Worcester Economic Indicators

Fourth Quarter 2017
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WEI grows at 1.0% in Fourth Quarter
Worcester area growth slow, steady

Worcester Economic Index

During the final quarter of 2017 the Worcester area economy continued to grow at a modest pace, slowing slightly from the prior quarter. Since September, the Worcester Economic Index (WEI) has increased at a 1.0% annualized rate which is down from the revised 1.3% rate of the third quarter. The Worcester Economic Index is estimated from Bureau of Labor Statistics employment and unemployment data for the Worcester metropolitan area. According to the Bureau of Labor Statistics Current Population Survey of households, almost 3200 more people had jobs in December 2017 compared to December 2016, while the BLS payroll survey yielded an estimate of 4600 additional jobs over the same period.[i] The growth in these two measures of employment contributed to the growth in the WEI over the past year. The 1.0% fourth quarter growth in the WEI is below the 2.6% advance estimate of U.S. real GDP growth released by the Bureau of Economic Analysis on January 26th.[ii]

Figure 1: Worcester Economic Index
Since January 2007

(January 2001 = 100)

Table 1 shows the Worcester Economic Index over the past 13 months, its month-to-month change, and annualized 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 consider changes in the index over longer periods of time. As the table shows, the Worcester economy started the year slowly, but grew in the 1.0% to 1.5% range during each of the last three quarters. For the year, the Worcester Economic Index finished up about 1.0%, well short of the almost 3.0% growth turned in during 2016.
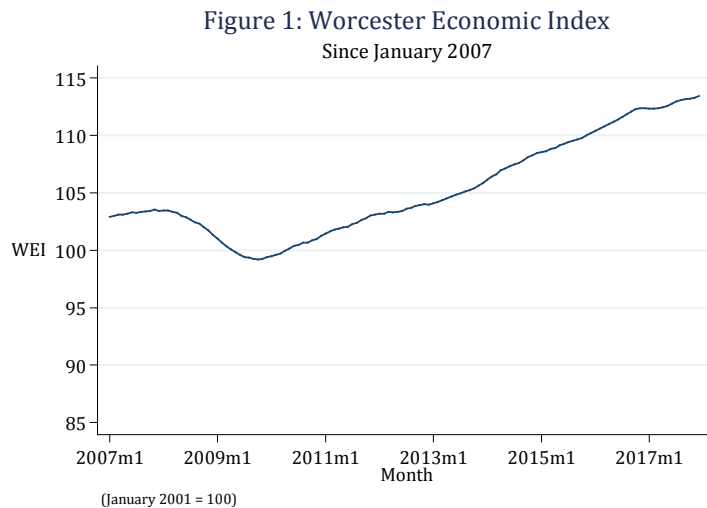
Typically, hiring picks up during the final months of the calendar year and at first glance the Worcester area appears to have followed this pattern during the fourth quarter of 2017. Table 2 shows that household employment was up by 1965, while the unemployment rate fell from 3.7% to 3.3% over the final quarter.[iii] However, these figures are not adjusted for seasonal effects. Adjusting the data to control for seasonal variation yields a less positive picture with household employment down (-1159) and the unemployment rate up (from 3.7% to 3.9%) since September. In addition, while payroll employment increased according to either measure, the increase was smaller for the seasonally adjusted than the not seasonally adjusted data (3000 vs. 4300).[iv] Put another way, the unadjusted data shows increases in employment over the final three months of the year while the adjusted data suggests that those increases were smaller than the normal seasonal upswing. Since the Worcester Economic Index attempts to track the longer term direction of the economy, seasonally adjusted employment and unemployment data are used in its estimation and this quarter's relatively weak numbers lead to the modest 1.0% quarterly growth rate.

Table 1
Worcester Economic Index (WEI)
December 2016 - December 2017

Month	Worcester Economic Index	Change from previous month	Quarterly Growth Rate, Annualized
December 2016	112.3	0.0	1.0%
January 2017	112.3	0.0	
February 2017	112.3	0.0	
March 2017	112.4	0.1	0.0%
April 2017	112.4	0.1	
May 2017	112.6	0.2	
June 2017	112.8	0.2	1.5%
July 2017	112.9	0.1	
August 2017	113.1	0.2	
September 2017	113.1	0.0	1.3%
October 2017	113.2	0.1	
November 2017	113.3	0.1	
December 2017	113.4	0.1	1.0%

Table 2
BLS Employment Estimates
Worcester NECTA, September 2017 – December 2017

	Not Seasonally Adjusted[iii]			Seasonally Adjusted[iv]		
	Sept 2017	Dec 2017	Change Dec – Sept	Sept 2017	Dec 2017	Change Dec – Sept
Unemployment Rate	3.7%	3.3%	-0.4	3.7%	3.9%	0.2
Payroll Employment	287,200	291,500	4300	286,800	289,800	3,000
Household Employment	334,690	336,655	1965	336,924	335,765	-1,159
Labor Force	347,630	348,061	431	350,056	348,608	-1,448

Worcester Economic Outlook

Each quarter following the estimation of the Worcester Economic Index a forecast is prepared regarding the future path of the WEI. This forecast is based on an econometric model that uses past estimates of the WEI in combination with four national leading indicators. Based on data through the end of 2017, the model currently projects the Worcester Economic Index to continue to growth at a modest pace over the first half of 2018. As table 3 shows, the December six-month forecast is 1.7%, while the average of the October, November, and December forecasts is 1.2%.

Table 3 also shows the growth forecast broken down into its six components. The first component is the long-run trend growth of the WEI which is estimated to be about 1.3%. Both the December and fourth quarter forecasts are near this long-run figure. The values shown for each of the other components listed in table 3 represent the amount that those components contribute to the forecasts rising above or falling below the trend.

Table 3
Breakdown of Projected Growth of WEI[v]
6-month growth forecast, annualized basis

Component	December 2017	Fourth Quarter Average
Trend	1.3%	1.3%
Consumer Expectations	0.2%	0.1%
S&P 500	0.2%	0.2%
Interest Rate Spread	-0.1%	-0.1%
Leading Credit Index™	0.3%	0.2%
WEI	-0.2%	-0.4%
Total	1.7%	1.2%

Components may not add to total due to rounding.

The University of Michigan Index of Consumer Expectations was 90.5 in October, only the third month since the Great Recession it has been above 90. The index has since fallen back to 84.3 in December, but consumer expectations are still relatively strong and therefore this component is pushing up the WEI forecast.[v]

The continued strong performance of the stock market also makes a positive contribution to the WEI forecast. Changes in the S&P 500 stock index are included in the forecast model as a measure of investor attitudes toward expected future business conditions. As of January 30th the S&P 500 is up about 12% since October 1st which contributes an additional 0.2 percentage points to the forecast.

Conditions in the credit markets, as measured by the Leading Credit Index™, are also currently making a positive contribution to the WEI forecast. The Leading Credit Index™ is compiled by The Conference Board each month and is a composite of six financial sector variables that aims to capture credit market conditions in the United States. This component provides a 0.3% bump to the December forecast.

The other two components, the interest rate spread and the recent performance of the WEI itself are both pushing the WEI forecast down. The interest rate spread, which is the difference between the yield on a 10-year Treasury bond and the federal funds rate, is a commonly used indicator of the direction of monetary policy. The Federal Reserve increased its federal funds rate target range to 1.25% - 1.50% in December, its third increase of 2017. Such increases have contributed to a decline in the interest rate spread which is now lower than at any time since the onset of the Great Recession. The decreasing spread is an indication of a tightening of monetary policy and therefore this component has a small negative impact on the WEI forecast.

The final component of the forecast is the WEI itself. Past values of the WEI are included in the forecast model because economies have a tendency to exhibit momentum and therefore recent economic performance can influence economic activity in the near future. The below trend performance of the WEI in the fourth quarter of 2017 thus acts as a drag on both the December (-0.2%) and fourth quarter (-0.4%) forecasts.

Local Leading Indicators

The forecast of the Worcester Economic Index presented above is based on four national leading indicators, recent WEI estimates, as well as its long-run trend. To supplement this forecast each quarterly issue of *Worcester Economic Indicators* includes a discussion of several leading indicators that are more closely tied to the local economy. Local data can be more volatile than national data and therefore quarterly averages are compared on a year-over-year basis to avoid problems arising from month-to-month variation. Recent performance of two local leading indicators, new business incorporations for the Worcester NECTA and initial unemployment claims for Massachusetts, are shown in table 4.

Following the pattern exhibited over the past year, the number of new business incorporations in the Worcester area rose in the fourth quarter of 2017 compared to the fourth quarter of 2016. In the past year the number of incorporations has increased by 10.6%.[vi] An increase in incorporations is considered a positive signal because new businesses may look to hire workers in the near future.

Table 4
Local Leading Indicators
Percentage Change
Quarter 4 2016 to Quarter 4 2017

Indicator	Percent Change	Signal
New Business Incorporations[vi]	10.6%	Positive
Massachusetts Initial Claims[vii]	-0.2%	Neutral

The number of initial unemployment claims filed during the fourth quarter in the Commonwealth of Massachusetts fell slightly from the final quarter of 2016. This could be considered a positive signal because it suggests that fewer people were let go from their jobs and forced to apply for unemployment compensation. However, the decrease in initial claims is so small that it is better described as offering a neutral signal.[vii]

To sum up, the Worcester Economic Index (WEI) increased 1.0% in the fourth quarter of 2017. The WEI is expected to grow in the 1.2%–1.7% range over the coming six months. The increase in new business incorporations can be viewed as a positive signal at this time.

The next Worcester Economic Indicators report will be issued in early May 2018. Additional information about this project is available at: http://www1.assumption.edu/worcester-economic-indicators-project/.

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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] US Department of Commerce, Bureau of Economic Analysis, https://www.bea.gov/newsreleases/national/gdp/2018/gdp4q17_adv.htm, accessed 1/26/18.

[iii] Data obtained from the Bureau of Labor Statistics SAE and LAU databases.

[iv] The not seasonally adjusted BLS data is adjusted for seasonal variation by the author using the X-12 ARIMA program developed by the U.S. Census Bureau.

[v] 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.

[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.