Does the Beige Book Reflect U.S. Employment and Inflation Trends?

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Prior to each Federal Open Market Committee meeting, the Federal Reserve releases the Beige Book, a summary of commentary on economic conditions. The report is based on anecdotal and qualitative information collected from a wide range of contacts, including business and community leaders across the nation. Although the "beige" in the title may imply a bland report, its anecdotes provide a colorful narrative about economic developments throughout the nation.

The report is intended to provide a timely assessment of economic conditions prior to the release of official statistics such as the unemployment rate or inflation. Readers dissect dozens of pages to identify tidbits of information or key themes that shed light on the economy's current and future prospects. For those lacking the time to comb through its pages, we show that simple, automated text analysis can extract useful metrics from the text of the Beige Book.[1]

Quantifying the Beige Book Text

We rely on one of the simplest methods of automated text analysis: counting the number of times specific words or phrases appear and converting the sum to a fraction of the total word count. If the Beige Book accurately captures economic trends, its focus on certain topics should correlate with related macroeconomic data. We focus on the topics tied to the Fed's dual mandate: labor markets and inflation.

For each topic—labor markets and inflation—we construct two lists of words that pertain to these topics: a list of *identifying* words and a list of *counting* words. Next, we count each time a word from the counting list appears in any sentence that also includes any word from the *identifying* list and then convert the sum to a percentage of total words in that Beige Book.[2]

For example, consider these sentences from the Federal Reserve Bank of St. Louis's April Beige Book report:

Reports from manufacturers remain positive, with continued strong growth in new orders despite labor shortages and supply-chain disruptions restraining

production. Real estate contacts reported a surge in seasonal buying activity coincided with a rise in mortgage rates, creating an uncertain outlook.

Only the first sentence includes a word on our labor market *identifying* list—"labor"—so we count the words from our *counting* list that appear in that sentence. There is only one—"shortages"—so the count is 1 for this passage. We apply the process to the rest of this and all other Beige Books since 2000, taking the total count for each release and dividing it by the number of words in the release to get a percentage.
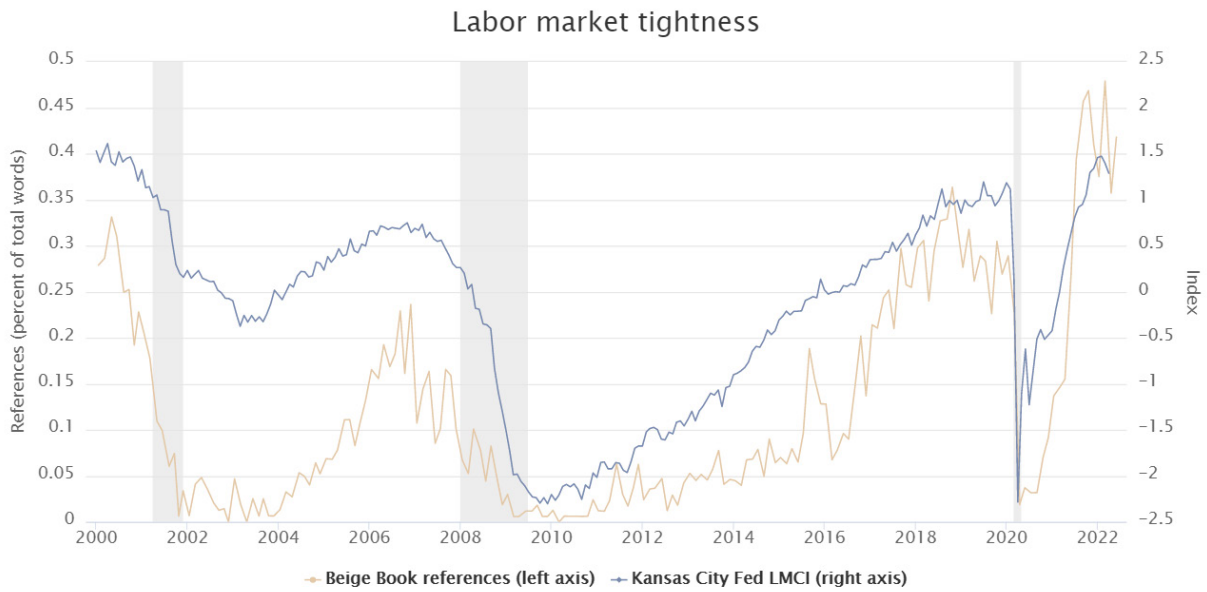
Labor Market Conditions Remain Tight

Figure 1 plots Beige Book references to labor market tightness[3] alongside the Federal Reserve Bank of Kansas City's Labor Market Conditions Index (LMCI).[4] Positive values of the LMCI correspond to above-average labor market conditions (e.g., tighter labor markets). The series are highly correlated (0.74): Both increase during expansions and decline prior to and during recessions (gray bars). Both indicate that current conditions are above pre-pandemic levels and strong in historical terms, aligning with widespread reports of worker shortages, high turnover, and difficulties hiring. However, both series indicate some softening in the labor market in recent months.

> Simple, automated text analysis can extract useful metrics from the Beige Book.

Inflation Pressures Are Significantly Elevated

Figure 2 plots Beige Book references to price increases alongside the annual change in the PCE (personal consumption expenditures) price index.[5] Beige Book references to rising prices tend to follow the inflation rate quite closely, with a correlation of 0.73.[6] This correlation is especially notable considering the Beige Book covers both consumer
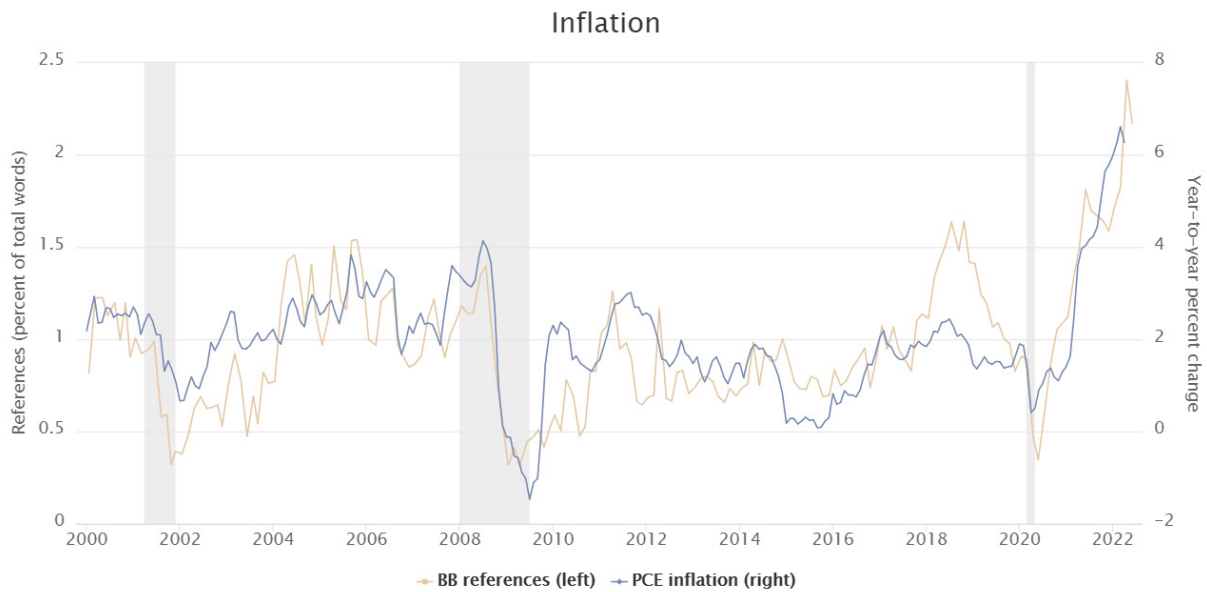
Figure 1

Labor market tightness

NOTE: Gray bars indicate recessions as determined by the National Bureau of Economic Research.

SOURCE: Federal Reserve Bank of Minneapolis, Federal Reserve Bank of Kansas City, FRED®, and authors' calculations.

Figure 2

Inflation

SOURCE: Federal Reserve Bank of Minneapolis, FRED®, Bureau of Labor Statistics, and authors' calculations.

and producer prices, whereas the PCE quantifies only the former.

Both series reflect the recent surge in prices, with the April Beige Book showing the highest inflationary pressures since 2000. The Beige Book series then declines during the latter half of 2021, perhaps reflecting sentiment at the time that pressures were transitory; the current surge corresponds with both rising COVID-19 cases in January (and consequent supply chains disruptions) and the sharp rise in energy prices with Russia's invasion of Ukraine.

Conclusion

Our text analysis, as revealed in the figures, shows that the Beige Book contains useful information for understanding economic trends—even when that information is extracted by a simple automated process. Such a reading of the Beige Book can provide a quick signal and easily track changes over time.

Of course, the Beige Book—with its emphasis on qualitative and anecdotal information—is written with the belief that those anecdotes provide a deeper understanding of the economy, which simple word counts cannot capture. If you'd like to follow the spirit of the report, you can always read it yourself. ∎

Notes

[1] There is a sparse existing literature on converting the text of the Beige Book into data that can be incorporated into forecasting models. These papers find that the Beige Book has useful information at the time of its release beyond what can already be discovered from contemporary macroeconomic data. See Armesto et al. (2009), Sadique et al. (2013), and Balke, Fulmer, and Zhang (2017).

[2] We generated our word lists by manually reading several Beige Books. Our simple counting scheme cannot account for the fact that some words may imply more forceful change (e.g., "doubled" versus "quadrupled" prices).

[3] Specifically, we count any time the word roots "tight-," "scarc-," "short-," "lack-," "vacan-," or "turnover-" appear in any sentence that also includes the word roots "labor-," "worker-," "employ-," or "hire-" or the word "hiring."

[4] The LMCI is designed to measure the level of activity or health in labor markets based on 24 data series.

[5] Specifically, we count any time the words, word roots, and phrases "ris-," "rais-," "rose," "grew," "grow-," "increas-," "accelerat-," "surge," "climb-," "hike-," "elevat-," "high-," "doubled," "tripled," "quadrupled," "pressure," "steep," "spike," "sharp," "markup," "escalat-," "intens-," "pass through," "passing on," "surcharge," "robust," "strong," or "brisk" appear in any sentence that also includes the word roots "price-" or "cost-" or the word "inflation."

[6] In theory, the Beige Book should be reporting on price changes since the last report; we chose to compare to annual inflation for readability. Results are similar when comparing to month-to-month inflation.

References

Armesto, Michelle T.; Hernández-Murillo, Rubén; Owyang, Michael T.; and Piger, Jeremy. "Measuring the Information Content of the Beige Book: A Mixed Data Sampling Approach." *Journal of Money, Credit and Banking*, February 2009, *41*(1), pp. 35-55.

Balke, Nathan S.; Fulmer, Michael; and Zhang, Ren. "Incorporating the Beige Book into a Quantitative Index of Economic Activity." *Journal of Forecasting*, 2017, *36*(5), pp. 497-514.

Sadique, Shibley; In, Francis; Veeraraghavan, Madhu; and Wachtel, Paul. "Soft Information and Economic Activity: Evidence from the Beige Book." *Journal of Macroeconomics*, September 2013, *37*, pp. 81-92.