, 2011. The committee admitted failure on November 21, 2011, and thus missed a key opportunity for Congress to balance competing priorities through federal spending and tax policy. Temporary federal spending and tax measures have helped to strengthen the economy as it came out of the worst recession since the Great Depression, but their continued support is in doubt now. The longer-term challenges for the federal government include more infrastructure investments in schools, roads, and bridges, among others; making the tax code simpler and fairer; reining in health care inflation; and reducing the long-term structural budget deficits.

The failure of the super committee means that Congress does not address these challenges now, but rather will have to take them up in the future. This has two implications for economic growth. First, the uncertainty over future congressional actions on spending and taxes could create uncertainty among consumers and businesses and delay spending and investment. Economists, for instance, attributed part of the economic slowdown in the spring and summer of 2011 to the uncertainty created by the political stalemate over an increase in the federal debt ceiling—the amount the federal government can borrow without additional approval from Congress. Second, the failure of the super committee meant that federal spending would be subject to automatic across-the-board cuts equal to $1.2 trillion for the next decade, starting on January 1, 2013. Half of these cuts will come from defense spending and the other half from non-security discretionary spending such as education.[15] The default cuts that went into effect when the super committee declared failure, hence do not balance spending cuts and revenue increases, and they do not balance competing needs of the economy.

These federal government changes could add to the drag that state and local government spending pose for economic growth. State and local governments have experienced atypically large and unusually long periods of budget deficits. Spending by state and local governments fell slightly during the recession with an average annual decline of -0.4 percent from December 2007 to June 2009.[16] But, this decline accelerated to an annual average decrease of -2.1 percent from June 2009 to September 2011.[17]

Analysts expect that state and local government spending will continue to decline further in 2012. Forty states projected budget gaps of a combined $113 billion for 2012.[18] The resulting enacted budgets for fiscal year 2012, which started on July 1, 2011, show that 37 out of 44 states with budgets by the end of July 2011 would reduce their spending in inflation-adjusted terms below the spending levels of 2008, their last budgets that were enacted before the crisis.[19] The spending cuts typically come to K-12 education, higher education, and health care, in addition to a number of other essential services.[20,21]

The crisis among state and local governments puts an added drag on total consumption as governments lay off many public employees. State and local governments reduced their employment by 435,000 between February 2010 and October 2011, as private-sector employment grew again.[22] These layoffs put added pressure on the private sector to create enough jobs to generate a strong, self-sustaining recovery. State and local government employment will likely to continue to decline as most states have already enacted cuts to key spending areas, especially education and health care.

European economic crisis threatens to weaken U.S. export growth

The final headwind to U.S. economic growth comes from the European economic crisis's effect on U.S. exports.[23] U.S. exports averaged 12.8 percent of gross domestic product, or GDP, from June 2009 to September 2011.[24] 47 percent of economic growth during this period came from U.S. export growth.[25] Moreover, U.S. goods exports to the European Union accounted for 18.7 percent of all U.S. goods exports in 2010 and 18.1 percent from January to September 2011.[26]

The lingering European debt crisis that first affected Greece and now threatens to spread to other parts of the continent could slow U.S. export and U.S. economic growth through two mechanisms. First, the growing weakness in Europe could translate into a stronger U.S. dollar relative to the euro, which would make U.S. exports to Europe more expensive (and imports less expensive). The dollar has already risen 8.3 percent compared to the euro from July 2011 to December 2011.[27] U.S. exports to Europe are hence becoming more expensive and should slow down. Second, the European crisis is already slowing economic growth in Europe, which also slows demand for U.S. products.

The possible slowdown in U.S. exports to Europe is especially problematic since the U.S. economy still imports more than it exports. The U.S. trade deficit—the difference between U.S. exports and U.S. imports—stood at a relatively high 3.7 percent of GDP in September 2011, up from its latest trough of 2.4 percent in June 2009.[28] That is, U.S. imports have been outpacing U.S. exports and therefore putting a drag on U.S. economic growth during the recovery since June 2009. Stronger U.S. exports are the primary means to overcome this obstacle to faster growth, but the European crisis currently dampens U.S. export growth.

Massachusetts in stronger position to weather headwinds

The growth experience of Massachusetts since the start of the last business cycle, after 2000, differs from the national economy in two ways. (see Table 3) First, economic growth was generally weaker in the aggregate in Massachusetts during the last business cycle, from 2001 to 2007, than for the country as a whole. Some of this difference can be explained by slower population growth, as the calculations in Table 3 show. The differences in per capita growth are always smaller than the differences in aggregate growth. Still, the Massachusetts economy grew more slowly between 2002, the year after the last recession ended, and 2006, the year before the financial crisis hit, than the rest of the country.

Second, the recent differences in economic growth in Massachusetts and the rest of the country largely reflect differences in the housing market, which drove the boom and the subsequent crisis. Housing prices started to decline in Massachusetts in 2005, about a year earlier than in other parts of the country.[29] House prices in Massachusetts reached their highest level in December 2005, while the rest of the country continued to experience gains through June 2007.[30] The run-up in house prices in Massachusetts was also faster up to peak levels than was the case for the rest of the country: House prices in Massachusetts grew a total of 56 percent from March 2001 to December 2005, while the U.S. average house price rose only 52 percent over a longer period, from March 2001 to June 2007.[31] Moreover, house prices in Massachusetts leveled off in 2010, while they continued to fall for much of the rest of the country. This housing and economic crises were hence slightly less severe in 2007 and thereafter in Massachusetts than it was for the rest of the country.

Table 3
Real economic growth, Massachusetts and the United States, 2001 to 2009

	Real GDP growth			**Real per capita GDP growth**		
Year	Mass.	United States	Difference (Mass. – United States)	Mass.	United States	Difference (Mass. – United States)
2001	2.4	1.3	1.1	1.8	0.3	1.5
2002	0.1	1.7	-1.6	-0.2	0.8	-1.0
2003	1.5	2.1	-0.6	1.4	1.3	0.1
2004	2.0	3.4	-1.4	2.2	2.5	-0.3
2005	1.1	2.8	-1.7	1.3	1.9	-0.6
2006	1.5	2.7	-1.2	1.4	1.7	-0.3
2007	2.0	2.1	-0.1	1.5	1.0	0.5
2008	1.2	0.1	1.1	1.0	-1.3	2.3
2009	-1.6	-2.1	0.5	-4.0	-3.3	-0.7
2010	4.2	2.6	1.6	3.6	1.7	1.9

Notes: All figures are in percent. Growth rates are based on real GDP in 2005 dollars. Source is Bureau of Economic Analysis, 2011, Gross Domestic Product by State, Washington, DC: BEA.

The Massachusetts economy has weathered the crisis better than many other states, which is, for example, evident in a Massachusetts unemployment rate that is significantly lower than the national unemployment rate. The unemployment rate in Massachusetts was 7.3 percent in October 2011, well below the 9.1 national rate at the time. The Massachusetts unemployment rate has in fact been below 8 percent since April 2011, while the national unemployment rate stayed at or above 9 percent until November 2011.[32]

The bottom line is that Massachusetts is in a somewhat stronger position than many other parts of the country to weather the economic headwinds that could transpire in the coming years.

Some economic headwinds may be stronger for Massachusetts than for the rest of the country

Massachusetts, however, is also more likely to feel parts of the economic headwinds more than other parts of the country. This is true for a slowdown of exports to Europe. Massachusetts exports slightly less than the rest of the economy since exports accounted for 6.9 percent of the Massachusetts economy in 2010, compared to an export share of 8.8 percent of GDP for the entire United States in 2010.[33] But exports to the European Union amounted to 35.6 percent of all Massachusetts exports in 2010, compared to a national average of only 18.7 percent.[34] Any slowdown of economic growth and increases in the value of the U.S. dollar against the European currencies, particularly the euro, could have a disproportionate effect on Massachusetts.

Similarly, Massachusetts receives a slightly above-average share of federal defense spending dollars. Total defense spending dollars for Massachusetts amounted to $16.6 billion in 2009, or 4.6 percent of GDP, compared to an average of 3.8 percent of GDP for the entire country.[35] The gap is in fact somewhat larger than these numbers indicate since the Massachusetts economy performed slightly better in 2009 than the rest of the country, thus reducing the share of defense spending in Massachusetts compared to the rest of the United States. The bottom line again is that Massachusetts is more vulnerable than the rest of the country to potential across-the-board cuts to defense that could be enacted as a result of the super committee's failure to reach a deficit reduction deal.

III. Conclusion

The economic recovery in the United States is in its third year, but economic growth has generally been too slow to substantially lower the unemployment rate. The Massachusetts economy is in a somewhat stronger position, largely because the boom was less pronounced than in the rest of the country and since the housing crisis started in Massachusetts earlier than elsewhere. Massachusetts's economic growth has been somewhat stronger than U.S. economic growth and the Massachusetts unemployment rate has been lower than the national average during and after the crisis of 2007 to 2009.

Several obstacles to faster growth either remain in place or are gaining some strength at this time. Households, for instance, are still struggling with massive amounts of debt, governments are trying to get a handle on their deficits by cutting key services in education and health care, and the ongoing European debt crisis may slow U.S. exports to the European Union.

Some of these obstacles may disproportionately affect Massachusetts. The Bay State depends more heavily on federal defense spending than the rest of the country and the Massachusetts economy relies disproportionately on exports to the European Union.

Federal policy decisions that could affect overall economic growth are thus of particular importance to the Massachusetts economy. These policy decisions include a potential extension of a temporary payroll tax holiday for 2012 and a temporary continuation of extended unemployment-insurance benefits for 2012. Both measures would boost after-tax incomes for American households and thus allow for faster deleveraging, larger increases in consumption, and faster business investment growth than otherwise would be the case.

Federal policymakers can continue their negotiations over measures to reduce the long-term structural federal budget deficits before automatic spending cuts are scheduled to go into effect on January 1,

2013. The goal of such negotiations should be to strengthen economic growth in the short-run, invest in America's infrastructure for the long-term, and to reduce the long-term structural deficits through a balanced approach of revenue increases and spending cuts. There is tremendous doubt, however, on whether Congress will be able to reach a far-reaching budget deal in an election year. The outlook for economic growth in Massachusetts hence remains fraught with uncertainty.

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[1] This testimony does not address the large oil price swings that have affected economic growth in 2011 and preceding years. Large oil price volatility indeed adversely affects consumer and business spending, but it has been a longer-term phenomenon that dates back to 2004. That is, there is no expectation that oil price volatility will be greater in the coming years than it has been in recent years. The economic outlook from many sources likely already incorporates the adverse effect of high oil price volatility. See Christian Weller and Jaryn Fields, "Not Again: The Summer Gas Price Roller Coaster on the Move Again" (Washington: Center for American Progress, 2011) on a detailed discussion of high oil price volatility on consumption, investment, and growth.

[2] National Bureau of Economic Research, "Announcement of June 2009 business cycle trough/end of last recession" (Cambridge, MA: 2010)

[3] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts" (Washington: 2011).

[4] Bureau of Labor Statistics, "Current Population Survey" (Washington: 2011)

[5] Author's calculations based on Bureau of Labor Statistics, "Current Employment Statistics."

[6] See Christian Weller, "Unburdening America's Middle Class: Shrinking Families' Debt Burden Faster is Imperative for Strong, Sustained Economic Growth" (Washington: Center for American Progress, 2011) for a detailed discussion of the links between household leverage, consumption, and business investment.

[7] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts" (Washington: 2011)

[8] Ibid

[9] Author's calculations based on Board of Governors, Federal Reserve System, "Release Z.1 Flow of Funds Accounts of the United States" (Washington: 2011)

[10] After-tax income growth calculated based on Bureau of Economic Analysis, "National Income and Product Accounts." Long-term average growth rate is the growth rate from March 1952 to December 2007, the last quarter before the Great Recession.

[11] Debt growth calculated based on Board of Governors, Federal Reserve System, "Release Z.1 Flow of Fund Accounts of the United States."

[12] Debt growth calculated based on Board of Governors, Federal Reserve System, "Release Z.1 Flow of Fund Accounts of the United States." Long-term average growth rate is the growth rate from March 1952 to December 2007, the last quarter before the Great Recession.

[13] Bureau of Economic Analysis, "National Income and Product Accounts."

[14] See Jennifer Alban, "PIMCO ups U.S. economic growth forecast on tax deal," Reuters, December 9, 2010, available at http://www.reuters.com/article/2010/12/10/pimco-gdp-forecast-idUSN0927461320101210; David Leonhardt, "Zandi on the 2012 problem," Exonomix blog, *The New York Times*, December 10, 2010, available at http://economix.blogs.nytimes.com/2010/12/10/zandi-on-the-2012-problem/

[15] Richard Kogan, "How the Automatic Across-the-Board Cuts in the Budget Control Act Will Work" (Washington: Center on Budget and Policy Priorities, 2011)

[16] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts."

[17] Ibid

[18] Elizabeth McNichol, Phil Oliff, and Nicholas Johnson, "States continue to feel recession's impact" (Washington: Center on Budget and Policy Priorities, 2011)

[19] Erica Williams, Michael Leachman, and Nicholas Johnson, "State Budget Cuts in the New Fiscal Year Are Unnecessarily Harmful: Cuts Are Hitting Hard at Education, Health Care, and State Economies" (Washington: Center on Budget and Policy Priorities, 2011)

[20] Ibid

[21] Further planned state spending cuts for fiscal year 2012 also mean that most states do not expect budget gaps and spending overruns. But a slowing economy due to unexpected problems, such as the European debt crisis, and a failure of the federal government to extend temporary tax and transfer measures and to slow payments to the states could translate into widening budget gaps for fiscal year 2012 and beyond. See National Conference of State Legislators, "State Budget Update: Fall 2011" (Washington: 2011)

[22] Bureau of Labor Statistics, "Current Employment Statistics" (Washington: 2011)

[23] See Sabina Dewan and Christian Weller, "When Europe's Sovereign Debt Crisis Hits Home: How the European Crisis Will Affect the United States" (Washington: Center for American Progress, 2011) for a discussion of the economic linkages between the U.S. and European economies.

[24] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts."

[25] Ibid
[26] Author's calculations based on U.S. Census, "Foreign Trade. Historical Statistics" (Washington, DC: 2011)
[27] Author's calculations based on Board of Governors, Federal Reserve, "Release H.10 Foreign Exchange Rates."
[28] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts."
[29]Author's calculations based on Federal Housing Finance Agency, "House price index" (Washington: 2011)
[30] Ibid
[31] Ibid
[32] Bureau of Labor Statistics, "Current Population Survey" (Washington: 2011)
[33] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts."; Bureau of Economic Analysis, " State Gross Domestic Product" (Washington: 2011); and Massachusetts Small Business Development Center Network's Massachusetts Export Center, "WISERTrade State HS Database" (Boston, MA: 2011)
[34] Ibid
[35] Author's calculations based on Bureau of Economic Analysis, "National Income and Product Accounts."; Bureau of Economic Analysis, "Gross Domestic Product by State" (Washington: 2011); and U.S. Census Bureau, "The 2012 Statistical Abstract" (Washington: 2011)