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Federal Reserve Forecasts Would Be Valuable to Commercial Forecasters

Does the Federal Reserve have information about future inflation that commercial forecasters do not? In **Federal Reserve Private Information and the Behavior of Interest Rates** (*NBER Working Paper No. 5692*), NBER Research Associates **Christina Romer** and **David Romer** compare Federal Reserve (Fed) forecasts of inflation, which are revealed five years after the fact, with commercial forecasts from Blue Chip Economic Indicators, DRI/McGraw Hill, and the Survey of Professional Forecasters. They find that the difference between the Fed's forecast and the commercial forecast is an excellent predictor of the commercial forecast error. Indeed, if the Fed forecast is 2 percentage points above the commercial forecast, for example, then actual inflation is on average also about 2 percentage points above the commercial forecast.

This means that the Fed has a significant information advantage over

commercial forecasters. Someone who had access to both forecasts would do best by completely ignoring the commercial forecast. But there is the rub: the public is not allowed to see the Fed's forecasts until five years after the fact.

Why do the Fed's forecasts contain so much more information than commercial forecasts? Romer and Romer consider three possibilities and reject two. The first possibility is that the Fed gets information before everyone else. But Romer and Romer note that the Fed receives data on unemployment and inflation only a few days before it is released to the public. Furthermore, they show that the Fed's information advantage remains even when they consider Fed forecasts made several weeks before the commercial forecasts.

The second possibility is that the Fed forecasters have inside information about future monetary policy. But the authors point out that mon-

etary policy has little impact on inflation for at least 9 months to a year; yet the Fed's forecast is useful in predicting private forecast errors even three to six months ahead.

The most likely explanation for the Fed's information advantage, Romer and Romer write, is that the Fed staff is simply better at processing and interpreting information. There is a simple reason for this: the Federal Reserve "commits far more resources to forecasting than even the largest commercial forecasters."

Commercial forecasters are motivated to be as accurate as possible. Because they lack access to the Fed's internal forecasts, they must rely on other means to estimate or infer the Fed's information. Romer and Romer focus on the possible signal provided by the Fed when it changes the federal funds rate — the rate charged on overnight lending to meet reserve requirements. Romer and Romer show that when the Fed raises its funds target by 1 percent-

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age point, its inflation forecast for the coming year is typically about a quarter of a percentage point above commercial forecasts. Thus, monetary policy actions reveal some of the Fed's information about future inflation.

Knowing that the Fed has useful information, the commercial forecasters see the signal provided by the change in interest rates and raise their own expectations of inflation. Romer and Romer find that commercial forecasters revise their forecasts upward, but typically by only one tenth to two tenths of a percentage point, or about half of the gap between the Fed forecast and the commercial forecast signalled by the monetary action.

Why not revise by the full quarter point? Romer and Romer suggest two reasons. First, when the Fed acts to curb inflation, its actions signal the

expected amount of inflation, but also tend to make future inflation lower than it otherwise would be. Therefore, commercial forecasters respond rationally by not raising

monetary policy today means less inflation in the future, and therefore a lower inflation premium in long-term rates. But in reality a shift to tighter monetary policy usually

“...the Fed has a significant information advantage over commercial forecasters. Someone who had access to both forecasts would do best by completely ignoring the commercial forecast.”

their forecasts by the full amount. Second, determining exactly what information is revealed by the Fed's actions is complicated. Commercial forecasters do not have unlimited resources to devote to interpreting the Fed's moves. Therefore, they make mistakes.

Standard theories of monetary policy imply that even as tighter monetary policy causes short-term rates to rise, it should cause long-term rates to fall. The reason is that tighter

causes long-term interest rates to rise. Their findings, Romer and Romer suggest, can explain why. When the Fed tightens monetary policy, it signals the market that it expects higher inflation. Higher expected inflation means higher long-term interest rates. Thus the apparent contradiction between monetary theory and empirical reality is resolved. DRH

Current Savings Incentives Pass the Cost-Benefit Test

NBER Research Associates **Glenn Hubbard** and **Jonathan Skinner** have reviewed the research on the efficacy of IRAs and 401(k) plans as savings incentives and concluded that such plans do stimulate moderate amounts of new saving in the short term. In **Assessing the**

although the authors suspect an even larger impact on net private saving.)

Hubbard and Skinner show that, even with this quite modest effect, saving incentives are very effective along the more relevant cost-benefit dimension — that is, how much sav-

ing suggest that saving incentives have a powerful marginal impact, the aggregate effects of the IRA program (for example) would not be that great. IRAs will not by themselves solve the low rates of U.S. saving, simply because they represent no more than a few percentage points of GDP. However, they and 401(k)s can have a substantial impact on the low levels of financial wealth among many Americans nearing retirement.

Finally, the authors note that their estimates are only for quite short-term effects of saving incentives. The longer-term effects are arguably more relevant in assessing the desirability of a permanent targeted saving program. And, previous studies suggest substantially larger long-term benefit-cost ratios of saving incentive plans, although the period of transition before the long-term effects are realized can be quite long.

“...more than \$2 in new private saving is generated by saving incentives per dollar in lost tax revenue.”

Effectiveness of Saving Incentives (*NBER Working Paper No. 5686*), they suggest as a conservative estimate that IRAs could increase net private saving by about 26 cents per dollar of contribution; the remaining 74 cents is split nearly evenly between the reduction in tax liability from making the IRA contribution, and saving shuffled from taxable accounts. (There is less information about the effectiveness of 401(k)s,

ing is increased per dollar of lost revenue. The authors suggest that, using the conservative 26 cents as a baseline, more than \$2 in new private saving is generated by saving incentives per dollar in lost tax revenue. If the saving incentives generated 40 cents of new saving per dollar of contribution, then the cost-benefit ratio would rise to more than \$4 of new saving per dollar of lost tax revenue. While the cost-benefit ratios

Big Macs Are a Useful Guide to Exchange Rates

In September 1986, *The Economist* magazine introduced its annual survey of the "hamburger standard": the price of Big Macs in various countries designed as a guide to "whether currencies are trading at the right exchange rates." The initial piece contained price data on Big Macs from 15 countries along with the corresponding 14 exchange rates relative to the U.S. dollar. The coverage had expanded to 33 countries by 1996.

NBER Research Associate **Robert Cumby** uses a sample of 14 countries for which he has data for all 10 years to ask how well the hamburger standard has performed. In **Forecasting Exchange Rates and Relative Prices with the Hamburger Standard: Is What You Want What You Get With McParity?** (*NBER Working Paper No. 5675*), he examines the deviations from "Big Mac parity," asking whether they are permanent or transitory. He also examines the adjustment to parity, in particular asking if observing an

overvalued currency (that is, a high price in U.S. dollars of a Big Mac) allows one to forecast a subsequent depreciation of the currency and/or a subsequent decline in the relative (local currency) price of Big Macs. He reaches four conclusions:

First, the average dollar prices of Big Macs differ substantially in the 14 countries. Big Macs are the most expensive (in dollar terms) in Denmark and Sweden and cheapest in Hong Kong. Differences in taxes,

In contrast, the literature suggests that deviations from purchasing power parity have about a 4 to 5 year half life.

Third, deviations from Big Mac parity provide useful information for forecasting exchange rates. After accounting for currency-specific constants, Cumby finds, "a 10 percent undervaluation according to the hamburger standard in one year is associated with a 3.5 percent appreciation over the following year."

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labor costs, and rents probably contribute to these differences in Big Mac Prices.

Second, once these average differences are taken into account, the deviations from Big Mac parity are temporary. It takes only about a year for half of a deviation to disappear.

Fourth, deviations from Big Mac parity seem to help in forecasting relative local currency prices. "When the U.S. dollar price of Big Macs is high in a country, the relative local currency price of Big Macs in that country is likely to fall during the following year."

Paying by the Piece Increases Productivity

Economic theory holds that if a firm switches from paying hourly wages to paying piece rates, the average productivity of workers will rise, the firm will attract a more able work force, and variations in output among workers also will rise. However, there have been few attempts to test this theory, mostly because of a lack of suitable data. But NBER Research Associate **Edward Lazear** found the data at the nation's largest installer of auto-glass, Safelite Glass Corporation, based in Columbus, Ohio. During

1994 and 1995, after the introduction of new management, that company gradually changed the compensation method of its work force, moving from hourly wages to piece rate pay. "The theory is borne out almost to the letter," Lazear writes in **Performance Pay and Productivity** (*NBER Working Paper No. 5672*). "Claims by sociologists and others that monetizing incentives may actually reduce output are unambiguously refuted by the data." The effects were dramatic: First, the switch boosted the average level of

output for the company as a whole by about 35 percent. Second, for a given individual, the use of piece rates increased productivity by about 20 percent. The firm shared the gains in productivity with its workforce: the piece rate was set so that a worker captured in extra pay about half of his increase in productivity. Thus, the average incumbent worker's wage rose by 9.6 percent as a result of the switch.

Third, the new pay system reduced turnover among the most productive workers, but increased

turnover overall. The system also enabled the firm to attract more able workers as employees.

Fourth, the switch in systems resulted in a greater range in workers' abilities and output. On average,

that guaranteed range; now, fewer than 30 percent are in the guaranteed range. Fifth, the piece rate pay reduced the amount of paid sick leave, probably by making sick leave relatively more costly to take.

"...the switch [to piece rate compensation] boosted the average level of output for the company as a whole by about 35 percent."

glass installers are paid \$20 per unit installed, but the new system included a guaranteed wage of about \$11 an hour (if a worker's weekly pay on the basis of units installed fell below that guarantee). Initially, many workers ended up in

The data from Safelite came from a sophisticated computerized information system which keeps track of how many units of each kind each installer in the company installed in a given week. Since the performance pay plan was phased in over an

18-month period, many workers were employed under both hourly and piece-rate regimes. Thus, data on individual output are available for installers under both systems. With an average 2,040 workers employed during the average month, the result was 38,764 monthly measures of individual output. Installers averaged 2.96 glass units per day over the entire period. Under the performance pay formula, the average worker earned \$2,250 a month when vacation, holiday, sick pay, and other factors are included with the per-window payment. DRF

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