Chicago Fed Letter

Using the Federal Reserve's Beige Book to track economic activity

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This article provides the public a first look at a new set of indexes constructed from the Chicago Fed's Beige Book survey, and describes their ability to track economic activity.

The Federal Reserve's Beige Book[1] is a collection of reports from the 12 Reserve Banks summarizing economic conditions in their respective Districts.[2] Its publication two weeks prior to scheduled meetings of the Federal Open Market Committee serves to complement existing data sources by drawing on anecdotal information collected from each Bank's regional business contacts. Arguing the Beige Book has little value to the public, some have questioned its relevance as an indicator of the direction of monetary policy.[3] While the publication of the Beige Book was never intended for this purpose, it was intended to provide information on current and future economic activity.

The value of the Beige Book in this respect is not entirely clear, as suggested by the mixed results from a small set of studies measuring its information content.[4] Generally, the approach of these studies has been to numerically score the language in the Beige Book and compare the score to another measure of economic activity. In this *Chicago Fed Letter,* we describe a different approach based on an online survey the Chicago Fed has been conducting in conjunction with the Beige Book for over a year. The survey asks both qualitative and quantitative questions that allow us to measure economic activity in the Seventh District with a set of indexes constructed from survey responses.

We show how our indexes track the national and Midwest economies by comparing them with the Institute for Supply Management's (ISM) various purchasing managers' indexes (PMIs) and the Chicago Fed's Midwest Economy Index (MEI). We then discuss how the combination of quantitative and qualitative survey responses can help us understand pivotal or special economic events.[5] For instance, we show that while the harsh winter weather at the beginning of 2014 reduced economic activity in the Midwest, respondents' outlooks remained positive in anticipation of the subsequent rebound.

Chicago Fed's Beige Book survey and indexes

Beginning with the March 6, 2013, Beige Book, the Chicago Fed has been gathering information from its business contacts using an online survey system. The survey asks respondents to rate the performance of their respective businesses over the past four to six weeks relative to the previous four to six weeks, covering aspects such as demand for their products or services. The survey then asks for anecdotes to explain their assessments. Respondents come from all of the major industries in the Seventh District. Figure 1 shows the industry composition of the respondent pool. Manufacturing has the highest representation, though no single industry dominates.
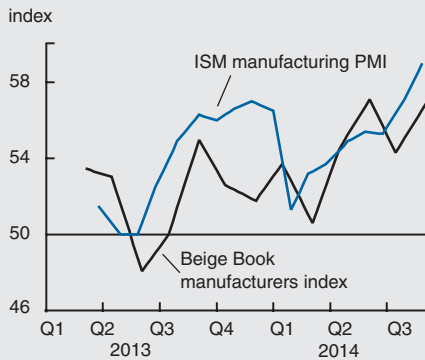
1. Beige Book respondent composition	
	percent
Agriculture	2
Banking and finance	15
Construction and real estate	19
Manufacturing	31
Retail	10
Services, government, and nonprofit	23

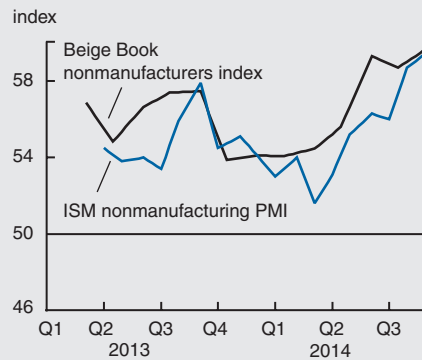NOTE: The average number of respondents to the Chicago Fed's Beige Book survey is 62.
SOURCE: Authors' calculations.

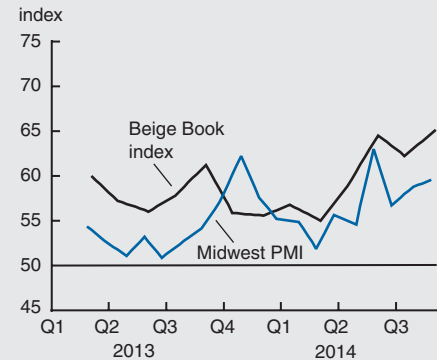**A. Manufacturing indexes**

index

ISM manufacturing PMI

Beige Book
manufacturers index

Q1 Q2 Q3 Q4 Q1 Q2 Q3
    2013   2014

B. Nonmanufacturing indexes

index

Beige Book
nonmanufacturers index

ISM nonmanufacturing PMI

Q1 Q2 Q3 Q4 Q1 Q2 Q3
    2013   2014

C. Midwest indexes

index

Beige Book
index

Midwest PMI

Q1 Q2 Q3 Q4 Q1 Q2 Q3
    2013   2014

Notes: The Institute for Supply Management's (ISM) manufacturing and nonmanufacturing purchasing managers' indexes (PMIs) are national indexes. The Midwest PMI is an average of the ISM's PMIs for Chicago, Detroit, and Milwaukee. A value greater than 50 indicates expansion in the manufacturing sector, nonmanufacturing sector, and Midwest economic activity in panels A, B, and C, respectively. See note 7 for details on how the Beige Book and ISM index comparisons are facilitated.

Sources: Authors' calculations and Institute for Supply Management data from Haver Analytics.

Respondents are asked to rate business conditions along a seven-point scale ranging from "substantially increased" to "substantially decreased." To summarize the distribution of responses, we calculate a series of diffusion indexes.[6] Diffusion indexes are intended to be leading indicators of economic activity, capturing changes in the prevailing direction of business conditions. If the index has a positive reading, it indicates that more respondents reported increased activity than decreased activity. The index ranges from –1 to +1 and will be –1 if every respondent reports decreased activity and +1 if every respondent reports increased activity.

Comparisons with survey-based indicators

Our diffusion indexes are comparable to the ISM's PMIs.[7] The ISM surveys purchasing managers and asks them to rate economic activity along a positive-neutral-negative scale, similar to how our Beige Book indexes are constructed. It is important to note, however, that because our survey targets industries in the Midwest economy, the composition of our respondent pool differs from that of the ISM's. For this reason, we compare our indexes to the ISM's at both the national and regional level. At the national level, we are better able to match the industry composition of the Beige Book and ISM respondent pools. At

the regional level, we are better able to match the locations of the respondents from both pools.

Figure 2's panels A and B show how the Beige Book indexes formed by dividing the survey responses between manufacturers and nonmanufacturers compare with the ISM's national manufacturing and nonmanufacturing PMIs, respectively. While the ISM's PMIs cover the entire U.S., the comparisons with our indexes are still informative because the respondents come from a comparable mix of industries. The correlation coefficient is greater than 0.50 for both comparisons, suggesting that the indexes are capturing very similar business conditions.

Panel C of figure 2 shows how the main Beige Book index (based on the entire pool of survey responses) compares with a Midwest PMI we created by averaging the ISM's PMIs for Chicago, Detroit, and Milwaukee. While this Midwest PMI covers a geography quite similar to the Beige Book index, we do not know the extent to which the industry composition of the ISM's respondent pools for the three Midwest urban centers differs from that of our pool because the precise composition of those three pools is not disclosed. The correlation coefficient for the two indexes is only 0.45, though a visual inspection of panel C suggests that our index potentially leads the Midwest PMI.

Comparisons with the MEI

While it is useful to compare our Beige Book indexes with the ISM's PMIs because of the similarity in their methodologies, we are more interested in whether they are a useful predictor of non-survey-based measures of economic activity. For this reason, we compare the main Beige Book index with the Chicago Fed's Midwest Economy Index.[8] The MEI is a monthly weighted average of Midwest economic indicators, including the three Midwest city PMIs referenced earlier, state employment and unemployment, retail and home sales, and housing permits. The MEI is measured relative to a trend rate of Midwest economic growth such that positive values indicate above-trend growth and negative values indicate below-trend growth. To facilitate the comparison, we adjust the main Beige Book index in a similar manner to be relative to our respondents' trend (or average) responses.[9]
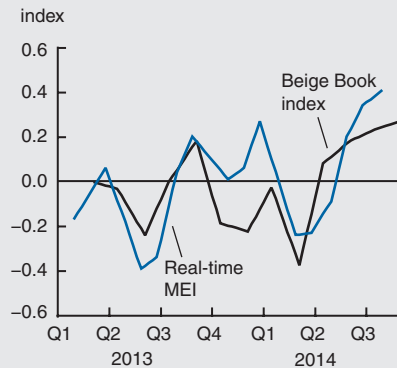
Figure 3 shows how this adjusted Beige Book index compares with the MEI. Because the data used to calculate the MEI are subject to revision, the MEI is subject to revision. Panel A features the revised MEI as of August 29, 2014. While the adjusted Beige Book index does not track the contemporaneous movements in the MEI very well, visual inspection suggests that the adjusted index may lead the MEI. Panel B shows the adjusted Beige Book index compared with the

3. Adjusted Beige Book index and MEI

A. Adjusted Beige Book index and MEI

index

Beige Book index

MEI

Q1 Q2 Q3 Q4 | Q1 Q2 Q3
2013 | 2014
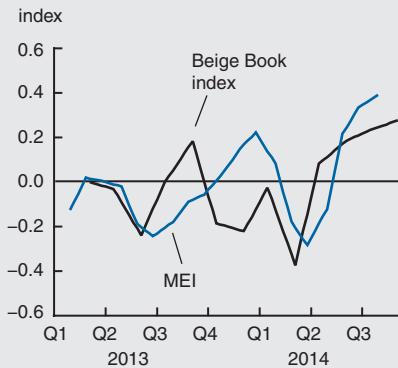
B. Adjusted Beige Book index and real-time MEI

index

Beige Book index

Real-time MEI
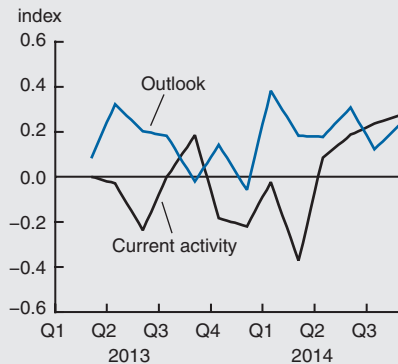
Q1 Q2 Q3 Q4 | Q1 Q2 Q3
2013 | 2014

NOTES: A value of zero for the Midwest Economy Index (MEI) here is consistent with trend growth in Midwest economic activity during the period from January 2013 through July 2014. The real-time MEI uses only the MEI reading initially reported for each month plotted in panel B. See the text, in particular note 9, for details on how the MEI and adjusted Beige Book index comparisons are further facilitated.
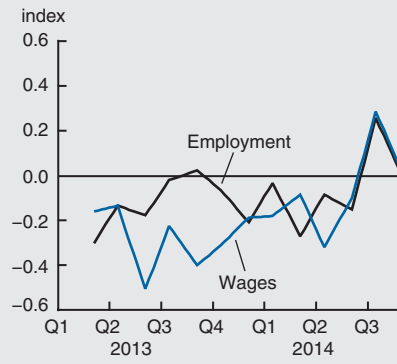
SOURCES: Authors' calculations and Haver Analytics.

4. Adjusted Beige Book indexes

A. Economic activity

index

Outlook

Current activity

Q1 Q2 Q3 Q4 | Q1 Q2 Q3
2013 | 2014

B. Labor market

index

Employment

Wages

Q1 Q2 Q3 Q4 | Q1 Q2 Q3
2013 | 2014

NOTES: The current activity index is the adjusted main Beige Book index, depicted in figure 3. See note 9 for a detailed example of how all the Beige Book indexes are adjusted to be relative to our respondents' trend (or average) responses. Positive readings of the current activity (employment or wages) index indicate that more respondents reported above-trend growth in activity (employment or wages) than below-trend growth. Positive readings of the outlook index (see note 11 for details on its construction) indicate more respondents reported above-average outlooks than below-average ones. Negative index readings indicate the opposite.

SOURCE: Authors' calculations.

real-time MEI, which uses only the MEI reading initially reported for each month plotted. The adjusted Beige Book index tracks contemporaneous movements in the real-time MEI quite well. Taken together, the two comparisons suggest that Beige Book respondents likely base their assessments partially on the prevailing data in the news but that their experience as business leaders may also contain information on future data revisions.

Pivotal or special economic events

Many of the previous studies conducted on the Beige Book suggest that it is especially useful for understanding pivotal economic events, such as the starts and ends of recessions, or special events, such as the partial government shutdown of 2013 or the harsh winter of early 2014. The Beige Book offers two potential advantages over other sources of information in these instances. First, the Beige Book is sometimes available more quickly than data from other sources. Second, Beige Book anecdotal information can help to discern which interpretation of a trend is most likely correct.

In the case of the harsh winter of early 2014, two important questions arose. First, was economic activity slowing in early 2014? Second, if economic activity

was slowing, was the slowdown likely to be short-term and thus simply weather-related, or was it potentially a longer-term development? Many information sources could provide insight on the first question, but the Beige Book was particularly useful for answering the second question.

Our survey provided two relevant indications of the expected duration of the slowdown in economic activity. First, we received anecdotes detailing the supply challenges many firms faced because of poor transportation conditions. For example, the weather had a notable effect on the steel industry. We wrote in the March 5, 2014, Beige Book that "a steel industry contact reported that there were seven days in the last six weeks where his firm could not send shipments, a first in his thirty-five years of experience."[10] Such supply problems can often cause a substantial slowdown in economic activity, but typically for only a short while.

The second indication was our respondents' outlooks for the U.S. economy in the next six to 12 months. Figure 4's panel A shows the large positive difference between respondents' outlooks[11] and their assessments of current activity

Charles L. Evans, *President*; Daniel G. Sullivan, *Executive Vice President and Director of Research*; Spencer Krane, *Senior Vice President and Economic Advisor*; David Marshall, *Senior Vice President, financial markets group*; Daniel Aaronson, *Vice President, microeconomic policy research*; Jonas D. M. Fisher, *Vice President, macroeconomic policy research*; Richard Heckinger, *Vice President, markets team*; Anna L. Paulson, *Vice President, finance team*; William A. Testa, *Vice President, regional programs, and Economics Editor*; Helen O'D. Koshy and Han Y. Choi, *Editors*; Rita Molloy and Julia Baker, *Production Editors*; Sheila A. Mangler, *Editorial Assistant*.

for their own businesses (the adjusted main Beige Book index) in early 2014. We concluded in the March 5, 2014, Beige Book that "the modest pace of growth to start the year tempered contacts' expectations only somewhat, as most generally maintained their optimistic outlook for 2014."[12] As panel A also shows, our business contacts have seen a healthy recovery in economic activity since the early 2014 slowdown. Moreover, by the third quarter of 2014, our contacts were reporting increased hiring and wage pressures, pushing up the employment and wages indexes in panel B of figure 4.

Conclusion

The Beige Book can be a useful tool for understanding current and future economic activity, especially at the regional level. As we have shown, it can and often does provide timely and unique contexts for understanding trends in national and regional economic activity. We plan to continue to develop our analysis of our survey with the expectation of making our indexes publicly available at a later date.

[1] For details, see www.federalreserve.gov/monetarypolicy/beigebook/.

[2] For District boundaries, including those of the Seventh District (which is served by the Chicago Fed), see www.federalreserve.gov/otherfrb.htm.

[3] See, e.g., Binyamin Appelbaum, 2014, "No need to read the Fed's Beige Book if you read this instead," *The Upshot*, blog, *New York Times*, June 4, available at www.nytimes.com/2014/06/05/upshot/no-need-to-read-the-feds-beige-book-if-you-read-this-instead.html.

[4] See, e.g., Michelle T. Armesto, Rubén Hernández-Murillo, Michael T. Owyang, and Jeremy Piger, 2009, "Measuring the information content of the Beige Book: A mixed data sampling approach," *Journal of Money, Credit and Banking*, Vol. 41, No. 1, February, pp. 35–55; Nathan S. Balke and D'Ann Petersen, 2002, "How well does the Beige Book reflect economic activity? Evaluating qualitative information quantitatively," *Journal of Money, Credit and Banking*, Vol. 34, No. 1, February, pp. 114–136; Nathan S. Balke and Mine K. Yücel, 2000, "Evaluating the Eleventh District's Beige Book," *Economic and Financial Review*, Federal Reserve Bank of Dallas, Fourth Quarter, pp. 2–10; David Fettig, Arthur J. Rolnick, and David E. Runkle, 1999, "The Federal Reserve's Beige Book: A better mirror than crystal ball," *Region*, Federal Reserve Bank of Minneapolis, Vol. 13, March, pp. 10–13, 28–32; Donna K. Ginther and Madeline Zavodny, 2001, "The Beige Book: Timely information on the regional economy," *Economic Review*, Federal Reserve Bank of Atlanta, Vol. 86, No. 3, Third Quarter, pp. 19–29; Shibley Sadique, Francis In, Madhu Veeraraghavan, and Paul Wachtel, 2013, "Soft information and economic activity: Evidence from the Beige Book," *Journal of Macroeconomics*, Vol. 37, September, pp. 81–92; and Madeline Zavodny and Donna K. Ginther, 2005, "Does the Beige Book move financial markets?," *Southern Economic Journal*, Vol. 72, No. 1, pp. 138–151.

[5] Sadique et al. (2013) highlight the value of the Beige Book in detecting turning points in economic activity.

[6] $Diffusion\ Indexes = \frac{Positive\ Responses - Negative\ Responses}{Total\ Responses}$.

We count a response as positive if it indicates economic activity increased and negative if it indicates economic activity decreased. We include neutral responses in the count of total responses.

[7] We transform the resulting Beige Book diffusion indexes to have the same range (0 to 100) as the ISM's PMIs and match the ISM's PMIs standard deviation over the sample period in which both are available. To match the timing of the responses, we use the release dates of the Beige Book and ISM's PMIs.

[8] For MEI details, see www.chicagofed.org/webpages/publications/mei.

[9] For example, if, on average, a respondent reports that demand increased slightly, we count a response for a given period as positive only when the respondent reports that demand increased moderately or substantially. For this respondent, we count a slight increase in demand as neutral. Thus, we treat respondents' average responses as the long-run trend in demand for their products. A reading above zero indicates growth above trend, while a reading below zero indicates growth below trend.

[10] See www.federalreserve.gov/monetarypolicy/beigebook/beigebook201403.htm?chicago.

[11] The Beige Book outlook index is also adjusted to be relative to each respondent's average response (see note 9). In addition, for the survey's question on the outlook, we use a positive-neutral-negative scale as opposed to the seven-point scale referenced early in the text.

[12] See www.federalreserve.gov/monetarypolicy/beigebook/beigebook201403.htm?chicago.