

# Worcester Economic Indicators

Second Quarter 2014

This report can be accessed online at:

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

## *Growth Accelerates in the Second Quarter*

*Positive employment data leads to rise in WEI*

### Worcester Economic Index

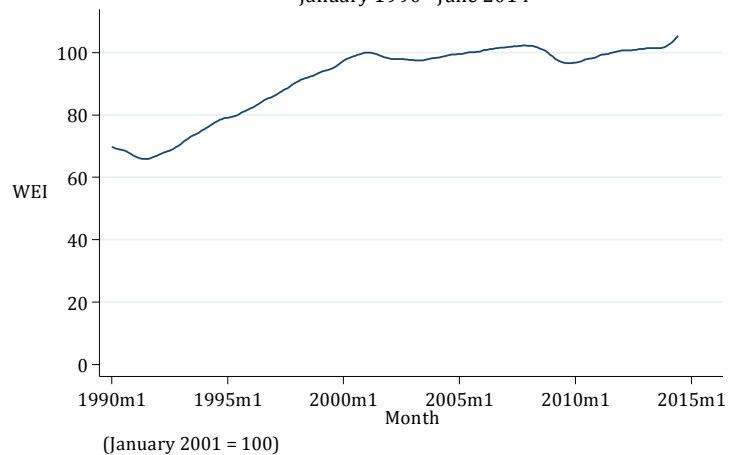
The Worcester Economic Index (WEI) increased at a 7.9% annual rate during the second quarter of 2014. The WEI is estimated using three data series for the Worcester NECTA available from the Bureau of Labor Statistics. The three variables used to estimate the WEI are total nonfarm payroll employment, total household employment, and the unemployment rate. During the

second quarter of 2014, all three of these variables showed improvements in the labor market which brought about the increase in the index. Both the payroll employment and household employment surveys indicate substantial increases in the number of people with jobs in the area. On a seasonally adjusted basis, payroll employment rose 1.8% during the quarter while household employment increased 1.5%. This

coincided with the continued decline in the local unemployment rate, which fell to 5.7% in May (not seasonally adjusted). The uptick in the unemployment rate to 6.1% in June can be explained by seasonal variation as students enter the labor force seeking summer employment. After taking into account seasonal effects the unemployment rate was roughly level from May to June, but fell over 1 percentage point since the start of the quarter.<sup>1</sup> Figure 1 shows the estimated WEI going back to 1990.

The declining unemployment rate was a major contributor to the rise in the WEI. Most of the fall was due to people finding jobs as revealed by the payroll and household employment numbers. However, part of the decrease in the unemployment rate can be attributed to a decline in the labor force that occurred in April of this year. As the economy

Figure 1: Worcester Economic Index  
January 1990 - June 2014



adds jobs, those potential employees who had left the labor force are likely to return, which will temper further reductions in the unemployment rate.

The 7.9% increase in the WEI during the second quarter builds on the revised 5.2% growth estimate for the first quarter of 2014.<sup>ii</sup> 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 longer periods of time. As the table shows, the WEI has been increasing at an increasing rate over the past year. Since June 2013, the WEI has increased about 3.8%, with the majority of that growth coming during the first two quarters of 2014.

**Table 1**  
**Worcester Economic Index (WEI)**  
**June 2013 – June 2014**

Month	Worcester Economic Index	Change from previous month	Quarterly Growth Rate, Annualized
June 2013	101.4	0.0	0.0%
July 2013	101.4	0.0	
August 2013	101.4	0.0	
September 2013	101.5	0.1	0.4%
October 2013	101.5	0.0	
November 2013	101.7	0.2	
December 2013	102.0	0.3	2.0%
January 2014	102.5	0.5	
February 2014	102.9	0.4	
March 2014	103.3	0.4	5.2%
April 2014	103.9	0.6	
May 2014	104.7	0.8	
June 2014	105.3	0.6	7.9%

## Worcester Economic Outlook

Looking forward, the WEI is expected to continue above trend growth in the coming months, but it is unlikely to continue growing at the rate experienced during the second quarter. 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 5% on an annualized basis over the third and fourth quarters of 2014.

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 represent the amount that each contributes to the forecast for the WEI being above or below trend. Looking at the average of the second quarter 2014 forecasts we see that the recent 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

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

Component	June 2014	Quarter 2 Average
Trend	1.2%	1.2%
Consumer Expectations	0.1%	0.1%
S&P 500	0.0%	0.1%
Interest Rate Spread	0.2%	0.2%
Leading Credit Index™	0.5%	0.5%
WEI	2.4%	3.5%
Total	4.5%	5.6%

Components may not add to total due to rounding.

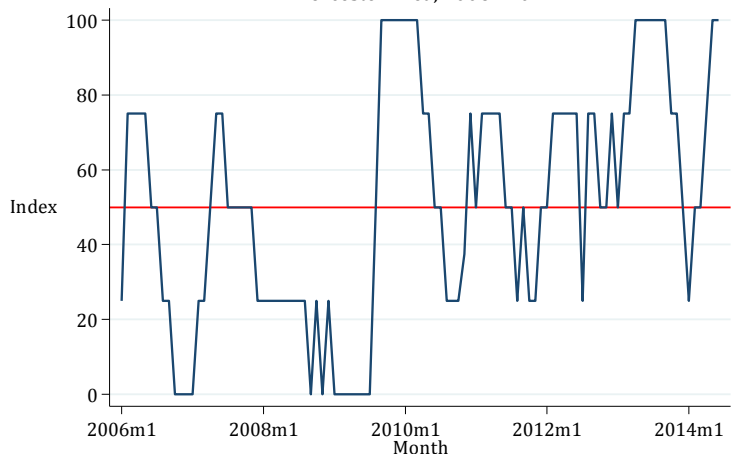
four indicators of the national economy included in the model each make a positive contribution to the estimated growth of the WEI. With credit market conditions as summarized by The Leading Credit Index™ providing the strongest signal of the four.

While the forecast for growth of the WEI makes use of several national leading indicators, there are several local leading indicators that can be considered. One such indicator is the number of initial unemployment claims for Massachusetts.<sup>iii</sup> An increase in initial claims is a signal of declining economic activity because it is usually correlated with layoffs. Over the past several years the number of initial claims in Massachusetts has generally been declining, a sign of a recovering labor market. While May and June of this year saw an increase in initial claims even after taking into account seasonal variation, claims are still down from six-months ago and therefore are still providing a positive signal.

Another indicator is the amount of online help-wanted advertising for the Worcester area.<sup>iv</sup> Since December the number of online help-wanted advertisements has continued to increase which is a positive signal for future hiring. The third leading indicator is the number of new business incorporations in the local area.<sup>v</sup> During the first half of 2014 incorporations are up modestly, which is another positive signal as new businesses may look to hire employees. The final local lead indicator is the value of new residential building permits.<sup>vi</sup> On a seasonally adjusted basis, building permits have been increasing since the start of the year which may indicate new hiring in the construction sector.

In order to summarize the information provided by the local leading indicators, a six-month diffusion index is calculated. A diffusion index summarizes how many of the leading indicators are providing positive signals of the direction of the economy.<sup>vii</sup> 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. The six-month diffusion index of the four local indicators, which was a neutral 50 in February and March, increased to 75 in April and then 100 in May and June. As discussed above, each of the local leading indicators has increased since December 2013 which is why the diffusion index calculates out to be 100. Local data series can be very volatile over short periods of time and therefore it is important to assess the diffusion index over several months or quarters. Figure 2 shows the six-month diffusion index for the Worcester region since 2006. With the exception of January 2014, the index has been at or above 50 for about 2 years. The recent values of the diffusion index are consistent with the growth forecast of the WEI.

Figure 2: Diffusion Index of Leading Indicators  
Worcester Area, 2006 - 2014



To sum up, the Worcester Economic Index (WEI) grew at an annual rate of 7.9% in the second quarter of 2014. The labor market showed strength as the number of people employed increased, and the unemployment rate fell. Over the next six months, the WEI is

projected to continue to grow at an above trend rate based on a model that uses four national leading indicators and the WEI to forecast growth. The diffusion index of local leading indicators is also providing a positive signal for future economic performance.

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

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

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<sup>i</sup> 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.

<sup>ii</sup> 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/>.

<sup>iii</sup> Massachusetts Department of Employment and Training. Initial claims for the Worcester area were originally part of the index, but that data has not been available since June 2013. Since it is desirable to utilize information that is as local as possible, if initial claims for Worcester becomes available in the future the index will be revised to include that data.

<sup>iv</sup> The Conference Board Help Wanted Online® (HWOL)

<sup>v</sup> Secretary of the Commonwealth of Massachusetts

<sup>vi</sup> U.S. Census Bureau, Building Permits Survey

<sup>vii</sup> 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>