

# Evaluating the Eleventh District's Beige Book

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*In this article, we examine how well the Beige Book corresponds to the growth rate of real Texas gross state product and employment.*

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In formulating policy, the Federal Reserve's Federal Open Market Committee (FOMC) relies on information about not only national but also regional economic conditions. In fact, former Federal Reserve Governor George Mitchell once testified that the regional information "brings the committee qualitative judgments and insights that aggregative statistics will always lack." However, up-to-date regional statistics are not readily available at the time of the FOMC meeting. The most timely data—state and metropolitan employment statistics—are released with at least a month lag and provide direct information about only one dimension of the economy. Gross state product (GSP) data, which give a more comprehensive measure of economic activity, are released with at least a two-year lag. As a result, an important potential source of regional information is the Federal Reserve's Beige Book, an anecdotal report on economic conditions drawn mainly from surveys of businesses in the twelve Federal Reserve Districts and released approximately two weeks before each FOMC meeting.

Several recent papers have studied the information about aggregate economic activity contained in the Beige Book. Balke and Petersen (1998) give numerical scores to various dimensions of the Beige Book discussion and find that several Beige Book indexes have significant predictive content for current- and next-quarter real gross domestic product (GDP) growth. Furthermore, the Beige Book has information about current quarter real GDP growth not present in other indicators, such as the Blue Chip consensus forecast or time series models that use real-time data. Payne (1998) uses a different methodology to quantify the Beige Book but also finds it strongly correlates with aggregate economic activity. Fetting, Rolnick, and Runkle (1999), using not only the publicly available Beige Book but also its previously unreleased predecessor, the Red Book, find that the Beige Book predicts current-quarter real GDP growth and explains about 30 percent of the uncertainty in current-quarter real growth. However, Fetting, Rolnick, and Runkle conclude that the Beige Book provides little additional information about current-quarter real GDP growth once the private sector forecasts have been taken into account.<sup>1</sup>

We examine whether the Eleventh District Beige Book description tracks current Texas real GSP growth and current Texas employment growth.<sup>2</sup> We also study whether the Beige Book contains information about growth not

## Examples of Eleventh District Beige Book Summary

1. Eleventh District summary paragraph from January 18, 1995, Beige Book.

“The Eleventh District economy continued to grow at a solid pace in late November and December. Increasing strength was reported in the service sector, and manufacturing orders continued to rise at a steady rate. Strong commercial construction activity offset a further decline in the single-family sector. Retail sales growth slowed after the Thanksgiving holiday and Christmas sales were lower than expected. Growth in loan demand continued at a strong pace, but competition between banks for customers squeezed margins. District energy activity remained unchanged but was slightly below last year’s levels.”

The Balke and Petersen readers both scored the summary as 1.0. Note that while this Beige Book was released in mid-January, it really contains information about December’s economic activity.

2. Eleventh District summary paragraph from March 15, 1995, Beige Book.

“The Eleventh District economy continued to expand in late January and February but at a slightly slower pace. Manufacturing orders rose, and activity at business service firms remained very strong. Retail sales slowed, however, and some contacts said that Texas sales were among the weakest in the nation. Construction activity was steady as an increase in commercial construction offset a decline in homebuilding. Loan demand continued to rise. Energy activity declined seasonally and remained below last year’s levels. Agricultural production was better than expected. Despite growth in the district economy, respondents in several industries said expectations of a slowdown in the U.S. economy and uncertainty over the effects of the Mexican peso devaluation had reduced their optimism.”

One reader scored the summary as 0.5, while the other scored it as 1.0, for an overall score of 0.75.

present in other regional indicators available to analysts at the time of the Beige Book’s release. If the Beige Book is a good predictor of regional economic activity, it can provide timely information on employment and GSP growth and help us understand the state’s current economic climate.

### ELEVENTH DISTRICT BEIGE BOOK SURVEY

Each of the twelve Federal Reserve Banks is responsible for reporting on economic conditions within its district. The district Banks are free to emphasize the sectors or aspects of economic activity they deem important for that particular Beige Book cycle. In the Dallas District, we contact about 100 businesses by telephone to obtain information on current conditions.<sup>3</sup> To get a clear industry picture, we gather a minimum of three responses for each industry we cover. An analyst writes a summary for each sector surveyed. An economist reviews these sectoral reports, then writes a regional economic summary and a more detailed sectoral description.

In recent years, the Beige Books have also included descriptions of price and wage pressures in the districts, and very recently, e-commerce activity. In addition to the surveys,

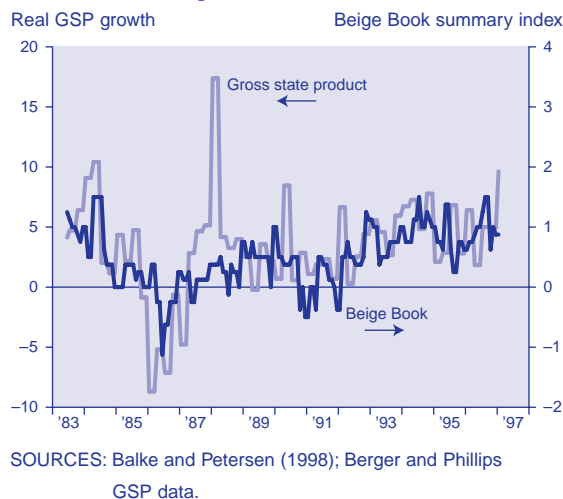
information from statistical releases and newspapers may be reported in the Beige Book.

### NUMERICAL BEIGE BOOK INDEXES

To evaluate the Eleventh District Beige Book, we must assign numerical values to various aspects of the Beige Book description. We use the Beige Book scoring of Balke and Petersen (1998) for the Eleventh District. They read and scored each Beige Book from July 1983 through January 1997. Along with national and district summaries, Balke and Petersen graded the Eleventh District sectoral discussions for retail, manufacturing, finance or banking, construction, and mining sectors (which typically reflects the oil and gas industry).

Balke and Petersen gave the Beige Book descriptions numerical values ranging from –2 to 2. Typically, if the Beige Book description appeared to suggest “moderate” or “normal” economic growth, it was scored a 0.5, while a description implying “strong” economic growth was given a score of 1.0 or 1.5. Keywords could be helpful in scoring but were not relied on exclusively. (See the box above for examples of summary paragraphs from the Eleventh District Beige Book and how they were scored.) The

Figure 1  
**GSP Versus Beige Book Index**



Beige Books were read in random order and with references to the calendar year removed to lessen the likelihood that hindsight would color scoring. Both readers scored all the Beige Books, and their grades were averaged to obtain the final score. Unlike traditional time series data—such as GDP, which refers to a specific quarter, or employment growth, which refers to a specific month—the Beige Book, compiled eight times a year, does not correspond exactly to a particular quarter or month. As a result, Balke and Petersen attempted to match the period for which the Beige Book was relevant with the period for the more traditional indicators of economic activity.<sup>4</sup>

### TRACKING ELEVENTH DISTRICT ECONOMIC ACTIVITY

To evaluate how well the Beige Book tracks Eleventh District economic activity, we need some measure of District economic activity with which to compare the Beige Book. In this article, we examine how well the Beige Book corresponds to the growth rate of real Texas GSP and employment. The GSP data from the Bureau of Economic Analysis are available only on an annual basis and with at least a two-year delay. As of May 2000, the latest GSP data available are from 1997. Berger and Phillips (1995) estimate quarterly GSP for each standard industrial classification for the available GSP: "...industry-specific (real) GSP is measured so that the sum of GSP across all industries equals total real output. That is, each industry's GSP is a measure of value-added and is different from the total number of units produced or the total sales of the industry." We use Berger and

Phillips' quarterly GSP estimates, which are the sum of the sectoral GSP estimates.<sup>5</sup>

Texas employment growth data are released monthly. Preliminary estimates are available with a one-month delay, revisions come out the next month, and the final revision is released in March of the following year. For both employment and GSP growth, we use the final, revised estimates, which we take to be the best measure of economic activity during the period in question. Of course, these data are released many months or, in the case of GSP, many years after the fact.

Figure 1 plots the numerical scores for the Eleventh District Beige Book summary against quarterly GSP growth. The Beige Book index tracks the general cyclical movements in GSP growth well, capturing the Texas economy's boom in the early 1980s and the oil bust of the mid-1980s. It also reflects the relatively strong economic growth Texas experienced during the mid-1990s. Recall that the Beige Book is released nearly two years before the GSP numbers are finally released.

In Table 1, we examine the information in the Eleventh District Beige Book by regressing various Beige Book indexes against real GSP and against Texas employment growth. In addition to the District summary, we also examine an average of the Eleventh District's five sectoral Beige Book indexes.

The table shows that the Beige Book Eleventh District summary and the average-across-sectors scores (sectoral average) reflect the Texas economy quite well, with large and significant coefficients in both the real GSP and employment regressions.<sup>6</sup> Although the Beige Book was not scored for its outlook, we find that it also has predictive content for next-quarter real GSP. Again, both the District summary and the sectoral average have large and significant coefficients. The sectoral average explains real GSP slightly better than the District summary does. This suggests that the individual sectoral discussions in the Beige Book contain information not entirely reflected in the Beige Book summary paragraph. Note also that the  $R^2$ s of the next-quarter GSP regressions are about half those of the current GSP regressions, reflecting the difficulty of forecasting one quarter ahead.

We also examine whether the individual Beige Book sectoral summaries have any predictive power in explaining Texas real GSP and employment growth (*Table 1*). We find that the Beige Book descriptions of the manufacturing and mining sectors have predictive content for

Table 1

### The Beige Book versus Texas Gross State Product and Texas Employment Growth

Independent variable	Dependent variable								
	Texas Gross State Product					Texas Employment Growth			
	Current quarter Texas real GSP growth			Next quarter Texas real GSP growth		Current month of Texas employment growth			
Model	1	2	3	4	5	6	7	8	9
Constant	1.39 (.84)	1.70 (.81)*	1.26 (.72)	1.86 (.98)	2.15 (.99)	1.98 (.68)**	.77 (.64)	1.00 (.58)	.74 (.56)
Beige Book Eleventh District summary	3.79 (1.01)**			3.16 (1.11)**			3.18 (.76)**		
Simple average of individual sectors		4.45 (1.29)**			3.65 (1.49)**			3.85 (.94)**	
Retail Beige Book Index			.41 (.64)			-.36 (.85)			.93 (.49)
Manufacturing Beige Book Index			3.07 (.91)**			2.69 (1.19)**			1.51 (.66)*
Finance Beige Book Index			.63 (.61)			.05 (.69)			.01 (.45)
Construction Beige Book Index			.14 (.55)			.23 (.74)			.79 (.47)
Mining Beige Book Index			.71 (.36)*			1.24 (.63)*			.69 (.38)*
Sum of individual sector coefficients			4.96 (1.05)**			3.85 (1.11)**			3.94 (.82)**
$\chi^2$ statistic for jointly excluding individual sectors (p-value)			31.4 (.00)			17.7 (.00)			24.0 (.00)
Adjusted R <sup>2</sup>	.26	.29	.36	.14	.15	.22	.25	.30	.30
SEE	3.21	3.13	2.97	3.83	3.81	3.67	2.76	2.67	2.67
Ljung–Box Q statistic	91.0 (.00)	108.6 (.00)	66.5 (.00)	113.7 (.00)	131.2 (.00)	65.8 (.00)	32.8 (.20)	34.65 (.15)	66.5 (.00)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.

overall Texas economic activity but the Beige Book descriptions of retail, finance, and construction sectors generally do not. The manufacturing and mining indexes are also significant in explaining changes in next-quarter GSP. Nonetheless, the sum of the coefficients of the sectoral summaries is statistically significant, and the coefficients of the sectoral summaries are also jointly significant for both current and next-quarter Texas real GSP. We see a similar pattern for Texas employment growth. The Beige Book mining and manufacturing sectors closely track changes in total employment, but retail, construction, and finance do not. In the employment growth regressions, as with GSP, the sum of coefficients of the five sectoral summaries is statistically significant, and the hypothesis that all five coefficients are equal to zero is strongly rejected.

The fact that the mining and manufacturing sector descriptions generally have predictive content for Eleventh District economic activity may be a function of their coverage in our Beige Book survey. The manufacturing and mining sectors are surveyed heavily, while the retail and finance sectors are not covered as extensively. Moreover, retail, finance, and construction are relatively small sectors compared with mining and manufacturing. The share of manufacturing in GSP has been relatively constant at around 16 percent in the 1980s and 1990s. Although mining is only 7 percent of GSP today, it was 20 percent in the early 1980s. Currently, retail, construction, and finance are 7.2 percent, 4.4 percent, and 2.8 percent, respectively. Another reason some Beige Book sectors don't explain GSP growth could be that these sectors are not in sync with the state's economy in general. For

Table 2  
**Texas GSP Regressions with Beige Book Indexes and the  
Four Most Recent Months of Texas Employment Growth**

Independent variable	Dependent variable					
	Current quarter Texas real GSP growth			Next quarter Texas real GSP growth		
Model	1	2	3	4	5	6
Constant	1.76 (.61)**	1.86 (.69)**	1.48 (.53)**	2.22 (.94)*	2.43 (.96)**	2.39 (.60)**
Beige Book Eleventh District summary	2.69 (.67)**			1.96 (1.20)		
Simple average of individual sectors		3.58 (1.12)**			2.18 (1.73)	
Retail Beige Book Index			.32 (.63)			-.77 (.81)
Manufacturing Beige Book Index			2.64 (.80)**			2.22 (.88)**
Finance Beige Book Index			-.01 (.57)			-.65 (.66)
Construction Beige Book Index			.16 (.49)			.03 (.62)
Mining Beige Book Index			.77 (.34)*			1.14 (.58)
P-value for jointly excluding individual sectors			.000			.001
P-value for exclusion of the four most recent months of Texas employment growth data	.002	.007	.001	.010	.055	.023
Adjusted R <sup>2</sup>	.33	.38	.44	.22	.23	.31
SEE	3.05	2.93	2.78	3.64	3.64	3.44
Ljung–Box Q statistic	90.8 (.00)	108.2 (.00)	58.1 (.00)	121.3 (.00)	139.3 (.00)	56.7 (.00)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.

example, previous work by Petersen, Phillips, and Yücel (1994) shows that in the 1980s the construction sector peaked much later than the oil sector or the regional economy in general.

#### **DOES BEIGE BOOK GO BEYOND OTHER ECONOMIC INDICATORS?**

We now examine whether the Beige Book summaries contain information not in other real time economic indicators, such as state employment and personal income. To gather these series, we went back to the original statistical releases and compiled the employment growth and personal income data that analysts had available at the time they were reading the Beige Book.

Tables 2 through 4 summarize our findings. Table 2 compares the Beige Book's predictive content with that of the four most recent months of (real-time) Texas employment growth data. As before, we consider the Beige Book summary, the sectoral average, and the five disaggregated sectoral scores. Four lags of employment growth are included as regressors in each model. We find that the Beige Book has predictive content beyond that in the employment growth data. Both the summary and sectoral average variables continue to be highly significant and only slightly smaller in magnitude than in the model without the employment data (*Table 1*). Similarly, in the model with the disaggregated sectors, the Beige Book manufacturing and mining sectors continue to

Table 3  
**Texas GSP Regressions with Beige Book Indexes and the  
Four Most Recent Quarters of Real Texas Personal Income**

Independent variable	Dependent variable					
	Current quarter Texas real GSP growth			Next quarter Texas real GSP growth		
Model	1	2	3	4	5	6
Constant	1.53 (1.06)	1.85 (1.07)	1.15 (.89)	3.07 (.98)**	3.45 (.99)**	3.16 (.86)**
Beige Book Eleventh District summary	3.63 (.97)**			4.13 (1.04)**		
Simple average of individual sectors		4.30 (1.18)**			4.71 (1.28)	
Retail Beige Book Index			.30 (.63)			-.13 (.76)
Manufacturing Beige Book Index			3.09 (.93)**			2.38 (.91)**
Finance Beige Book Index			.47 (.61)			.84 (.77)
Construction Beige Book Index			.12 (.57)			.50 (.60)
Mining Beige Book Index			.63 (.32)*			1.15 (.58)*
P-value for jointly excluding individual sectors			.000			.002
P-value for exclusion of the four most recent quarters of real personal income growth	.166	.086	.073	.176	.205	.265
Adjusted R <sup>2</sup>	.28	.29	.38	.27	.27	.29
SEE	3.16	3.08	2.92	3.57	3.53	3.50
Ljung-Box Q statistic	103.9 (.00)	121.9 (.00)	79.7 (.00)	63.9 (.00)	65.7 (.00)	45.0 (.02)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.

be significant, and the sum of coefficients for individual Beige Book sectors is significant. For all three models, the sum of the coefficients of lagged Texas employment is also significant. The hypotheses that the coefficients are zero were rejected both for the lags of employment and for the Beige Book sectoral summaries.

When real-time, real personal income is included rather than total Texas employment, the Beige Book coefficients become larger as real personal income does not add much to the regression. As can be seen in Table 3, the lags of personal income are not significant at the 5 percent level in the Texas GSP equation.

We see a similar pattern in next-quarter GSP results. When the four most recent months of employment growth are added to the model,

both the Beige Book summary and sectoral averages continue to be significant, albeit with slightly smaller coefficients. Again, the Beige Book has predictive content for real GSP data that is not contained in the four most recent months of Texas employment growth data. For the Beige Book sectoral summaries, manufacturing and mining continue to be significant, and retail, finance, and construction remain insignificant.

In Table 4, we examine whether the Beige Book has predictive content for Texas employment growth after taking into account the information of other economic indicators. Again, we find that the Beige Book summaries continue to have predictive content above and beyond the information in past values of (real-time) Texas

Table 4

### Texas Employment Growth Regressions with Beige Book Indexes and the Four Most Recent Months of Employment Growth Data

Independent variable	Dependent variable		
	Current month of Texas employment growth		
Model	1	2	3
Constant	1.03 (.53)*	1.12 (.51)*	.94 (.44)
Beige Book Eleventh District summary	2.37 (.61)**		
Simple average of individual sectors		3.15 (.83)**	
Retail Beige Book Index			.80 (.48)
Manufacturing Beige Book Index			1.21 (.59)*
Finance Beige Book Index			-.53 (.38)
Construction Beige Book Index			.79 (.44)
Mining Beige Book Index			.70 (.34)*
Sum of individual sector coefficients			2.96 (.66)**
$\chi^2$ statistic for jointly excluding individual sectors (p-value)			26.7 (.00)
$\chi^2$ statistic for jointly excluding four most recent months of employment growth from regression (p-value)	13.6 (.00)	16.4 (.00)	19.8 (.00)
Adjusted R <sup>2</sup>	.28	.33	.35
SEE	2.70	2.60	2.57
Ljung–Box Q statistic	35.0 (.14)	32.46 (.22)	24.4 (.61)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.

employment growth. However, past values of employment growth also have predictive content for employment growth. Nonetheless, it appears that the Beige Book has additional predictive content for final Texas employment growth above that in employment data available to analysts at the time of the Beige Book's release.

#### BEIGE BOOK SECTORAL INDEXES AND SECTORAL ECONOMIC ACTIVITY

Finally, we analyzed whether the sectoral summaries explained movements in sectoral Texas GSP or sectoral employment. We also included the four most recent months of sectoral employment growth data in both the real sectoral GSP and the sectoral employment growth regressions to determine whether the Beige Book sectoral summaries had predictive content over and above the sectoral employment growth data.

Table 5 shows that Beige Book sectoral summaries of the retail, construction, and mining sectors are significant at the 1 percent level, while finance and manufacturing are significant at the 5 percent level. Furthermore, the four most recent months of sectoral employment growth are significant in only the FIRE and mining value-added regressions. When sectoral employment is the dependent variable (*Table 6*), the mining and manufacturing Beige Book indexes continue to explain sectoral employment well, even when lags of sectoral employment are included in the regressions. The lags do not generally have much predictive power for sectoral employment itself; only in the construction and mining regressions are the lags significant. Thus, overall, the Beige Book contains information about Texas economic activity at the sectoral level not completely reflected by past values of employment growth in those sectors.

#### CONCLUSION

In this study, we analyze how well the Eleventh District Beige Book descriptions of regional economic activity track the Texas economy. We find that both the summary and the average across sectors reflect GSP and employment growth very well. These two measures of the Beige Book also have predictive content for GSP growth one quarter ahead. We also find that the Eleventh District's Beige Book has information for Texas economic activity over and above other state economic indicators, such as Texas employment growth, personal income, or sectoral employment growth. The Beige Book sectoral summaries also have predictive content for total GSP and employment growth. Furthermore, they typically contain information about economic activity in their own sectors not reflected in past values of sectoral employment growth.

We have shown that the Beige Book, although anecdotal in nature, tracks the regional economy well and has predictive content over and above other economic indicators. Because the Beige Book is released at least one month earlier than employment and two years before GSP data, its timeliness makes it a good tool for current regional economic analysis. Alan Blinder (1997) refers to the Fed's use of anecdotal evidence as the "ask your uncle" method of gathering information about the economy. However, this study suggests that the ask your uncle method can provide timely information about economic activity in the region. To paraphrase Nobel Prize-winning economist George Stigler, data are the plural of anecdote.

Table 5

### Sectoral Value-Added Regressions with Sectoral Beige Book Indexes and the Four Most Recent Months of Sectoral Employment Growth

Independent variable	Dependent variable: Texas sectoral value-added growth				
	Wholesale and retail	Manu- facturing	FIRE	Construction	Mining
Model	1	2	3	4	5
Constant	1.06 (.77)	.80 (1.59)**	3.50 (1.84)	-.56 (1.42)	-2.50 (2.78)
Retail Beige Book Index	2.95 (1.03)**				
Manufacturing Beige Book Index		5.28 (2.10)*			
Finance Beige Book Index			4.99 (2.25)*		
Construction Beige Book Index				4.54 (1.22)**	
Mining Beige Book Index					9.98 (2.64)**
P-value for exclusion of the four most recent months of Texas sectoral employment growth data	.438	.069	.001	.053	.000
Adjusted R <sup>2</sup>	.10	.27	.12	.29	.53
SEE	5.61	9.26	13.24	9.18	17.5
Ljung-Box Q statistic	64.5 (.00)	98.0 (.00)	32.4 (.22)	46.0 (.01)	129.8 (.00)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: FIRE is the acronym for finance, insurance, and real estate. Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.

Table 6

### Sectoral Employment Growth Regressions with Sectoral Beige Book Indexes and the Four Most Recent Months of Real-Time Sectoral Employment Growth

Independent variable	Dependent variable: Texas sectoral employment growth				
	Wholesale and retail	Manu- facturing	FIRE	Construction	Mining
Model	1	2	3	4	5
Constant	-.48 (.62)	-.40 (.64)	-.14 (.29)	-.45 (1.07)	-.62 (.63)
Retail Beige Book Index	.60 (.55)				
Manufacturing Beige Book Index		1.65 (.76)*			
Finance Beige Book Index			.22 (.31)		
Construction Beige Book Index				1.62 (1.07)	
Mining Beige Book Index					2.50 (.91)**
P-value for exclusion of the four most recent months of real-time Texas sectoral employment growth data	.071	.438	.058	.000	.000
Adjusted R <sup>2</sup>	-.04	.04	.00	.15	.47
SEE	6.12	4.55	3.15	7.77	7.37
Ljung-Box Q statistic	6.3 (.99)	15.2 (.97)	28.4 (.39)	45.4 (.01)	27.2 (.45)

\* Significant at the 5 percent level.

\*\* Significant at the 1 percent level.

NOTES: FIRE is the acronym for finance, insurance, and real estate. Standard errors in parentheses for the coefficients. Standard errors derived from heteroskedastic, autocorrelation-consistent covariance matrix.



## NOTES

- <sup>1</sup> The apparently conflicting results of Balke and Petersen (1998) and Fetting, Rolnick, and Runkle (1999) are due to the timing difference of the private forecasts used. Fetting, Rolnick, and Runkle compare the quarterly American Statistical Association/National Bureau of Economic Research (ASA/NBER) consensus forecast, which is released at the end of the second month of the quarter, with the Beige Book released earlier in the quarter. Given that the ASA/NBER survey participants are likely to have had access to the Beige Book reports at the time of their survey, it is perhaps not surprising that the Beige Book has no additional explanatory power. When the ASA/NBER surveys are compared with Beige Books released later in the quarter, the Beige Book does contain additional predictive content.
- <sup>2</sup> The Eleventh District consists of Texas and parts of Louisiana and New Mexico. However, because Texas accounts for 95 percent of economic activity in the District, the Eleventh District Beige Book only covers Texas.
- <sup>3</sup> Industries surveyed are retail sales; auto sales; agriculture; construction; real estate; legal, accounting, consulting, temporary, finance, and transportation services; petroleum refining; lumber and wood; chemicals; oil field machinery; apparel; electrical and electronic equipment; paper; primary metals; fabricated metals; stone, clay, and glass; food and kindred products; and telecommunications manufacturing.
- <sup>4</sup> See Balke and Petersen (1998) for a more detailed discussion of the issues associated with quantifying the Beige Book and with the timing of the quantified Beige Book series.
- <sup>5</sup> We deflate nominal sectoral GSP by the Consumer Price Index to correct for inflation. We believe that the overall price level rather than a sector-specific one is the relevant deflator for Beige Book respondents because their main concern is real profits, that is, the buying power of their nominal profits.
- <sup>6</sup> We used the “robust errors” option in RATS to compute a heteroskedastic, autocorrelation-consistent covariance matrix. The number of moving average terms was set to four.

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