Worcester Economic Indicators

Fourth Quarter 2019

Stronger Economy in the Fourth Quarter
Worcester Economic Index increases 2.0%

Worcester Economic Index

After a sluggish performance for most of the year the local economy closed out 2019 with its strongest quarter. During the fourth quarter the Worcester Economic Index grew at a 2.0% annualized rate, more that twice the revised 0.8% rate of the third quarter. In comparison, U.S. real GDP grew 2.1% in the fourth quarter according to the U.S. Bureau of Economic Analysis[i] announcement of January 30th, while Massachusetts experienced a 1.3% increase in real GDP based on recently released estimates from MassBenchmarks.[ii]

Figure 1: Worcester Economic Index
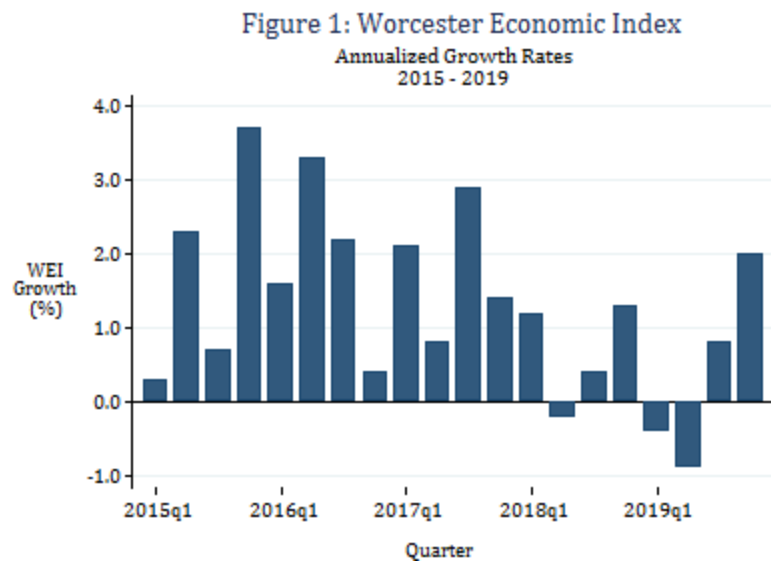Annualized Growth Rates
2015 - 2019

Figure 1 shows the annualized growth rates of the Worcester Economic Index for each quarter going back to 2015 and table 1 provides the specific estimates for the index over the past year. Both show that local economic activity in the first half of 2019 was relatively weak. The stronger performance at the end of the year was enough to allow the Worcester Economic Index to finish up 0.3% for the year. The index is estimated using Bureau of Labor Statistics (BLS) data on employment and unemployment in the Worcester metropolitan area (NECTA). According to the BLS payroll survey, the number of local jobs increased by only 800 over the course of 2019, while the BLS survey of households estimated employment rose 867 and the unemployment rate fell from 2.9% to 2.7% over the same period.[iii] The fairly small changes in the employment data is the reason the Worcester Economic Index reported such a mediocre economic perfomance during 2019.

While the Worcester Economic Index changed little over the course of the year, the fourth quarter result was more encouraging. Table 2 shows how the BLS employment and unemployment data changed during the past few months, which provides some insight into the relative strength of the local economy in the fourth

Table 1: Worcester Economic Index (WEI)
December 2018 – December 2019

Month	Worcester Economic Index	Change from previous month	Quarterly Growth Rate, Annualized
December 2018	117.8	0.1	1.3%
January 2019	117.8	0.0	
February 2019	117.8	0.0	
March 2019	117.7	-0.1	-0.3%
April 2019	117.5	-0.1	
May 2019	117.4	-0.1	
June 2019	117.4	0.0	-0.9%
July 2019	117.5	0.1	
August 2019	117.6	0.1	
September 2019	117.6	0.1	0.8%
October 2019	117.8	0.2	
November 2019	118.0	0.2	
December 2019	118.2	0.2	2.0%

quarter as measured by the Worcester Economic Index. The not seasonally-adjusted data from the BLS shows substantial increases in payroll employment and household employment during the fourth quarter, along with a corresponding decline in the unemployment rate. Even after the data was adjusted for the normal seasonal upswing at the end of a calendar year, both of the employment measures show fairly sizeable increases over the quarter, with payroll employment increasing by 2,100 jobs and household employment up over 4,900. The seasonally-adjusted unemployment rate went down modestly over the quarter from 3.3% to 3.2%.[iv] Together these data are used in the estimation of the Worceseter Economic Index and the relative strength of those measures in recent months is the reason the index increased at a more considerable rate during the fourth quarter.

Table 2: BLS Employment Estimates
Worcester NECTA, September 2019 to December 2019

	Not Seasonally Adjusted[iv]			Seasonally Adjusted[iv]		
	September 2019	December 2019	Change Dec – Sept	September 2019	December 2019	Change Dec – Sept
Unemployment Rate	3.2%	2.7%	-0.5	3.3%	3.2%	-0.1
Payroll Employment	285,800	290,300	4,500	285,200	287,300	2,100
Household Employment	346,630	354,725	8,095	349,306	354,247	4,941
Labor Force	358,167	364,448	6,281	361,785	365,545	3,760

Worcester Economic Outlook

Each quarter following the estimation of the Worcester Economic Index a forecast is prepared regarding the future path of the index. This forecast is based on an econometric model that combines past estimates of the Worcester Economic Index with four national leading indicators. Based on data through the end of 2019, the model currently projects the Worcester Economic Index will continue to grow at a moderate pace over the first half of 2020. As table 3 shows, the December six-month forecast is 1.2%, while the average of the October, November, and December forecasts is 1.4%, where each forecast is expressed on an annualized basis.

Table 3 also shows the growth forecast broken down into its six components. The first component is the long-run trend growth of the Worcester Economic Index which is estimated to be about 0.9% on an annualized basis. The values shown for each of the other components listed in table 3 represent the amount that those components

Component	December 2019	Fourth Quarter Average
Trend	0.9%	0.9%
Consumer Expectations	-0.1%	-0.1%
S&P 500	0.2%	0.3%
Interest Rate Spread	-0.4%	-0.3%
Leading Credit Index™	0.6%	0.6%
Worcester Economic Index	0.0%	0.0%
Total	1.2%	1.4%

Components may not add to total due to rounding.

contribute to the forecast rising above or falling below the trend.

The Leading Credit Index™, which is an index computed by The Conference Board to measure credit market conditions, is the indicator that is currently providing the most sizable contribution to the forecast of the Worcester Economic Index. The Leading Credit Index™ (LCI) is a composite of six financial sector variables that is designed to quantify the availability of credit. For both the December and average forecasts the Leading Credit Index™ is contributing a positive 0.6% to the forecasts.[v]

The other indicator providing a positive contribution to the growth forecast is the S&P 500 Index. The S&P finished 2019 up about 29% and while there has been some volatility recently, as of January 30th the Index had increased over 1% since the start of 2020. In theory, stock market valuations reflect investor attitudes toward future economic conditions, so the rising market is considered a positive leading indicator.

As was the case during the second and third quarters, the interest rate spread is bringing down the growth forecast. The spread, which is the difference between the yield on a 10-year treasury bond and the federal funds rate, is an indicator of monetary policy. During the second and third quarters the spread became negative which is consistent with an inverted yield curve, a well-known signal of a potential future recession. A negative interest rate spread suggests that investors in long-term bonds are expecting lower interest rates in the future as a weaker economy leads to reductions in the federal funds rate by the Federal Reserve. Rate decreases by the Federal Reserve in July, September, and October has caused the spread to increase in the past few months, but it is still relatively low and therefore is making a negative contribution to the growth forecasts.

The University of Michigan Index of Consumer Expectations is the other leading indicator that is pulling down the growth forecast. The index increased in December from 87.3 to 88.9[v] which is encouraging, but it is still below where it was during the middle of the year and therefore it is bringing down the forecasts a modest 0.1 percentage points.

The remaining component of the forecast is the Worcester Economic Index itself. Past values of the index are included in the forecast model because economies tend to exhibit momentum over the short-run, suggesting recent economic trends can help explain the future direction of the economy. The unexceptional performance of the local economy over

the past year is not providing a strong signal for coming economic activity and is therefore entering the forecast as a neutral indicator (0.0%).

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 the 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 area and initial unemployment claims for Massachusetts, are shown in table 4.

The end of 2019 saw a decline in new business incorporations, breaking a multi-year rising trend for this indicator. The fourth quarter

Table 4: Local Leading Indicators
Percentage Change, Quarter 4 2018 to Quarter 4 2019

Indicator	Percent Change	Signal
New Business Incorporations[vi]	-5.4%	Negative
Massachusetts Initial Claims[vii]	1.6%	Negative

of 2019 showed a drop of about 5.4% compared to 2018.[vi] The decrease in incorporations is considered a negative signal because fewer new jobs may be available.

The number of initial unemployment claims filed during the fourth quarter in the Commonwealth of Massachusetts rose 1.6% from the fourth quarter of 2018.[vii] This is considered a negative signal because it indicates there is an increase in the number of people who have been let go from their jobs and forced to apply for unemployment compensation. Like business incorporations, state-wide initial claims data has been consistently showing a strengthening economy in the past

Figure 2: Massachusetts Initial Unemployment Claims
Quarterly Averages, 2005 - 2019

Massachusetts Department of Employment and Training, and author's calculations

several years and while it is currently providing a negative signal, the numbers are still very low compared to the recent past as shown in figure 2. The uptick in initial claims should be considered a weak signal at best.
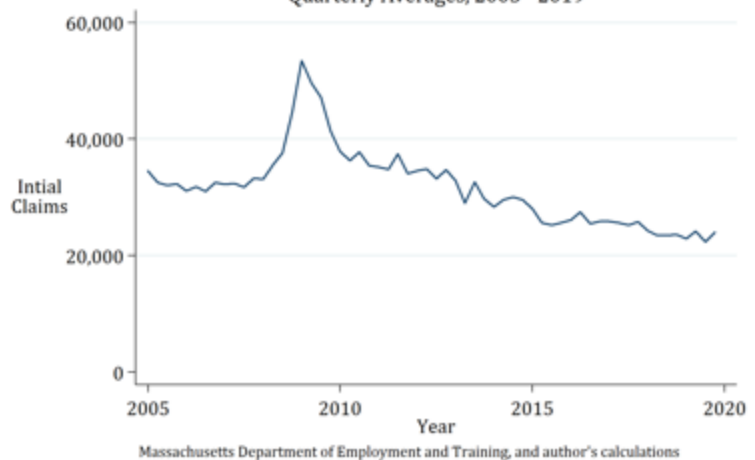
To sum up, the Worcester Economic Index (WEI) increased at a 2.0% annualized rate in the fourth quarter of 2019. The WEI is expected to grow at about 1.2% over the first half of 2020. Credit market conditions are favorable for growth, however the interest rate spread

continues to act as a drag on the six-month forecast. Local leading indicators while negative, are not offering strong signals at this time.

The next issue of *Worcester Economic Indicators* will be released in early May 2020.

Additional information about this project is available at: https://www.assumption.edu/people-and-departments/organization-listing/economics-and-global-studies/worcester-economic-index

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[i] U.S. Department of Commerce, Bureau of Economic Analysis, https://www.bea.gov/system/files/2020-01/gdp4q19_adv_0.pdf, accessed 1/31/20.

[ii] MassBenchmarks, Current and Leading Indexes January 2020. http://www.donahue.umassp.edu/business-groups/economic-public-policy-research/massbenchmarks/benchmarks-bulletin-january-2020, accessed 1/31/20.

[iii] Author's calculations based on data from the U.S. Bureau of Labor Statistics. Household employment and the unemployment rate data obtained from the Local Area Unemployment Database (LAU) of the BLS, https://www.bls.gov/lau/data.htm. Payroll employment is obtained from the State and Area Employment Database (SAE) of the BLS, https://www.bls.gov/sae/data/home.htm. 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.

[iv] Author's calculations based on data from the Bureau of Labor Statistics. 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.