Research Department
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FRBSF Weekly Letter

Firm Size, Exchange Rates, and Interest Rates

This Weekly Letter *inaugurates a new series, appearing once a quarter, of digests of articles appearing in the Federal Reserve Bank of San Francisco's quarterly* Economic Review. *These digests are intended to make available to a wider audience the major findings of research conducted at the San Francisco Bank. Readers of the* Weekly *who wish to obtain individual copies of a* Review, *or who would like to be placed on the* Review *mailing list, may do so by writing the Public Information Department, P.O. Box 7702, San Francisco 94120. In the case where you are interested in a particular* Review, *please be sure to specify its* date *(e.g., Winter, 1984).*

Economics of Firm Size

Four articles appear in the Winter, 1984 *Economic Review,* covering a wide range of topics. In the first article, "The Economics of Firm Size," Michael Keeley looks at the question of why firms of widely varying sizes coexist in many industries, a question that has important implications for regulatory and antitrust policy. Conventional neo-classical price theory does not shed much light on this question because its usual assumptions of competitive behavior and identical production technologies lead to the prediction that all firms will be the same size in an industry.

Recent research on the economics of firm size finds an explanation in differences in managerial ability. According to this work, even small differences in managerial talent can have large effects on a firm's overall productivity because of the highly hierarchical structure of the modern day enterprise. Firms with superior managerial talent therefore can become large and still remain efficient by reason of their increased productivity.

As Keeley notes, however, there are limits to the size of a firm because costs of monitoring employees' performance grow as the firm's work force expands. Keeley argues that two ways large firms try to keep monitoring costs under control is to hire high-productivity workers and to provide large amounts of specific, on-the-job training for them. If his argument were correct, employees in larger firms should be observed to earn more on average than workers in smaller firms because of their higher productivity. At the same time, the relatively large amounts invested in specific training by larger firms should mean lower layoff and quit rates for their labor force.

Keeley finds evidence for both of these implications in a survey of households and employers done in 1979-1980 for the federal government's Employment Opportunity Pilot Project. He finds that large firms pay 10 to 15 percent more on average to their employees, even after correcting for demographic differences, occupation, union status and other variables. Moreover, data from the survey also indicates significantly lower employee turnover rates in larger firms.

These findings bear on contemporary anti-trust law and regulatory practices that discourage large-scale firms in some industries. Keeley argues that these actions may be counterproductive because they may prevent firms from fully utilizing their managerial resources to obtain maximum efficiency. Consequently, he concludes, "...there may be economic losses associated with public policies that prohibit firms from attaining their optimum size."

Money Demand

In a short policy article, "Dynamic Adjustment in Money Demand," Brian Motley looks at two competing specifications of how money demand behaves in the short-run. The first, contained in conventional, or *money-adjustment,* models specifies that

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the public adjusts the quantity of money it holds with a lag to changes in desired levels.

The alternative explanation, which has received increasing attention in the past few years, is based on the idea that the central bank can in principle determine the total amount of money in circulation (the supply of money) independent of the public's demand for it in the short run. Over longer periods of time, the economy will adjust interest rates, prices and income to bring the desired quantity of money balances into line with the existing supply.

Motley compares the performance of a variant of this supply-determined model—one in which prices adjust to bring money demand and supply into balance—with the money-adjustment specification in the Federal Reserve Bank of San Francisco's money-market model. (As Motley notes in his introduction, the San Francisco specification, with its emphasis on the important "buffer stock" role money plays, falls somewhere between the conventional and alternative specifications.) Using monthly data for the period 1976-1983, Motley concludes that there is some evidence in favor of the money-adjustment model, although "the evidence is not strong either way." Motley also notes that the price-adjustment model's poor performance for the period after October 6, 1979 raises the question of whether the Fed's switch to a new operating procedure then was really the "monetarist experiment" many claimed it to be.

Intervention: Japan's Case

Whether and how central banks should intervene in foreign exchange markets to stabilize their currencies has been a subject of wide debate in recent years and a major topic in the economic summits of Versailles and Williamsburg in 1982 and 1983. Michael Hutchison, in his article "Intervention, Deficit Finance and Real Exchange Rates: The Case of Japan," studies the effectiveness of so-called "sterilized" intervention in the foreign exchange markets.

Sterilized intervention means that any effects of intervention on the domestic money stock are offset. Sterilized intervention therefore affects the exchange rate only through its impact on the mix of foreign and domestic bonds in private portfolios. Different portfolio compositions in principle affect the relative yields on domestic and foreign bonds, which in turn causes exchange rates to adjust. However, as Hutchison argues, government deficits also alter the mix of foreign and domestic securities as new domestic bonds are issued, and therefore may offset the effect of exchange rate intervention.

Hutchison's examination of the Japanese-U.S. exchange rate during the period 1973-82 suggests that sterilized intervention

by the Bank of Japan has "had only a small influence on the yen-dollar real exchange rate" and that this influence has been swamped by the impact of government deficits. Moreover, Hutchison concludes, "it appears likely that sterilized intervention will become an even less potent policy instrument as the Japanese financial system becomes more closely integrated with its western counterparts."

Indicators of Real Interest Rates

Modern economic theory emphasizes that nominal, or market, rates of interest have two components: an inflation premium to protect lenders against expected future inflation, and a real, or inflation-adjusted, component that measures the true cost to the borrower. As Charles Pigott points out in his article, "Indicators of Long-Term Real Interest Rates," each of these components is of concern to the policy-maker, but unfortunately, neither can be observed directly. This makes it particularly difficult to interpret movements in longer term rates.

Pigott's strategy for determining which component is changing when market rates move is to look at some economic *indicators* that are affected either by real interest rates, or by expected inflation—but not by both.

One of the real rate indicators Pigott uses is the real exchange rate—the nominal exchange rate deflated by the ratio of the foreign to the U.S. price level. A rise in the real exchange rate is caused, among other things, by a rise in U.S. longer term real rates. Thus, all other things being equal, an observed rise in both U.S. nominal rates and the real exchange rate would indicate that real U.S. rates had risen. On the other hand, concurrent movements in nominal interest rates and forward exchange rates—an indicator of expected inflation—would be evidence that inflation expectations had changed.

Pigott applies this methodology to the behavior of the dollar-German mark exchange rate and U.S. and German longer term interest rates over the period 1976-1983 in a search for clues about what happened to real interest rates and inflation expectations in the U.S. during that time. His findings corroborate impressions from other sources that there was "a substantial decline in expected...inflation over the last several years" but that at the same time "real interest rates have remained very high...in comparison to their level prior to...1979."

Despite some practical difficulties in implementing his methodology, Pigott concludes that it offers a potentially fruitful way of extracting information from foreign exchange and other financial markets to understand the likely sources and potential impacts of variations in domestic interest rates.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 5/9/84	Change from 5/2/84	Change from 12/28/83 Dollar	Change from 12/28/83 Percent Annualized
Loans, Leases and Investments[1, 2]	179,691	− 375	3,666	5.6
Loans and Leases[1, 6]	159,987	− 393	4,632	8.1
Commercial and Industrial	48,421	320	2,458	14.6
Real estate	59,720	29	821	3.8
Loans to Individuals	27,906	− 34	1,255	12.8
Leases	5,013	13	− 50	− 2.7
U.S. Treasury and Agency Securities[2]	12,106	36	− 401	− 8.7
Other Securities[2]	7,598	− 18	− 565	− 18.9
Total Deposits	185,545	− 2,311	− 5,452	− 7.8
Demand Deposits	43,257	−2,969	− 5,980	− 33.2
Demand Deposits Adjusted[3]	29,173	63	− 2,158	− 18.8
Other Transaction Balances[4]	12,296	99	− 479	− 10.2
Total Non-Transaction Balances[6]	129,992	559	1,007	2.1
Money Market Deposit Accounts—Total	39,370	62	− 277	− 1.5
Time Deposits in Amounts of $100,000 or more	38,773	292	608	4.3
Other Liabilities for Borrowed Money[5]	21,192	660	− 815	− 9.6

Weekly Averages of Daily Figures	Week ended 5/7/84	Week ended 4/23/84
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (−)	356	68
Borrowings	120	102
Net free reserves (+)/Net borrowed(−)	236	− 33

[1] Includes loss reserves, unearned income, excludes interbank loans
[2] Excludes trading account securities
[3] Excludes U.S. government and depository institution deposits and cash items
[4] ATS, NOW, Super NOW and savings accounts with telephone transfers
[5] Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
[6] Includes items not shown separately

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