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# FRBSF WEEKLY LETTER

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## Interest Rate Spreads as Indicators for Monetary Policy

Traditionally, economists have focused on aggregate money stock measures such as M1 and M2 as indicators of future economic activity. However, the relationship between these aggregates and real GDP has deteriorated in recent years. Thus there is a growing interest in alternative indicators, some of which are conceptually quite new compared to the conventional financial market aggregates. For example, Kashyap, Stein, and Wilcox (1993) examine the ratio of bank loans to the sum of both bank loans and funds raised through issuing commercial paper by firms.

This *Weekly Letter* examines related indicators, namely, the spread between the 6-month commercial paper and the 6-month Treasury bill rates, as well as the spread between yields on long-term and short-term Treasury securities. Historically, both spreads have been useful leading indicators of economic activity. However, they are not infallible, and they failed to predict the most current recession. Furthermore, continuing financial market innovations and the changing market environment might further undermine the usefulness of some of these indicators as more assets become available and as portfolio choices and financing sources become more diverse. Thus, policymakers will have to rely on a broad range of indicators, including these new indicators.

### Interest rate spreads

There are several reasons to consider interest rates as indicators of monetary policy and future economic growth. First, the Federal Reserve has used an interest rate as one of its policy instruments. Second, macroeconomic theory suggests it is through interest rates that monetary policy actions are transmitted to the economy. For example, when the Fed increases the money supply, short-term rates drop, which stimulates activity in interest-sensitive sectors. Third, studies of the determinants of output movements conducted since the early 1980s found that when interest rates are considered, the monetary aggregates

lose most of their explanatory power, suggesting that interest rates contain important information about future output (Sims 1980).

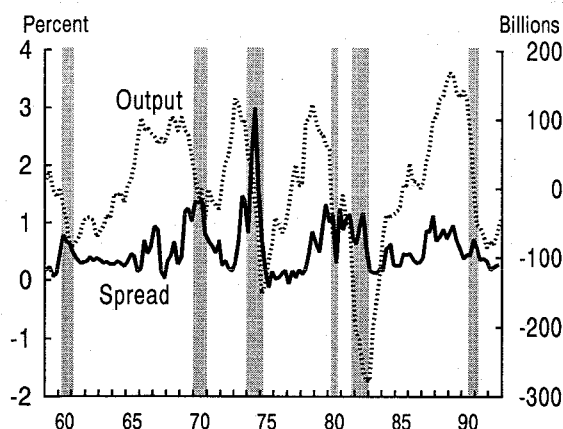
Finally, the relationship between output and monetary aggregates has deteriorated in recent years (Judd and Trehan 1992). Econometric studies have revealed a loosening of the long-term relationship between money and income when the data for the 1980s are included (Friedman and Kuttner, 1992). Deregulation and innovation in financial markets are perceived to have contributed to this deterioration. The same changes also prompted policymakers to shift their focus from a narrowly defined monetary aggregate, M1, which consists of fully checkable deposits and currency in the hands of the public, to a more broadly defined measure, M2, in an effort to find a measure that retained a stable relationship with output and prices. Even with M2, however, studies on money demand have found instability in the relationship in the late 1980s.

Prompted by this experience, economists have looked at alternative indicators, such as interest rate spreads. The two spreads examined here are the difference between rates on the 6-month commercial paper and 6-month Treasury bills (the paper-bill spread), and the difference between the yield on 10-year Treasury notes and the yield on the 3-month Treasury bills (the yield curve). Figures 1 and 2 plot these spreads over the past thirty years; the shaded areas denote recessions as designated by the National Bureau of Economic Research.

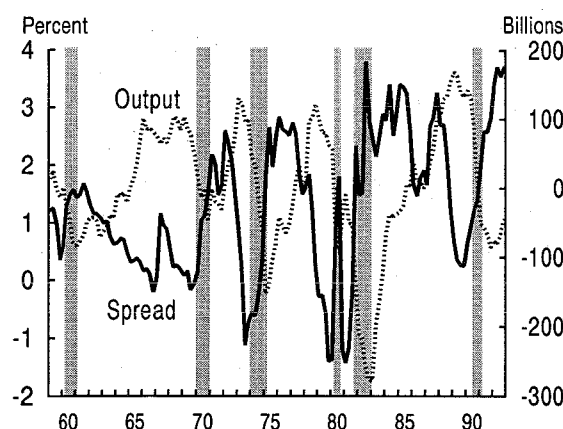
Before 1990, there is a comovement over time between the indicators and detrended output. Thus, a distinct increase in the paper-bill spread was followed by a recession (Figure 1). In the case of the yield curve, it turned negative immediately prior to each of the recessions in that period (Figure 2). Generally, most large movements in the two rate spreads were associated with slowdowns in detrended output. Such relationships between the spreads and output have

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**Figure 1: Paper Bill Spread and Output**



**Figure 2: Yield Curve Spread and Output**



been confirmed by formal statistical studies (Esteller and Hardouvelis 1991; Friedman and Kuttner 1992).

## Why are interest rate spreads useful?

Interest rate spreads may be helpful for predicting future movements in output for a number of reasons. First, the paper-bill spread is affected by the overall level of risk in the economy, which rises and falls with the contractions and expansions in real economic activity. The default risk of commercial paper tends to increase when a downturn in the economy is imminent, driving its rate up; but, since the default risk of the government-backed Treasury bill does not rise, its rate does not go up. Consequently, the difference between the two rates tends to widen before the onset of a recession.

Second, the paper-bill spread may serve as an indicator of the stance of monetary policy. When there is a monetary policy tightening, bank lending contracts in response, and some firms issue more commercial paper to raise funds. The increase in the demand for credit in the commercial paper market will raise the commercial paper rate. This increase raises the paper-bill spread if the T-bill rate does not rise proportionately. The T-bill rate could rise, for example, if commercial banks and other investors sell T-bills from their portfolios and substitute for them commercial paper to take advantage of the higher rates of return. However, Treasury bills and commercial paper are not perfect substitutes in the portfolios of investors and banks, because the two types of securities differ substantially in terms of tax treatment, liquidity, and regulatory considerations. Thus, it is likely that a contraction in economic activity caused by a tightening of monetary policy would be accompanied by a rise in the paper-bill spread.

Movements in the paper-bill spread as well as the bank loan ratio mentioned earlier are related to the so-called "credit channel" view of how monetary policy tightening affects output. The option of borrowing in the private open market, which can mitigate a cutback in bank lending, is not fully available to all firms. Small firms, in particular, have limited access to open financial markets since, unlike large firms, they lack an established name. Thus, when monetary policy is tightened, and some larger borrowers switch to commercial paper, some small firms are denied credit and must curtail their business activities. These declines in spending then contribute to a slowdown in the pace of overall economic activity.

The third reason why the spreads may be useful is related to the yield curve, which depicts the relationship between the yields on securities of comparable risk and their terms to maturity. Most authors have attempted to capture yield curve effects by using the yield spread between long-term and short-term Treasury securities. The "expectations" theory of the term structure of interest rates argues that the expected returns from holding a long-term security until maturity should equal the returns realized from investing in a series of short-term securities for the same period of time. Thus, the difference between, say, the yields on 3-month Treasury bills and 10-year Treasury notes reflects the path of expected yields for the short-term instrument in the future.

For example, if the 10-year rate is lower than the short-term rate, it suggests that investors expect

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the short-term rate in the future to be lower than it is today. One reason that investors might expect short-term interest rates to fall in the future is that they expect an economic downturn. Thus, an "inversion" of the yield curve often represents a forecast of an economic slowdown.

### Spreads during the recent downturn

As shown in the figures, prior to the 1990 business cycle peak, the interest rate spread variables did a good job of predicting recessions. Prior to each of the last five recessions the paper-bill spread shot up and the yield curve consistently turned negative. However, these spreads did not anticipate the 1990–1991 recession: The paper-bill spread did not show a clear increase prior to the 1990 recession; the yield curve was not "inverted." Also, there was an unusually long lead time between the dip in the spread and the onset of the downturn.

These observations are confirmed by the recent performance of sophisticated econometric models in which similar interest rate spreads were used as key information variables. One example is the National Bureau of Economic Research Experimental Recession Probability Index. The index includes both the paper-bill spread and a measure of the yield curve. The index failed to anticipate the 1990 downturn (Huh 1991).

### Implications for monetary policy

This *Letter* briefly examined two newly proposed indicators that are potentially useful for the conduct of monetary policy. Although these alternative indicators seem to contain information about the future condition of the real economy when looking at earlier recessions, their performance in predicting the 1990 downturn was disappointing.

Perhaps it is unrealistic to expect to find an indicator that would remain consistently useful in forecasting future movements in output for an extended period of time. First, fluctuations in output are caused by myriad factors, such as real shocks like the oil price shock of the early 1970s, and monetary shocks, like the Volcker deflation of the early 1980s. Each of those factors may affect aggregate demand and supply conditions and hence can influence financial market quantity and price variables differently. Thus, it is remarkable that interest rate spreads have been as consistently informative as they have in the past.

Second, not only can the key factors behind business cycles vary over time, but so can the overall thrust of monetary policy, which influences general financial market conditions. For example, monetary policy since the early 1980s has placed greater emphasis on controlling inflation compared to the 1970s. Thus, the information content of some long term rates might have shifted in the recent period due to changes in the expected inflation rate that makes up a part of long rates.

Third, since the 1970s, financial markets have been evolving rapidly, and the trend continues. The introduction of more sophisticated financial instruments is broadening the spectrum of available asset choices, as well as financing sources, and hence makes substitutions between assets more feasible and desirable and also makes the prices and quantities of these assets adjust more rapidly. This changing environment can make the interest spreads less informative over time.

The discussion illustrates the difficulty that monetary policymakers face in the current environment. In the absence of consistently reliable indicators to gauge future changes in economic conditions, it becomes necessary to monitor and interpret a wide set of potentially useful indicators with changing information content.

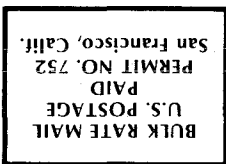
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