

Worcester Economic Indicators

First Quarter 2014

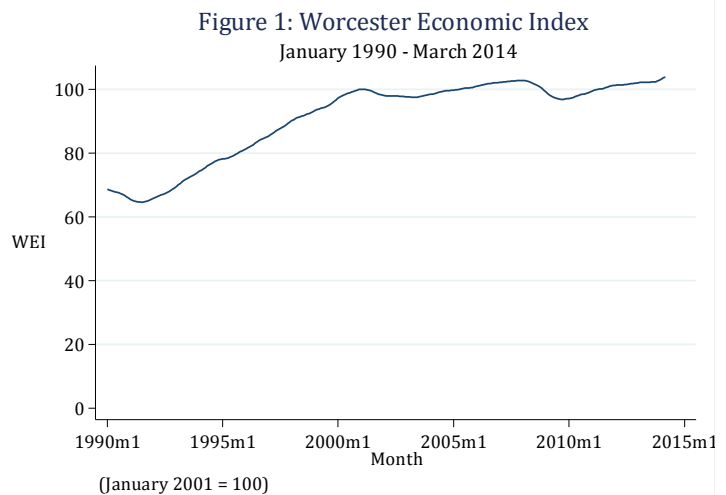
This report can be accessed online at:

<http://www1.assumption.edu/worcester-economic-indicators-project/>

Local Economy Picks Up in First Quarter *Employment data points to a growing economy*

Worcester Economic Index

The Worcester Economic Index (WEI) increased at a 3.9% annual rate during the first quarter of 2014. The WEI, which was initially released in February 2014, is estimated using Bureau of Labor Statistics data for the Worcester NECTA. The three variables used to estimate the WEI are total nonfarm payroll employment, total household employment, and the unemployment rate. During the first quarter of 2014, all three of these variables moved in a positive direction leading to the increase in the index. On a seasonally adjusted basis, payroll employment rose 0.5%; household employment increased 1.7%; while the local unemployment rate fell to its lowest level since 2008, near the start of the Great Recession.ⁱ Figure 1 shows the estimated WEI going back to 1990.



The recent 3.9% increase in the WEI is substantially higher than the revised 2.0% increase experienced during the fourth quarter of 2013.ⁱⁱ Table 1 shows the Worcester Economic Index over the past 13 months, its month-to-month change, and quarterly growth rate. While the WEI is calculated on a monthly basis it is best not to read too much into changes in any single month, but rather examine how the index has changed over the past 3-6 months. As the table shows, after a stagnant second quarter of 2013, the WEI has been showing increasing growth since that time. Over the last two quarters the index has increased at a combined annual rate of about 3.0%.

Worcester Economic Outlook

Looking forward, the WEI is expected to continue its above trend growth in the coming months. Based on the recent path of the WEI as well as four leading indicators of the national economy, the WEI is expected to grow by about 3.3% over the second and third quarters of 2014.

Table 1
Worcester Economic Index (WEI)
March 2013 – March 2014

Month	Worcester Economic Index	Change from previous month	Quarterly Growth Rate, Annualized
March 2013	102.2	0.0	1.2%
April 2013	102.2	0.0	
May 2013	102.2	0.0	
June 2013	102.2	0.0	0.0%
July 2013	102.2	0.0	
August 2013	102.3	0.1	
September 2013	102.3	0.0	0.4%
October 2013	102.3	0.0	
November 2013	102.5	0.2	
December 2013	102.8	0.3	2.0%
January 2014	103.2	0.4	
February 2014	103.5	0.3	
March 2014	103.8	0.3	3.9%

Table 2 shows this growth forecast broken down into 6 components. The first component is the long-run trend growth of the WEI which has been about 1.2% on an annual basis. The values associated with the other components can be interpreted as the amount that they push the WEI above or below trend. Looking at the average of the first quarter 2014 forecasts we see that the recent uptick in growth of the WEI is the primary contributor to the above trend forecast over the coming months. Past values of the WEI are included in the model because economies tend to exhibit momentum and therefore recent economic performance is a strong indicator of future performance. In addition, the Leading Credit Index continues to indicate that credit conditions are favorable for economic growth, as does the interest rate spread. The index of consumer expectations and the performance of the S&P 500 are not significant factors in the forecast for above trend growth in the coming months.

Table 2
Breakdown of Projected Growth of WEI
6-month growth forecast, annualized basis

Component	March 2014	Quarter 1 Average
Trend	1.2%	1.2%
Consumer Expectations	0.3%	0.1%
S&P 500	0.1%	0.0%
Interest Rate Spread	0.2%	0.2%
Leading Credit Index™	0.6%	0.6%
WEI	0.5%	1.1%
Total	2.9%	3.3%

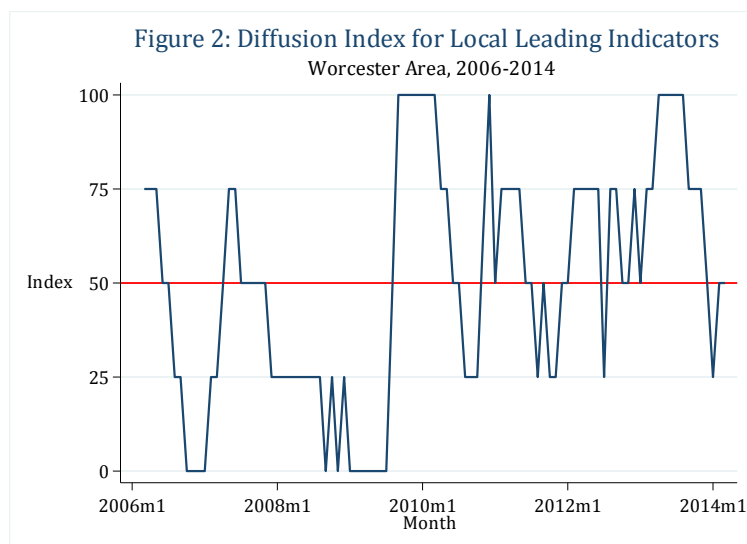
Components may not add to total due to rounding.

As a complement to the forecast growth of the WEI, four other leading indicators are tracked in order to further gauge the direction of the Worcester economy. Unlike the leading indicators utilized in the forecast of the WEI, each of these four indicators is specific to the local economy. The first local leading indicator is initial unemployment claims for the Worcester regionⁱⁱⁱ, an increase in which may signal a drop off in economic activity. Unfortunately, this indicator has been unavailable since June 2013 due to changes in the way the Massachusetts Office of Labor and Workforce Development collects and disseminates data. As a proxy for the missing local data, state level initial unemployment claims^{iv} are used to estimate the diffusion index. The index will be recalculated with local data once it becomes available. Since 2010, the number of initial claims in Massachusetts has in general been falling as the state slowly recovered from the recession. Over the last

six months that trend has continued and now initial claims are near pre-recession levels after adjusting for seasonal variation.

The second indicator is the amount of online help-wanted advertising for the Worcester area.^v Over the past two quarters the amount of online help-wanted ads has been increasing which is a positive indicator of future hiring and employment. The third leading indicator is the number of new business incorporations in the local area.^{vi} Incorporations fell dramatically during the latter part of 2013, and while they have increased during the first three months of 2014 they are still below mid-2013 levels. The final local lead indicator is the value of new residential building permits.^{vii} Over the past 6 months there has been a decline in the value of newly issued building permits suggesting that new construction activity is slowing down.

In order to summarize the information provided by the local leading indicators a diffusion index is calculated. A diffusion index summarizes how many of the leading indicators are providing positive signals of the direction of the economy.^{viii} The maximum value that a diffusion index can take on is 100. A diffusion index above 50 suggests a growing economy, while an index of less than 50 indicates the leading indicators are on balance pessimistic. After being at or above 50 for all of 2013, the 6-month diffusion index of the four local indicators fell to 25 in January 2014 before moving to 50 in February and March, providing a neutral signal on the direction of the economy.



As discussed above, initial unemployment claims (MA) and online help-wanted ads have been providing a positive signal while new business incorporations, and the value of building permits declining in recent months. Local data series can be very volatile over short periods of time and therefore it is important assess the diffusion index over several months or quarters. Figure 2 shows the six-month diffusion index for the Worcester region since 2006.

To review, the Worcester Economic Index (WEI) indicates that the local economy picked up steam during the first quarter of 2014, growing at an annual rate of about 3.9%. Over the next six months, the WEI is projected to grow at about 3.3% based on a model that uses four national leading indicators and the WEI to forecast changes from trend growth. The diffusion index of local leading indicators is not providing a clear positive or negative signal at this time.

The next Worcester Economic Indicators report will be issued in early August 2014. Additional information about this project is available at:

<http://www1.assumption.edu/worcester-economic-indicators-project/>.

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ⁱ Bureau of Labor Statistics. Payroll employment is obtained from the State and Area Employment Database (SAE) of the BLS. Household employment and the unemployment rate is obtained from the Local Area Unemployment Database (LAU) of the BLS. All employment data is for the Worcester NECTA which consists of the city of Worcester as well as 39 surrounding towns located in south central Massachusetts and northeastern Connecticut. Nonfarm payroll employment is available on a seasonally-adjusted from the BLS. Unfortunately, the BLS only provides household employment and the unemployment rate only on a not seasonally adjusted basis, so those data series are adjusted for seasonal variation using the X-12 ARIMA program developed by the U.S. Census Bureau.

ⁱⁱ Recent estimates of the WEI will be revised with each release. This is due to both revisions to the underlying data as well as the methodology utilized to estimate the index. The WEI is based on the methodology developed by Stock & Watson (1989), and employed by Clayton-Matthews & Stock (1998/99), Crone & Clayton-Matthews (2005), and Tebaldi & Kelley (2012) to estimate an index of the underlying economy using a state-space model. An explanation of how these methods were utilized for this project is available at:

<http://www1.assumption.edu/worcester-economic-indicators-project/>.

ⁱⁱⁱ Massachusetts Department of Employment and Training

^{iv} United States Department of Labor

^v The Conference Board Help Wanted Online® (HWOL)

^{vi} Secretary of the Commonwealth of Massachusetts

^{vii} U.S. Census Bureau, Building Permits Survey

^{viii} For a description of the methodology used to calculate a diffusion index go to: <http://www.conference-board.org/data/bci/index.cfm?id=2180>