

Worcester Economic Indicators

First Quarter 2016

This report can be accessed online at:

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

*WEI grows 1.8% in First Quarter
Moderate pace expected to continue*

Worcester Economic Index

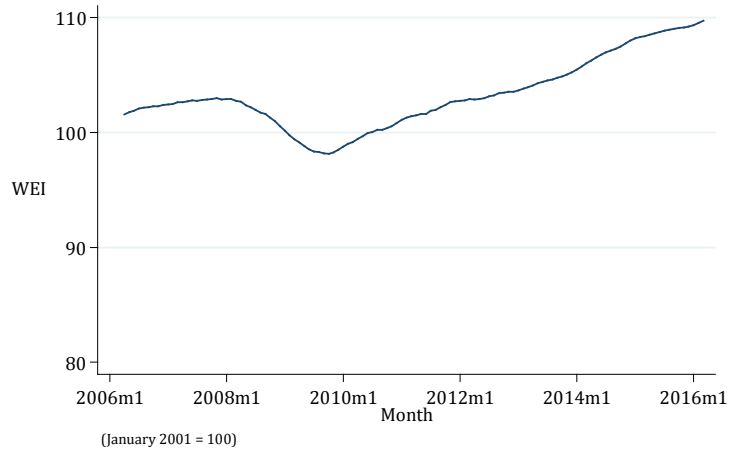
After a sluggish finish to 2015, the Worcester economy grew at a slightly faster pace during the first quarter of 2016. Since December, the Worcester Economic Index (WEI) has increased at a 1.8% annualized rate due to improvements in labor market indicators. The Worcester Economic Index is estimated using Bureau of Labor Statistics (BLS) data on employment and unemployment for the Worcester metropolitan area (NECTA).

According to the BLS Current Employment Statistics Survey, employment in the Worcester area increased by 0.8% over the past year (March 2015-March 2016). While the BLS Current Employment Statistics Survey, estimated an employment increase of 1.2% over the same period. The modest increase in employment combined with a decrease in the estimated size of the labor force lead to a fall in the unemployment rate from 5.6% in March 2015 to 5.0% in March 2016.ⁱ

Table 1 shows the Worcester Economic Index over the past 13 months, its month-to-month change, and quarterly growth rate. Since the Bureau of Labor Statistics periodically revises its data on employment and unemployment in metropolitan areas, the WEI is re-estimated each quarter using the most current data available. Typically, the re-estimation results in small changes in the index values. However the most recent revisions to the employment data derived from the BLS survey of households showed substantial changes from the previously reported values. As a result the latest estimate of the WEI indicates the local

Figure 1: Worcester Economic Index

March 2006 - March 2016



economy grew at a 0.7% annualized rate during the fourth quarter of 2015, which while still slow is an upward revision from the last issue of *Worcester Economic Indicators*, which reported that the WEI had decreased by 0.7% during that quarter.

Table 1
Worcester Economic Index (WEI)
March 2015 - March 2016

Month	Worcester Economic Index	Change from previous month	Quarterly Growth Rate, Annualized
March 2015	108.3	0.1	1.5%
April 2015	108.4	0.1	
May 2015	108.5	0.1	
June 2015	108.7	0.2	1.2%
July 2015	108.8	0.1	
August 2015	108.9	0.1	
September 2015	109.0	0.1	1.1%
October 2015	109.0	0.0	
November 2015	109.1	0.1	
December 2015	109.2	0.1	0.7%
January 2016	109.3	0.1	
February 2016	109.5	0.2	
March 2016	109.7	0.2	1.8%

As discussed in past reports, there is a seasonal component to employment data. Typically there is an upswing in employment during the last few months of the year due to the holiday season which then reverses itself during the first quarter of the next year. Adjusting data for seasonal effects helps isolate changes in the underlying economy from regular seasonal trends. Table 2 shows the not seasonally adjusted data provided by the BLS alongside seasonally adjusted estimates. On a not seasonally adjusted basis, two of the three variables used in the estimation of the WEI are indicating a weakening economy: payroll employment has fallen since December, while the unemployment rate has gone up. However, once seasonal variation is taken into account both payroll employment and the unemployment rate appear to be improving.ⁱⁱ The Worcester Economic Index is based on seasonally adjusted employment and unemployment data which explains why the index has increased during the first quarter of 2016.

Table 2
BLS Employment Estimates
Worcester NECTA, December 2015-March 2016

	Not Seasonally Adjusted			Seasonally Adjusted		
	December 2015	March 2016	Change Mar-Dec	December 2015	March 2016	Change Mar-Dec
Payroll Employment	282,300	278,600	-3,700	279,430	281,112	+1,682
Household Employment	327,758	329,520	+1,762	326,901	329,708	+2,807
Unemployment Rate	4.8%	5.0%	+0.2	5.2%	4.9%	-0.3

Worcester Economic Outlook

Looking forward, the Worcester Economic Index is expected to continue the modest rate of growth experienced during the first quarter of the year. The model used to forecast the WEI relies on four leading indicators of the national economy as well as recent WEI estimates. The March six-month forecast is 1.8%, while the average of the January, February, and March forecasts is 1.3%.

Table 3 shows the growth forecasts broken down into its 6 components. The first component is the long-run trend growth of the WEI which is estimated to be about 1.2% on an annualized basis. The values shown for each of the other components listed in table 3 represent the amount that each component contributes to the WEI being above or below trend.

The consumer expectations indicator currently shows no impact on the WEI forecast in both the March and Quarter 1 forecasts. This indicator which is based on the University of Michigan Survey of Consumer Sentiments has been fairly stable in recent months. While the March estimate of 81.5 is down from the 82.7 figure posted in December that is not enough of a drop to have an impact on the WEI forecast. ^{iv}

Table 3
Breakdown of Projected Growth of WEIⁱⁱⁱ
6-month growth forecast, annualized basis

Component	March 2016	Quarter 1 Average
Trend	1.2%	1.2%
Consumer Expectations	0.0%	0.0%
S&P 500	0.0%	-0.1%
Interest Rate Spread	0.1%	0.1%
Leading Credit Index TM	0.2%	0.1%
WEI	0.3%	0.0%
Total	1.8%	1.3%

Components may not add to total due to rounding.

Changes in the S&P 500 stock index are included in the forecast model as a measure of investor attitudes toward future business conditions. An increase in the S&P 500 may signal an improving economy. The stock market got off to a rough start in 2016, and was down over 10% by early February but since that time has recovered to the point where as of April 29 it was up about 1.0% for the year. This volatility is reflected in the forecast for the WEI. The poor market performance in January and February caused the S&P 500 to act as a drag on the average of the Quarter 1 forecasts, while the rebound since then has been enough so that the S&P 500 is only neutral in the most recent March forecast.

The interest rate spread, which is the difference between the yield on a 10-year Treasury bond and the federal funds rate, is included as a measure of monetary policy. The larger the spread the more growth-oriented the policy. While the Federal Reserve is maintaining a low federal funds rate target, low long-term Treasury rates means the spread is providing only a modest positive impact on the WEI forecast. The 0.1% contribution to above-trend growth has been consistent over the last four quarters.

Conditions in the credit markets, as measured by the Leading Credit IndexTM, continues to provide a positive impact on the WEI forecast. The Leading Credit IndexTM is compiled by The Conference Board each month and is a composite of several financial sector variables that aims to capture credit market conditions in the US.

The final component shown in the table 3 breakdown of the WEI forecast is the WEI itself. The weak WEI performance at the end of 2015 caused the average forecast to be neither above nor below trend, while increases in the WEI since the start of the year causes it to provide a 0.3% contribution to the March forecast.

Local Leading Indicators

Each quarter, *Worcester Economic Indicators* reports include a discussion of three local leading indicators: online help-wanted advertisements, new business incorporations, and state-wide initial unemployment claims. A fourth indicator, new housing permits was originally included in the reports but was dropped after changes in the way the U.S. Census

Bureau gathers permits data made the monthly figures unreliable at the local level. Fortunately, the Census Bureau does release useful annual housing permit data for the Worcester area which are utilized in a discussion on page 5 of the relationship between local, state, and national permit data and construction employment.

As table 4 shows, two of the three local leading indicators are currently offering positive signals on the direction of the economy. Only online help-wanted advertisements is

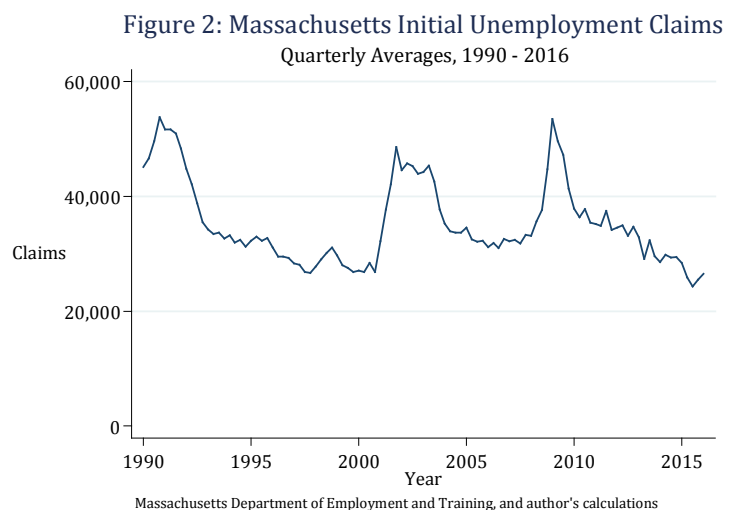
Table 4
Local Leading Indicators
Percentage Change
Quarter 1 2015 to Quarter 1 2016

Indicator	Percent Change	Signal
Online Help Wanted Ads ^v	-21.5%	Negative
New Business Incorporations ^{vi}	27.7%	Positive
Massachusetts Initial Claims ^{vii}	-6.7%	Positive

negative. The number of online help-wanted advertisements is a measure of the demand for labor by employers. It is considered a leading indicator of employment because advertisements usually precede hiring and therefore an increase in help-wanted ads may signal additional employment down the road. The data shows that over the past year there has been a substantial fall in the number of online advertisements for Worcester area employment. On a seasonally-adjusted basis the number of online job openings is down over 21% in the first quarter of 2016 compared to the first quarter of 2015.^v Fewer job openings is a sign that firms are reluctant to hire and therefore is a pessimistic signal for the economy.

On the other hand, new business incorporations are providing a positive signal at this time. Compared to the first quarter of 2015, the number of incorporations is up over 27%.^{vi} An increase in incorporations is considered a positive signal because new businesses may look to hire workers in the near future.

The final indicator is the number of initial unemployment claims in the Commonwealth of Massachusetts. Since the first quarter of 2015 initial claims are down almost 7% statewide. Figure 2 shows the pattern of initial claims for Massachusetts going back to 1990. Currently, claims are near the lowest they have been in the past 25 years. This is a positive signal because it implies fewer people are being laid-off and forced to apply for unemployment compensation.^{vii}



To sum up, the Worcester Economic Index (WEI) increased 1.8% in the first quarter of 2016. The WEI is expected to continue at roughly that pace over the coming six months. In addition, two of the three local leading indicators are providing positive signals about future economic activity.

Construction Employment and Building Permits

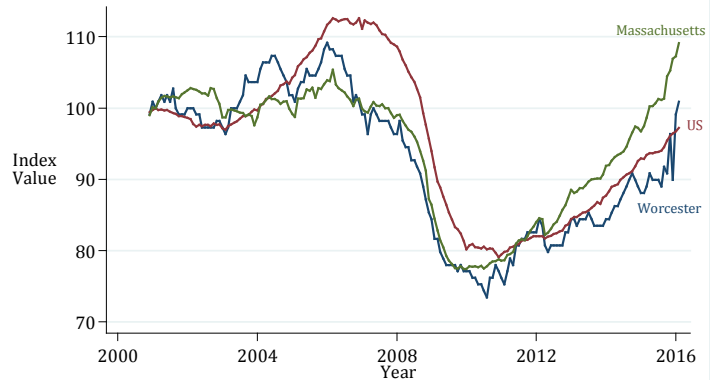
The housing market is closely linked to the overall economy. The housing boom of the last decade contributed to rising spending and incomes, while the subsequent bust helped to bring on the Great Recession. Even though construction employment is typically only 4-5% of total employment, the housing market has a substantial impact on overall economic activity due to spillovers into the home-improvement and home-furnishing industries. In addition, a strong housing market is a signal of overall consumer confidence.

Figure A compares construction employment for the Worcester NECTA to state and national values. It shows that while Worcester did not experience as large of an increase during the 2003-2006 period, it did share in the bust in 2007-2009. And while Massachusetts construction employment has largely recovered, the Worcester region and the nation as a whole have only recently approached pre-recession levels.

New residential housing permits can be a leading indicator of construction employment since a permit is required before builders can break ground on a new home. For the Worcester NECTA, reliable housing permit data is only available on an annual basis which limits its usefulness as a leading indicator since permits typically lead construction by only 1-6 months. Figure B compares total annual housing permits in Worcester, to Massachusetts and US values. Like construction employment, permits fell dramatically in 2007-2008 and have recently bounced back, but Worcester has not seen as much of an upswing as Massachusetts and the nation as a whole.

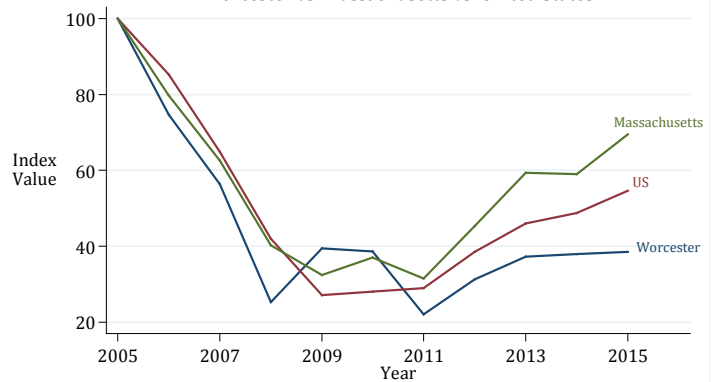
While local data for housing permits is only available annually, the US Census Bureau reports national permits estimates on a monthly basis. Figure C compares national housing permits to construction employment in the Worcester area using 5-month moving averages of the data. Note that US permits reach high and low points about 6-18 months before construction employment in the Worcester area, demonstrating why permits are used as a leading indicator. Since the start of the year, US housing permits are down over 10% (seasonally-adjusted), which would suggest that the recent upswing in Worcester construction employment shown in figure A is not likely to continue in the coming months.

Figure A: Construction Employment since 2001
Worcester vs. Massachusetts vs. United States



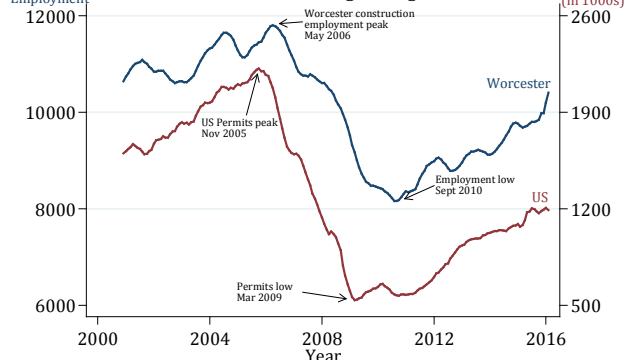
US Bureau of Labor Statistics, Current Employment Statistics
<http://www.bls.gov/sae/data.htm>, <http://www.bls.gov/ces/data.htm>
 Index values calculated by author (March 2001 = 100)

Figure B: Annual Housing Permits since 2005
Worcester vs. Massachusetts vs. United States



US Census Bureau Building Permits Survey
<http://www.census.gov/construction/bps/>
 Index values calculated by author (2005 = 100)

Figure C: Housing Permits and Construction Employment
United States vs. Worcester
5-month moving averages



US Census Bureau Building Permits Survey, <http://www.census.gov/construction/bps/>
 US Bureau of Labor Statistics, Current Employment Survey
 Moving averages calculated by the author

The next Worcester Economic Indicators report will be issued in early August 2016. Additional information about this project is available at:
<http://www1.assumption.edu/worcester-economic-indicators-project/>.

Prepared by:
Thomas White, Ph.D.
Department of Economics & Global Studies
Assumption College
508-767-7556
twhite@assumption.edu
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ⁱ Author's calculations based on data from the 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 48 surrounding towns located in south central Massachusetts and northeastern Connecticut.

ⁱⁱ The BLS data is seasonally adjusted by the author using the X-12 ARIMA program developed by the U.S. Census Bureau.

ⁱⁱⁱ The leading indicators used to forecast the WEI are:

Consumer expectations: From the University of Michigan Survey of Consumer Sentiments.

S&P 500: Monthly closing value of the index.

Leading Credit Index™: The Conference Board's index of credit market conditions.

Interest rate spread: The yield on a 10-year Treasury bond less the federal funds rate.

The above leading indicators are obtained from The Conference Board's Business Cycles Indicators database.

^{iv} University of Michigan, Survey of Consumers, <http://www.sca.isr.umich.edu/>

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

^{vi} Secretary of the Commonwealth of Massachusetts

^{vii} 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.