
Review

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In This Issue . . .

In the first article in this *Review*, "Has the Deregulation of Deposit Interest Rates Raised Mortgage Rates?" R. Alton Gilbert and A. Steven Holland assess the effects of the removal of deposit rate (Regulation Q) ceilings on the interest rates charged on mortgage loans. It is widely believed that the phase-out of interest rate ceilings on deposits at banks and thrift institutions has contributed to the rise in U.S. interest rates and, in particular, U.S. mortgage rates, over the last few years. In contrast to this popular opinion, Gilbert and Holland explain that economic theory suggests that deregulation, other things the same, should result in *lower* rates than would otherwise be observed.

Critics of this theoretical analysis of deregulation have noted that the average interest rate on mortgage loans, the average cost of funds for savings and loan associations, and market interest rates in general have risen substantially since the introduction of new types of deposits with flexible interest ceilings (or no ceilings at all). More importantly, mortgage rates have moved higher relative to government bond rates of similar duration since deregulation began.

However, Gilbert and Holland show that this increase in interest rate spreads is not related to deregulation at all; instead it is due to some crucial differences between conventional residential mortgages and government bonds as debt instruments. In particular, the relative rise in mortgage rates has resulted from more variable interest rates (which produced a higher premium on mortgages for the option of prepaying a mortgage loan) and the recession in the early 1980s (which raised the premium on mortgage loans to cover the higher risk of default on mortgages).

In the second article of this *Review*, "What Can Central Banks Do About the Value of the Dollar?" Dallas S. Batten and Mack Ott examine whether policymakers can do anything to reduce the dollar's currently high exchange rate. While many commentators on U.S. economic policy have argued that the high value of the dollar is to blame for a variety of domestic and international ills, few have gone on to offer constructive proposals for U.S. policymakers. Batten and Ott first explain the procedures through which central banks attempt to alter their currencies' exchange rates; they then assess the likelihood that U.S. monetary authorities can do anything substantive to lower the dollar's value.

After reviewing the procedures for central bank intervention, the authors argue that the size of U.S. international currency transactions and the demonstrated unwillingness of U.S. policymakers to subordinate domestic policy to international goals weigh heavily against an effective exchange rate policy. They conclude that, constrained by other domestic policy goals — principally, a stable inflation rate — the United States can do little by means of monetary policy alone to affect the dollar's value.

In the third article, "The Dutch Disease or Monetarist Medicine?" K. Alec Chrystal discusses the performance of the British economy over the last few years. Focusing on the impact of the British government's policies under Mrs. Thatcher, he argues that these policies have not been as restrictive as is often claimed.

Instead, Chrystal argues that the substantial rise in British unemployment

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since 1979 can be attributed to the structural change that the British economy has been undergoing, primarily as a result of its transformation from an importer of oil to a substantial net exporter of oil. Chrystal explains that this adjustment involved a loss of competitiveness of the manufacturing sector which led to contractions in the manufacturing sector and the associated substantial rise in unemployment.

Has the Deregulation of Deposit Interest Rates Raised Mortgage Rates?

R. Alton Gilbert and A. Steven Holland

LEGISLATION enacted in 1980 calls for the gradual phase-out of interest rate ceilings on deposits at banks and thrift institutions by 1986.¹ This legislation was intended to increase the efficiency of financial markets, which a deregulated financial environment provides, and permit small savers to earn more competitive rates on their savings. Many of these interest rate ceilings already have been removed.

Some economists have suggested that the payment of higher interest rates to depositors has contributed to the high rates of interest in this country over the last few years. According to Arenson (1983) in the *New York Times*, "Economists estimate that the higher cost of bank funds probably has raised the general level of interest rates by about 1½ percentage points." Bacon (1983), in the *Wall Street Journal*, quotes Lawrence Chimerine of Chase Econometrics as estimating the same effect on long-term real rates of interest. The basic argument is that the phase-out of Regulation Q has raised the interest expense of depository institutions; in response, these institutions have raised the interest rates they charge borrowers.

This article assesses the effects of the removal of deposit rate (Regulation Q) ceilings on the interest rates charged on mortgage loans. While the analysis developed here applies to all interest rates, we emphasize mortgage interest rates because large proportions

of the deposit liabilities of major mortgage lenders, such as savings and loan associations (S&Ls) and mutual savings banks, have been subject to Regulation Q ceiling rates; indeed, one reason for the removal of these ceilings was to increase the ability of these thrift institutions to attract deposits to use for mortgage lending.² Furthermore, some analysts have suggested that such deregulation has caused mortgage rates to increase more than other long-term interest rates.³

STEPS IN PHASING OUT DEPOSIT RATE CEILINGS

Table 1 describes the steps that already have been taken in eliminating deposit interest rate ceilings. Many of these steps created new types of accounts, with ceiling rates higher than those on passbook savings accounts or with no ceilings at all. The first significant steps in the relaxation of Regulation Q occurred even before the passage of the Depository Institutions

²Thrifts currently hold around 40 percent of the one- to four-family residential mortgage debt in the United States. They originate a much greater percentage, however, selling a large proportion of their mortgages to investors in the form of mortgage passthrough certificates. See McNulty (1983) for a discussion of mortgage origination and investments of thrift institutions.

³For instance, Edward Friedman (1983), pp. A.40–A.41, of Chase Econometrics maintains that:

The other major effect of the new deposit structure at thrifts and banks is the permanent rise in borrowing costs for deposit institution borrowers relative to open-market rates The implication is that if, for example, bond rates were to fall to much lower levels, home mortgage rates would not necessarily follow point for point.

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¹*Depository Institutions Deregulation* (1980).

Table 1
Steps in the Phase-Out of Regulation Q

Effective date of change	Nature of change
June 1978	Money market certificates established with minimum denomination of \$10,000, 26-week maturity and ceiling rates based on the 6-month Treasury bill rate.
November 1978	Automatic transfer service (ATS) savings account created, allowing funds to be transferred automatically from savings to checking account when needed.
June 1979	Small saver certificates established with no minimum denomination, maturity of 30 months or more and ceiling rates based on the yield on 2½-year Treasury securities, with maximums of 11.75 percent at commercial banks and 12.00 percent at thrifts.
June 2, 1980	Ceiling rates on small saver certificates relative to yield on 2½-year Treasury securities raised 50 basis points (maximums retained).
June 5, 1980	Maximum ceiling rate on money market certificates raised to the 6-month Treasury bill rate plus 25 basis points when the bill rate is above 8.75 percent. Other ceilings apply below 8.75 percent.
January 1, 1981	NOW accounts permitted nationwide. On the previous day, ceiling rates on NOW and ATS accounts set at 5.25 percent.
August 1, 1981	Caps on small saver certificates of 11.75 percent at commercial banks and 12.00 percent at thrifts eliminated. Ceiling rates fluctuate with 2½-year Treasury security yields.
October 1, 1981	Adopted rules for the All Savers Certificates specified in the Economic Recovery Act of 1981.
December 1, 1981	New category of IRA/Keogh accounts created with minimum maturity of 1½ years, no regulated interest rate ceiling and no minimum denomination.
May 1, 1982	New time deposit created with no interest rate ceiling, a required denomination of \$500 (but no specified minimum) and an initial minimum maturity of 3½ years. New short-term deposit instrument created with a \$7,500 minimum denomination, 91-day maturity and a ceiling rate tied to the 91-day Treasury bill discount rate. Maturity range of small saver certificate adjusted to 30–42 months.
September 1, 1982	New deposit account (7- to 31-day account) created with ceiling rate based on 91-day Treasury bill discount rate, minimum daily balance of \$20,000 and either a fixed term or a required notice period of 7 to 31 days.
December 14, 1982	Money market deposit account (MMDA) created with minimum balance of not less than \$2,500, no interest ceiling, no minimum maturity, up to six transfers per month (no more than three by draft), and unlimited withdrawals by mail, messenger or in person.
January 5, 1983	Super NOW account created with same features as the MMDA, except that unlimited transfers are permitted. Interest rate ceiling eliminated and minimum denomination reduced to \$2,500 on 7- to 31-day account. Minimum denomination reduced to \$2,500 on 91-day accounts and money market certificates of less than \$100,000.
April 1, 1983	Minimum maturity on small saver certificates reduced to 18 months.
October 1, 1983	All interest rate ceilings eliminated except those on passbook savings and regular NOW accounts. Minimum denomination of \$2,500 established for time deposits with maturities of 31 days or less (below this minimum, passbook savings rates apply).
January 1, 1984	Rate differential between commercial banks and thrifts on passbook savings accounts and 7- to 31-day time deposits of less than \$2,500 eliminated. All depository institutions may now pay a maximum of 5.50 percent.
January 1, 1985	Minimum denominations on MMDAs, Super NOWs and 7- to 31-day ceiling-free time deposits will be reduced to \$1,000.
January 1, 1986	Minimum denominations on MMDAs, Super NOWs and 7- to 31-day ceiling-free time deposits will be eliminated.

Deregulation and Monetary Control Act of 1980 (MCA), with the establishment of money market certificates (June 1978), automatic transfer service accounts (November 1978) and small saver certificates (June 1979). The introduction of NOW accounts nationwide (January 1981) was the first major change in deposit interest rate ceilings put into effect under provisions of the MCA.⁴

The Depository Institutions Deregulation Committee has the responsibility for complete removal of deposit rate ceilings by 1986. The committee meets periodically during the transition period, and most of the changes described in table 1 represent the outcomes of these meetings. Currently, the only ceilings in effect apply to passbook savings deposits and NOW accounts.⁵

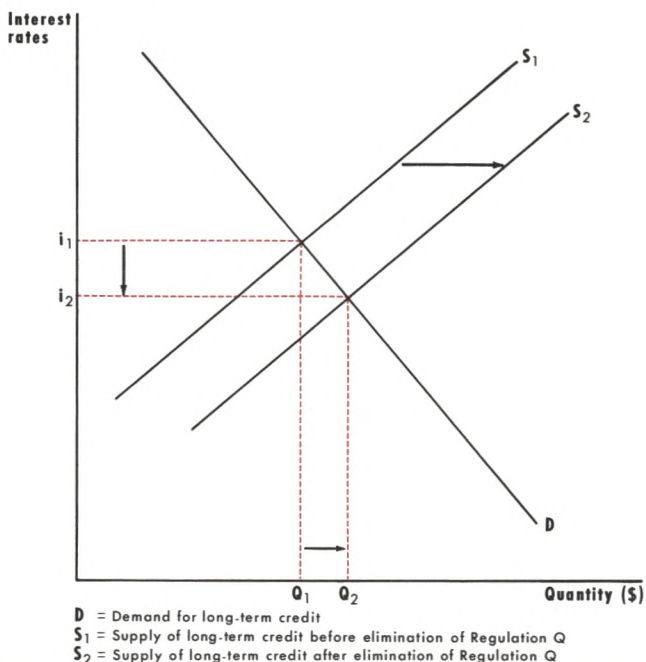
THE DETERMINATION OF MORTGAGE INTEREST RATES

In analyzing how mortgage rates are determined and how they might be affected by the deregulation of deposit interest rates, we assume that lenders, depositors and borrowers are all wealth-maximizers. In particular, we assume that lenders attempt to maximize their profits, depositors attempt to get the highest interest return they can for a given degree of risk, and borrowers search for the lowest interest rates, given other contractual characteristics of the loan.

We also make two alternative assumptions about competitive forces in the market for residential mortgages. Under the first assumption, interest rates on residential mortgages are determined in a competitive national market by the interaction of the total demand for and supply of long-term credit. Under the second assumption, each depository institution has some market power that permits it to choose the interest rate at which it lends.

In the first case, the phasing out of Regulation Q would increase the supply of long-term credit, due to an increase in savings by those whose returns from saving previously were limited by Regulation Q ceiling rates. The increase in the supply of credit would cause long-term interest rates to fall. This is illustrated in figure 1 as a rightward movement in the supply curve from S_1 to S_2 and a reduction in the rate of interest from

Figure 1
Effect of Eliminating the Regulation Q Ceiling Rate on a Competitive Market for Long-Term Credit



i_1 to i_2 . Of course, the decline in rates may be small; it depends on the extent to which deposit rate ceilings limited the incentives for saving. There would be no change in the relationship between mortgage and other long-term interest rates, since differences in risk and liquidity that determine the spreads in interest rates between various types of long-term securities would not be affected by the phase-out of Regulation Q.

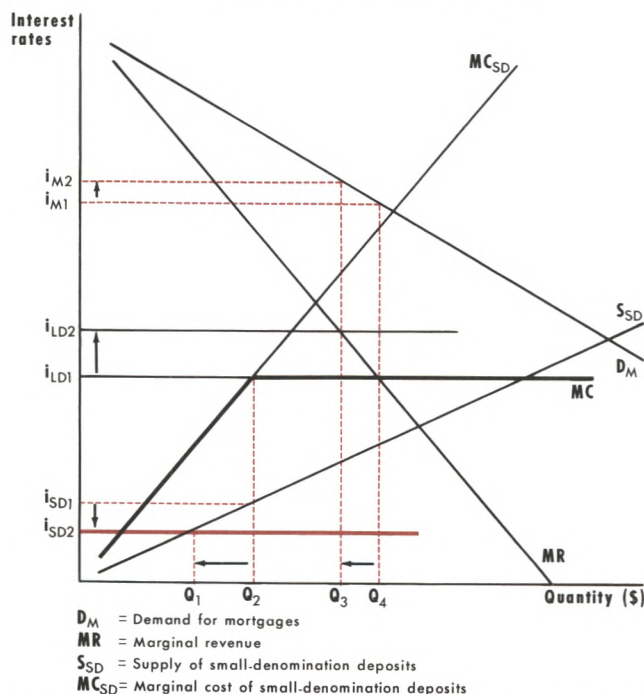
The conclusion is not dramatically different if residential mortgages are made by specialized lending institutions that have some market power. If a firm with market power raises its mortgage rate, it will make fewer loans than if it offered mortgage credit at lower interest rates.⁶ This is illustrated by the downward-sloping demand curve (D_M) in figure 2. We also assume that the firm must raise the interest rate it pays on small-denomination deposits if it wishes to attract more of these deposits. This is illustrated by the upward-sloping supply curve (S_{SD}). In contrast, the firm can attract all the large-denomination deposits it wants by selling certificates of deposit at the rate of

⁴NOW accounts were available for many years in New England before their introduction nationwide.

⁵The prohibition of interest payments on demand deposits is not affected by the MCA.

⁶Lenders might have such market power if most borrowers were limited to borrowing from institutions with offices in their local area and if the government restricted the number of institutions that may establish offices in each area.

Figure 2
Effect of a Regulation Q Ceiling Rate on
the Mortgage Interest Rate Set by a Lender with Market Power



interest determined in a competitive national market. With no Regulation Q ceilings in effect, we assume this interest rate is i_{LD1} .

The lender maximizes profits by lending the amount of mortgages at which the marginal cost (the increase in total cost due to the last dollar increase in mortgage lending) equals the marginal revenue (the increase in total revenue from the last dollar increase in mortgage lending). Marginal cost and marginal revenue are illustrated by MC (the heavy black line) and MR , respectively, in figure 2.

The relevant marginal cost curve has two portions: (1) For deposit levels below Q_2 , it is the marginal cost of attracting small-denomination deposits (MC_{SD}), since MC_{SD} is less than the interest rate on large-denomination deposits, i_{LD1} . (2) For deposit levels above Q_2 , it is equal to i_{LD1} . If the lender wants to attract more deposits than Q_2 for mortgage lending, it will attract Q_2 as small-denomination deposits and any additional funds as large-denomination deposits. In figure 2, if there are no ceilings on deposit rates, the profit-maximizing quantity of mortgage loans is Q_4 with a mortgage rate of i_{M1} and a rate on small-denomination deposits of i_{SD1} .

Suppose regulators impose a maximum interest rate that may be paid on small-denomination deposits of

i_{SD2} .⁷ The lender will be able to attract only Q_1 of small-denomination deposits and will have to attract any additional funds in the market for large-denomination deposits. Each lender increases its demand for large-denomination deposits, causing the interest rate on these deposits to rise (to i_{LD2} , for instance). By constructing a new marginal cost curve in the same manner as before (not shown), we find that the new equilibrium mortgage rate rises to i_{M2} , and the amount of mortgage lending falls to Q_3 . Thus, the theory indicates that a binding ceiling on the interest rates paid on small-denomination deposits results in a higher interest rate on mortgage loans, less mortgage lending, and a higher interest rate on large-denomination deposits.⁸ Therefore, the elimination of Regulation Q ceilings should result in lower mortgage interest rates.

Given this conclusion, what are we to make of the argument that the phase-out of Regulation Q ceiling rates has caused mortgage interest rates to rise? It is an assertion that is inconsistent with standard economic analysis, which is based on the wealth-maximizing behavior of business firms and individuals.

WHAT HAS HAPPENED TO MORTGAGE RATES?

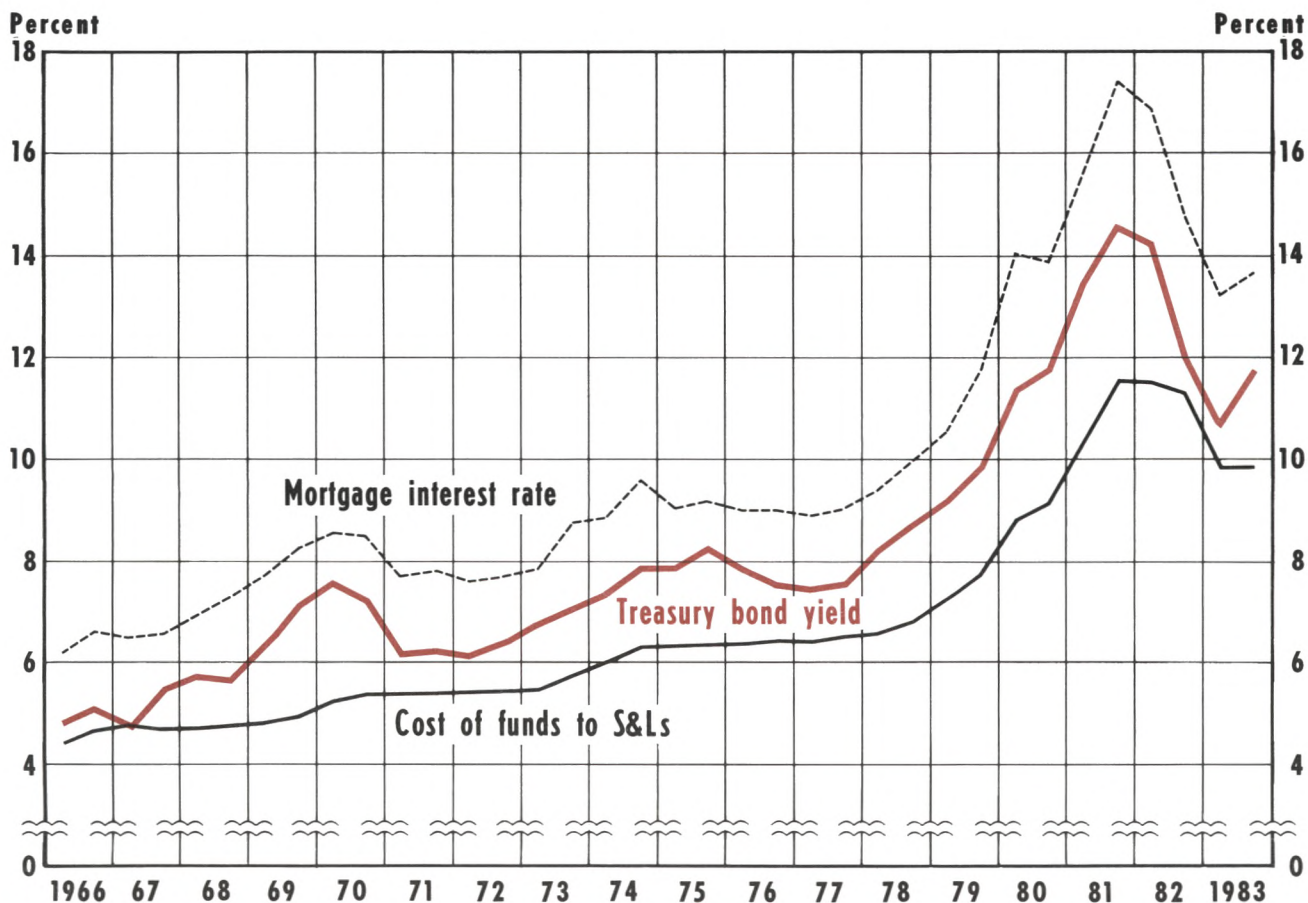
We now compare the recent behavior of mortgage interest rates with movements in other market rates and the average cost of funds for S&Ls. The objective is to determine whether the evidence supports the argument that deregulation of deposit interest rate ceilings has caused mortgage interest rates to rise relative to other market interest rates of comparable duration. The mortgage interest rate series used is published by the Department of Housing and Urban Development: the average interest rate at which residential mortgage lenders make commitments to lend for long-term, fixed-rate conventional loans. The insert on pages 10 and 11 describes several series on residential mortgage interest rates and discusses the basis for choosing this measure.

⁷In the theoretical analysis illustrated in figure 2, Regulation Q ceiling rates are assumed to apply only to small-denomination deposits. This assumption corresponds to the actual structure of ceiling interest rates under Regulation Q, which have exempted deposits in denominations of \$100,000 or more for many years.

⁸The general conclusions would be the same if all deposits were subject to a Regulation Q ceiling rate. Imposing a ceiling interest rate on all deposits that is below the unregulated market interest rate would reduce the amount of deposits the lender could attract. The profit-maximizing lender with market power would raise its mortgage interest rate to ration the reduced supply of mortgage credit among its customers.

Chart 1

Semiannual Comparison of Mortgage Interest Rate with Cost of Funds to S&Ls and 10-Year Treasury Bond Yield



The yield on 10-year U.S. Treasury bonds is used as a measure of the interest rate on long-term debt obligations other than residential mortgages.⁹ The 10-year maturity approximates the average length of time that residential mortgages are outstanding. This is much shorter than the stated maturities of conventional loans because of the prepayment of a substantial number of mortgage loans before their maturity.

Chart 1 indicates that semiannual averages of the cost of funds to S&Ls, the mortgage interest rate, and the yield on 10-year U.S. Treasury bonds tend to move together over time.¹⁰ The relationship between

changes in the mortgage and bond rates is somewhat closer (correlation coefficient of 0.897) than between changes in the mortgage rate and the average cost of funds (correlation coefficient of 0.816).

All three series were substantially higher in the late 1970s and 1980s than they had been earlier. Thus, the phase-out of Regulation Q ceilings allowed S&Ls to bid for funds by offering rates that kept pace with rises in market interest rates. One indicator of how rising market interest rates and the phase-out of Regulation Q affected the average cost of funds for thrift institutions is the decline in the share of their deposit liabilities held in the form of passbook savings deposits. Between

⁹Mayer and Nathan (1983) use the 10-year Treasury bond rate for the same purpose.

¹⁰The average cost of funds for S&Ls, obtained from the Federal Home Loan Bank Board, incorporates not only the interest S&Ls pay

on deposits, but also the interest they pay on advances from their Federal Home Loan Banks and other borrowed funds. The average cost of funds is somewhat higher than the average interest rate paid on deposits.

Four Measures of Mortgage Loan Interest Rates

This section describes four measures of interest rates on mortgage loans and explains why the HUD commitment rate is chosen in the text. Since the purpose of the paper is to determine how the phase-out of Regulation Q ceiling rates has affected interest rates paid by home buyers on new mortgage loans, the use of interest rates on mortgages traded in secondary markets is ruled out. An important criterion for the choice of a mortgage interest rate series is that the terms on mortgage loans that affect the rate be held constant. This criterion is especially important because of the many changes in the terms on mortgage loans in recent years, such as the rising share of loans with adjustable interest rates.

HUD Mortgage Commitment Rate

The Department of Housing and Urban Development surveys major mortgage lenders (primarily mortgage bankers) nationwide to determine the typical contract rate for loan commitments on long-term, fixed-rate conventional mortgages. This survey is conducted as of the first business day of each month. Lenders are not asked to specify the maturity or loan-to-value ratio of their mortgage loans. This series does not incorporate fees or discount points paid by borrower or lender. The series starts in April 1960.

FHLMC Mortgage Commitment Rate

The Federal Home Loan Mortgage Corporation conducts a weekly survey of mortgage lenders (primarily S&Ls) to determine the contract rates for commitments on fixed-rate loans with maturity of 30 years and loan-to-value ratio of 80 percent. This series also does not reflect fees or discount points. It starts in April 1971.

FHLBB Mortgage Commitment Rate

The mortgage lenders included in the commitment rate survey of the Federal Home Loan Bank Board include S&Ls, mortgage bankers, commercial banks and mutual savings banks. The survey asks these lenders about the interest rates at which they are making commitments to lend on newly built homes, under various combinations of loan-to-value ratios. The maturity of the loans is specified as 25 years or longer. The published data include an average contract rate and an average effective rate; the effective rate includes the fees and discount points, amortized over 10 years. The series plotted in chart 2 is for effective rates. The commitment rate data before September 1983 does not distinguish between rates on fixed-rate loans and those with

adjustable rates. The series based on a loan-to-value ratio of 75 percent starts in January 1973.

FHLBB Series on Interest Rates on Mortgage Loans Closed

The Federal Home Loan Bank Board also surveys the interest rates on residential mortgages that are actually closed (i.e., borrowers receive loans to buy homes). This series is available on a consistent basis since January 1973.

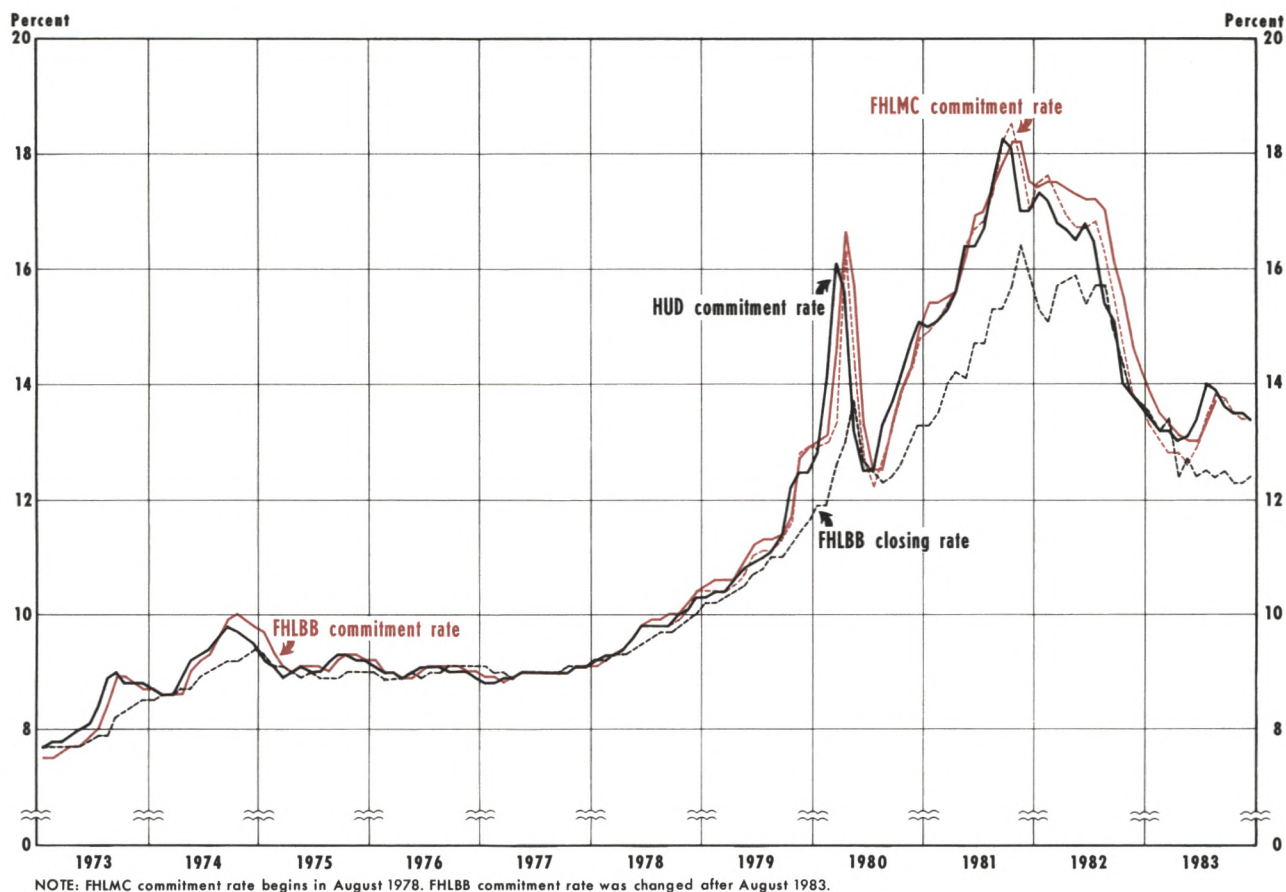
The closing rate series is different in several ways from the three commitment rate series. Lenders generally make commitments for mortgage loans a few months before the loans are closed, and interest rates are set at the time of commitment. Therefore, movements in interest rates on loans closed tend to lag movements in commitment rates (see chart 2). Thus, the rate at time of commitment is a better indicator of the rate at which borrowers can obtain mortgage credit at a given point in time. Furthermore, the series for the interest rate at time of closing reflects a conglomeration of loan terms; it incorporates interest rates on fixed rate, adjustable rate and graduated payment loans. It also incorporates mortgages with a variety of loan-to-value ratios and maturities and some mortgage loans with discounted rates under various creative financing schemes.¹ For these reasons, the series on loans closed did not rise as much as the commitment rate series during 1980–82.

The three series on commitment rates tend to move together closely over time (see chart 2). The Federal Home Loan Bank Board's series is slightly higher than the others during some periods, the difference reflecting primarily the amortized fees and discount points. The HUD rate is used in the text as the measure of mortgage interest rates simply because it is available over a longer period than the other two series. None of the results presented in the text would be substantially altered if a different commitment rate series had been used.

¹One of the creative financing schemes involves reduced-rate loans to buyers of homes on which a lender has made previous mortgage loans at fixed rates substantially below current mortgage rates. The new buyers generally would prefer to assume the outstanding mortgage loans with the relatively low interest rates, but may be financially unable to do so. The lender would prefer that the new buyer borrow at the prevailing market interest rate, thereby eliminating the old low-yielding mortgage loan. To reduce the incentives for new buyers to borrow enough from other sources to assume the old mortgages with the relatively low interest rates, many lenders have offered to lend to the new buyers at interest rates *between* those on the old mortgages and the prevailing market interest rates. Interest rates on mortgages that involve such arrangements are reflected in the series on average interest rates on mortgage loans closed.

Chart 2

Selected Mortgage Rates



1978 and 1983, savings deposits (subject to fixed interest rate ceilings) fell from over 35 percent of total deposits to less than 15 percent. Meanwhile, the new money market certificates and money market deposit accounts each grew to represent about 17 percent of total deposits.

Chart 3 plots the same three interest rate series on a monthly basis since May 1979.¹¹ The relationships among the three series enable us to see that changes in the cost of funds to S&Ls clearly lag changes in the mortgage rate and the Treasury bond rate, usually by about two months. A simple statistical analysis confirms the visual pattern in chart 3. The contemporaneous correlation between changes in the cost of funds and the other two series is actually negative, though not statistically significant. However, the cor-

relation between the current change in the mortgage rate and the change in the cost of funds two months later is 0.612.¹²

The Rise of Mortgage Rates Relative to Other Long-Term Interest Rates

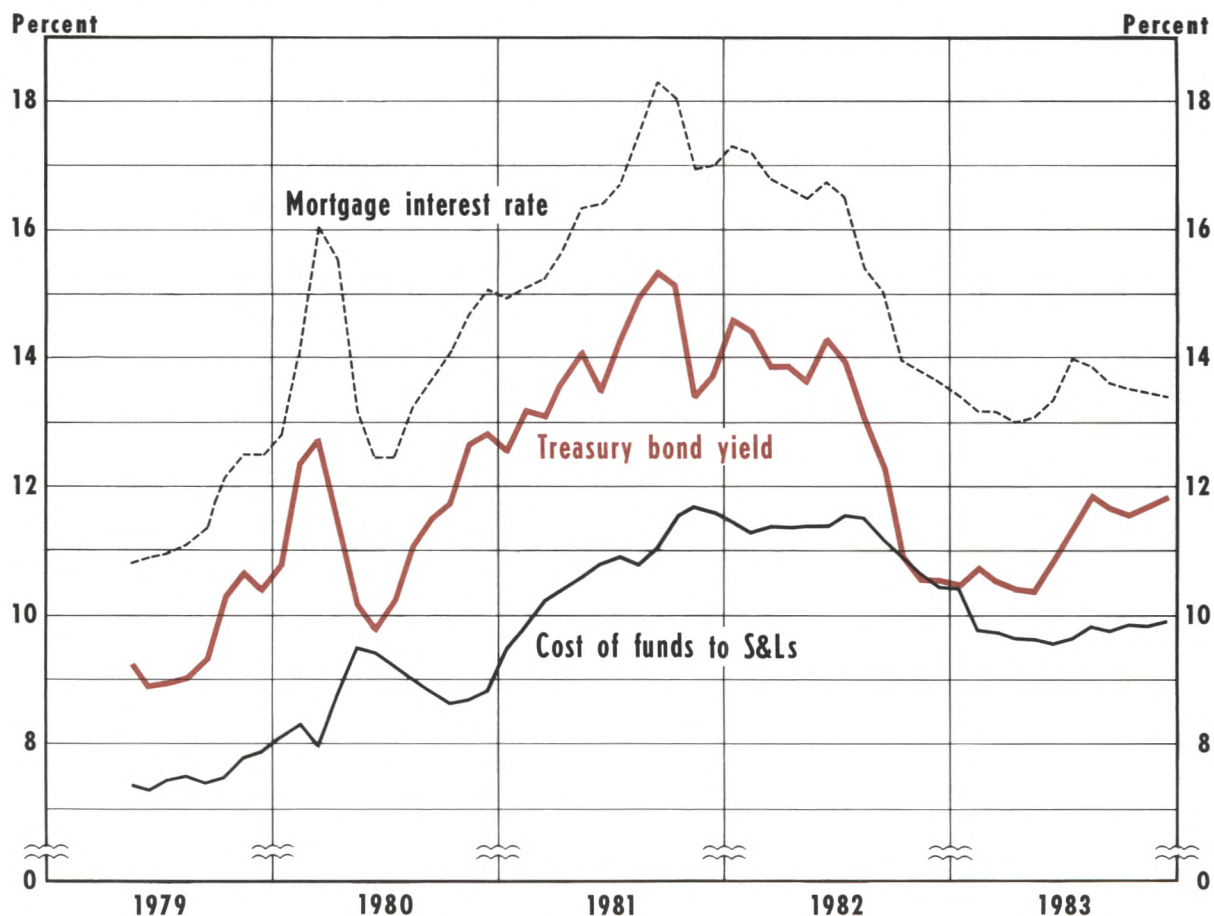
The behavior of mortgage rates since 1980 appears to lend empirical support to the hypothesis that deregulation has resulted in higher mortgage rates relative to other long-term rates. The average spread between the mortgage rate and the 10-year Treasury bond rate from 1966 to 1979 ranged generally from 1 to 1.75 percentage points; in the 1980s, it has ranged from 2 to 3 percentage points.

¹¹See Chamberlain, Olin and McKenzie (1983) for a discussion of the monthly cost of funds data. This series is actually the *median* cost of funds rather than the average.

¹²The contemporaneous correlation between changes in the mortgage rate and changes in the yield on 10-year Treasury bonds is 0.794, indicating that interest rates on both kinds of long-term debt instruments are affected simultaneously by the same credit-market influences.

Chart 3

Monthly Comparison of Mortgage Interest Rate with Cost of Funds to S&Ls and 10-Year Treasury Bond Yield



Since 1980, however, the average spread between the mortgage rate and the average cost of funds for S&Ls also has increased, by roughly the same order of magnitude as the increase in the average spread between mortgage rates and the rate on 10-year Treasury bonds. The gap between mortgage interest rates and the average cost of funds stayed mostly between 2 and 3.5 percentage points before 1980; since then, it has varied between 3.25 and almost 6 percentage points. Therefore, the widening in the spread between mortgage rates and the Treasury bond rate does not appear to be the result of a higher average cost of funds to S&Ls.

Why, then, did mortgage rates rise relative to rates on Treasury bonds of comparable term to maturity after 1980? The answer appears to involve differences between conventional residential mortgages and Treasury bonds as debt instruments. The two major differences are: (1) Most mortgages allow the borrower

to pay off his debt before maturity without penalty; and (2) There is risk of default on mortgage loans. Treasury bond holders face neither prepayment risk nor default risk.

Mortgage Rates and the Prepayment Option

Investors must be compensated with higher interest rates on residential mortgages than on Treasury bonds to compensate for the risk of prepayment by debtors.¹³ Mortgage borrowers must pay a higher interest rate for such a "call option." The value of this option need not remain constant over time. In particular, its value will be higher during periods of more volatile long-term

¹³For a more thorough analysis of the role of the prepayment option in determining the spread between mortgage interest rates and Treasury bond rates, see Hendershott, Shilling and Villani (1982).

interest rates than during periods of stable rates, because of the increased likelihood that the prepayment option will be exercised. Long-term interest rates were extremely variable by historical standards from 1980 to 1982. Thus, we would expect mortgage rates to rise relative to Treasury bond rates during this period.

The size of the interest rate premium necessary to compensate investors for the prepayment option on residential mortgages can be gauged by examining the spread between the yield on passthrough securities issued by the Government National Mortgage Association (GNMA) and the yield on 10-year Treasury securities. The risk of prepayment is the major difference between investing in GNMA passthroughs and Treasury bonds. Investors who purchase these passthrough securities receive the interest and principal payments from a pool of FHA-VA government-guaranteed residential mortgages. Thus, there is no more risk of default on the interest and principal payments on GNMA passthroughs than there is for bonds issued by the U.S. Treasury. Any prepayment of the mortgages, however, is "passed through" to the holders of the passthrough securities.¹⁴

This feature reduces the probability of a capital gain on GNMA passthrough securities compared with an investment in Treasury bonds. If long-term interest rates decline after an investor buys Treasury bonds, their market value rises, and the investor receives a capital gain if he sells them. In contrast, if long-term interest rates decline after an investor buys GNMA passthrough securities, the mortgages in the investment pool are more likely to be prepaid. Because such prepayments reduce the size of the potential capital gain, a premium in the form of a higher yield on mortgage passthroughs is required to make investors indifferent between them and Treasury bonds.

Chart 4 indicates that the spread between yields on GNMA passthrough securities and 10-year Treasury bonds rose during 1980 through early 1983. Thus, one reason for the relative increase in mortgage interest rates during those years was a rise in the rate premium necessary to compensate investors for the prepayment option on mortgages.

¹⁴Another factor that accounts for a small portion of the spread between rates on GNMA passthrough securities and Treasury bonds is the effect of state and local taxes. Interest earned on Treasury bonds is exempt from state and local taxes, but earnings on mortgage passthroughs are not. There is no reason to suspect that this factor has increased in importance during recent years. There also could be differences in yields on these two assets if investors do not view them as being of roughly equal term to maturity, as we are assuming.

Mortgage Rates and Default Risk

Another reason for the rise in interest rates on conventional mortgages since 1980 appears to be a general rise in interest rates on privately issued debt securities relative to yields on securities issued or guaranteed by the federal government. Table 2 shows that the average spread between interest rates on privately issued debt instruments and Treasury securities is higher in the generally recessionary period, February 1980 to November 1982, than in the expansionary period, April 1975 to January 1980.¹⁵ This is a reflection of the greater default risk associated with privately issued securities during recessionary periods. In each case, the differences in mean spreads between the time periods are statistically significant at the 1 percent level.¹⁶ The pattern of spreads between mortgage and Treasury bond rates is very similar to the pattern of spreads between yields on other privately issued securities and Treasury securities of comparable duration.

Table 2 also indicates that the spreads between yields on privately issued and U.S. Treasury securities declined to near their pre-1980 levels a few months after the economic recovery began in December 1982. The decline in the spread between the mortgage commitment rate and the Treasury bond rate occurred despite the authorization of money market deposit accounts — a major relaxation of Regulation Q ceiling rates that occurred in the first month of the current recovery.

These observations are supported by the behavior of delinquency rates for mortgages. The percentage of conventional mortgages with payments delinquent for 60 days or more rose steadily from 0.61 percent in the second quarter of 1979 to 1.37 percent in the first quarter of 1983, then began to decline. Delinquency rates in the 1980s have been substantially higher than in the period 1964–79, which undoubtedly accounts for a substantial portion of the higher mortgage rates relative to Treasury bond rates observed since 1980.¹⁷

¹⁵The period from July 1980 to July 1981 is officially classified as an economic recovery. The financial markets, however, did not respond during that period as they typically do during expansionary periods. Stock price indexes were little affected, and the spread between corporate Baa and Aaa bond rates (known to be influenced by cyclical factors) changed little. The lack of response is undoubtedly due to the weakness and short duration of the recovery.

¹⁶Some corporate Baa bonds grant a call option to the issuer. Part of the increase in the spread between the Baa bond rate and long-term Treasury securities, therefore, is accounted for by an increase in the value of this prepayment option.

¹⁷The average quarterly delinquency rate (60 days or more) for conventional mortgage loans between I/1964 and IV/1979 was 0.58 percent; between I/1980 and IV/1983, it was 1.01 percent. This difference is statistically significant at the 1 percent level.

Chart 4

Selected Interest Rate Spreads

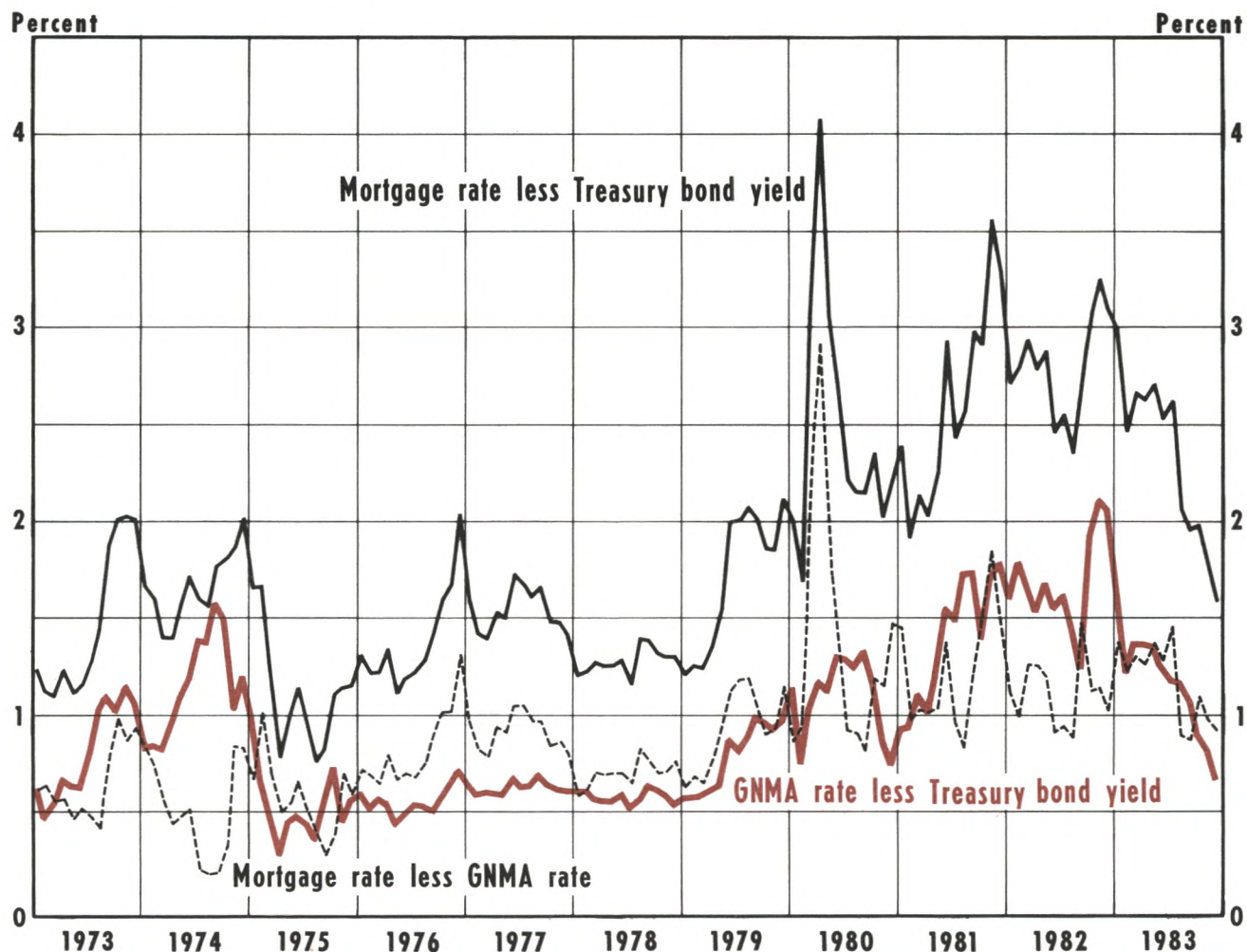


Table 2

Spreads Between Interest Rates on Privately Issued Debt Instruments and U.S. Treasury Securities (monthly average spreads in percentage points)

Interest Rate Spread	Apr. 1975–Jan. 1980	Feb. 1980–Nov. 1982	Dec. 1982–July 1983	Aug. 1983–Mar. 1984
Mortgage rate minus 10-year Treasury bond rate	1.41	2.63	2.71	1.71
Corporate Baa rate minus long-term Treasury bond rate	1.67	2.90	2.83	1.88
3-month commercial paper rate minus 3-month Treasury bill rate	0.53	1.29	0.26	0.31

Table 3

Decomposition of the Spread Between the Mortgage Rate and the 10-Year Treasury Bond Rate (monthly average spreads in percentage points)

Type of risk	Measure of risk	Apr. 1975–Jan. 1980	Feb. 1980–Nov. 1982	Dec. 1982–July 1983	Aug. 1983–Mar. 1984
Default risk	Mortgage rate minus GNMA rate	0.79	1.26	1.29	0.94
Prepayment risk	GNMA rate minus 10-year Treasury bond rate	0.62	1.37	1.42	0.77

The effects of the major factors that appear to account for the rise in mortgage rates relative to Treasury bond rates can be seen in table 3 (and also in chart 4). For the period 1980–82, the premium to compensate for the risk of prepayment (approximated by the spread between the yield on GNMA passthrough securities and 10-year Treasury bonds) was about 75 basis points higher on average than in 1975–79. The default risk premium on privately issued securities not guaranteed by the government (approximated by the spread between interest rates on new conventional residential mortgages and the yield on GNMA passthrough securities) was approximately 50 basis points higher on average during this period. Therefore, both effects appear to share in the responsibility for higher mortgage interest rates relative to Treasury securities in the early 1980s. Both have declined during the current economic expansion.

CONCLUSION

Economic theory suggests that the deregulation of deposit interest rates does not cause mortgage rates to rise and may, in fact, result in lower mortgage interest rates than would otherwise be observed. Nonetheless, many believe that the higher average cost of obtaining loanable funds that results from deregulated deposit rates have led to higher mortgage rates.

Since the introduction of new types of deposits with flexible interest ceilings (or no ceilings at all), the average interest rate on mortgage loans, the average cost of funds for savings and loan associations, and market interest rates in general have risen substantially. The notion that higher mortgage rates are due to the removal of deposit interest rate ceilings, however, is not supported.

Although mortgage rates have moved higher relative to government bond rates of similar duration following the beginning of deregulation, that pattern appears to be unrelated to the deregulation of deposit rates. Instead, it was the result of more variable interest rates, which caused a higher premium for the option of prepaying a mortgage loan, and the economic downturn in the early 1980s, which raised the premium for the risk of default on mortgages. Since interest rates have become less variable and an economic expansion has begun, the spreads between mortgage rates and government bond rates have fallen over the last year to close to their pre-1980 level.

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What Can Central Banks Do About the Value of the Dollar?

Dallas S. Batten and Mack Ott

OVER the past four years, the stubborn strength of the U.S. dollar in foreign currency markets has created what many observers believe is a precarious balance between two undesirable features of the floating exchange rate system. On the one hand, some argue that the dollar is overvalued and, consequently, soon will fall dramatically, generating increased U.S. inflation and jeopardizing world financial stability. On the other hand, others argue that the "high" dollar was a major cause of the 1981–82 economic recession and now assert that the current expansion is not sustainable without a substantial decline in the foreign exchange value of the dollar.¹

Surprisingly, both sets of dollar critics have advanced the same policy prescription: intervene in foreign exchange markets. In other words, the monetary

authorities of the United States and its major trading partners should buy and sell foreign currencies. The first set of critics urges this policy *to manage the fall* of the dollar's foreign exchange value, while the second urges it *to bring down the value* of the dollar in order to stimulate the U.S. traded goods sectors.²

The purpose of this paper is to explain the fundamentals of central bank intervention in foreign exchange markets and the conditions required for it to be effective. First, the motives, mechanics and consequences of intervention are discussed. Next, the relationship between intervention and domestic monetary policy is investigated. Finally, some qualitative and quantitative evidence on the efficacy of intervention is reviewed.

WHY CENTRAL BANKS INTERVENE

The exchange rate is the price of one country's currency in terms of another. As the relative price of two assets (currencies), it is determined by the forces of demand and supply, as are the prices of other assets,

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¹For examples, consider Kraus (1984), Arenson (1984) and Bank for International Settlements (1984). In the last (p. 1), Dr. Gleske, a member of the Directorate of the Deutsche Bundesbank, was somewhat bemused by the dollar's persistent high value:

There therefore seem to be enough reasons to support expectations that the dollar rate will decline. However, contrary to all historical experience, these expectations have not been fulfilled as yet. The markets do not seem to have any expectations of this nature, either. Apparently, investing in dollar assets — especially in the United States itself — continues to be lucrative despite the greater exchange rate risk, and the markets appear up to now to have hardly any doubts that the dollar will remain attractive despite the fact that the fundamental factors like the declining competitiveness of U.S. industry and sharply rising current-account deficits operate rather in favour of expecting the opposite.

²Traded goods are those goods that are *potentially* exportable or importable — whether or not they are actually consumed domestically or abroad. For instance, agricultural commodities, airplanes and steel are traded goods, while haircuts, legal services and housing are primarily nontraded goods. The importance of the distinction between traded and nontraded goods is that changes in foreign competition will directly affect production and sales both in the home and foreign markets in the traded goods sector, while only indirectly affecting production and sales in the nontraded goods sector.

such as stocks, bonds or real estate.³ Moreover, the relative valuations of and yields on non-currency assets also have, as we shall see, large impacts on the exchange rate.

Unlike the prices of services or nondurable goods, asset prices reflect primarily the market's expectations about future economic conditions. Consequently, in the short run, exchange rates should be influenced predominantly by *new* information — that is, surprises — which alters expectations of future events; these surprises lead to highly unpredictable and often sizable movements in exchange rates. Because news can be incorrect and because markets can overreact to news even when it is correct, monetary authorities typically believe that much of the short-run volatility exhibited by foreign exchange markets is excessive.⁴ Consequently, intervention is frequently rationalized by central banks as a means to reduce the presumed excessive variability of exchange rate movements resulting from the variability of market expectations.⁵

In the long run, movements of exchange rates tend toward a relationship among currencies known as purchasing power parity (PPP). That is, a dollar or yen or deutsche mark (DM) would each purchase the same amount of goods whether expended at home or abroad. Thus, a country with a relatively rapid inflation rate will have its currency decline in value relative to the currencies of countries with slower inflation rates.

Ignoring long-run considerations, frequent and offsetting exchange rate movements in the short or

intermediate term can be more than just a nuisance to monetary authorities — they also can have real effects. For example, an appreciation of the exchange rate beyond that necessary to offset the inflation differential between two countries (termed “overshooting”) raises the price of traded goods in the home country relative to the prices of traded goods in the rest of the world. Thus, home country exports become less competitive in world markets and home country import substitutes less competitive in domestic markets. Consequently, sales of traded goods decline, generating unemployment in the traded goods sector and, subsequently, inducing a shift of resources from the traded to the nontraded goods sector.

This reallocation of resources is efficient for the economy if that portion of the exchange rate appreciation in excess of the inflation differential is permanent. If this excess portion of the exchange rate appreciation is short-lived (i.e., reversed in the near future), the corresponding movement of resources will be reversed, and the economy will have experienced unnecessary unemployment due to the costs of shifting resources, reallocating capital, laying off and hiring. Monetary authorities who wish to avoid such situations may intervene to oppose exchange rate movements that they believe will *not* persist. This is a feasible policy, however, only if they can distinguish temporary exchange rate fluctuations from permanent ones.⁶

Exchange rate changes also affect the general price level and may generate some measured short-run inflation or disinflation as markets adjust to the changing relative price of traded to nontraded goods. In particular, an exchange rate depreciation raises the domestic currency price of imports and, thus, raises the domestic price level. Because the total impact of this change is not felt all at once, the price level continues to rise for some time. Thus, since exchange rate depreciation usually precedes changes in domestic prices, it may appear to cause inflation.⁷

³ Policymakers sometimes argue that it is too important to be determined solely by market forces. Consider, for example, the view of Dr. Otmar Emminger, former President of the Deutsche Bundesbank, as expressed in a speech to a Bankers' Forum at Georgetown University, Washington, D.C., on September 28, 1981 (see Bank for International Settlements [1982], p. 4):

The exchange rate is far too important a price — because of its effects on domestic stability and activity, the balance of payments, and international trade and payments relations — to be treated with ‘benign neglect’ as a ‘residual outcome’ of domestic monetary and other economic policies. This should not be misunderstood as a call for activism and interventionism in the field of exchange rates. It cannot be emphasised too much that the most important foundation for exchange rate stability is a policy of monetary and financial stability at home. We would, however, delude ourselves if we believed that all that is required for stable exchange rates is the pursuit of a steady money supply policy. Short and medium-term strains and disturbances are built-in elements in the field of payments and exchange markets, even if we had firm international agreement and successful implementation of concerted money supply policies.

⁴ This concern, however, appears to be misdirected as Bergstrand (1983) has demonstrated that exchange rates are actually less variable than other asset prices.

⁵ For additional support for this characterization, see Kubarych (1983), pp. 16–19 and 43–45.

⁶ This distinction is difficult to make in practice. As Martin Feldstein (1983), p. 48, observed:

[T]here is no way in practice to distinguish an exchange-rate movement that is merely a random fluctuation from one that is part of a fundamental shift in the equilibrium exchange rate. Exchange-market intervention aimed at smoothing a transitory disturbance may in fact be a counterproductive or futile attempt to prevent a basic shift in the equilibrium exchange rate.

Furthermore, this overshooting may occur because asset markets clear more rapidly than do goods markets, and, as a result, it may not be undesirable.

⁷ For a more detailed discussion of the relationship between domestic inflation and exchange rate changes, see Batten and Ott (1983).

Figure 1

U.S. Intervention to Support the Deutsche Mark

Federal Reserve Banks (FRB)		U.S. Commercial Banks (cb)		Bundesbank (B)		German Commercial Banks (Gcb)	
+ DM deposits at B	+ Reserves of cb	+ Reserves			+ DM deposits of FRB	– Reserves	– DM deposits of cb
		– DM deposits at Gcb			– Reserves of Gcb		

Finally, many domestic residents, firms and, especially, multinational corporations have financial assets and liabilities denominated in foreign currencies. Exchange rate changes, then, produce wealth effects since they generate capital losses and gains. For example, if the U.S. exchange rate unexpectedly appreciates, the dollar values of foreign-currency-denominated assets and liabilities fall. Hence, U.S. net monetary debtors in foreign currencies experience gains, and net creditors experience losses.⁸

In sum, changes in exchange rates have consequences that monetary authorities may deem undesirable. Thus, having chosen not to allow exchange rates to be completely market-determined, many central banks intervene periodically in foreign exchange markets to mitigate what they believe to be transient but deleterious effects of exchange rate movements on the domestic economy.

HOW CENTRAL BANKS INTERVENE

The mechanics of central bank intervention in foreign exchange markets can take a variety of forms. The general purpose of each variant, however, is basically the same: augment the market demand for one currency by augmenting the market supply of another. An exhaustive explanation of the ways in which intervention can be conducted is beyond the scope of this paper.⁹ Instead, we will describe the most frequently

employed method — intervention by the monetary authority.

A Typical Example

Suppose that the dollar is believed to be overvalued. The Federal Reserve Bank of New York, which acts as the agent for U.S. foreign exchange market interventions, will purchase foreign currency, typically DM, with U.S. dollars.¹⁰ It can do this simply by creating dollar reserves and using them to purchase DM. In particular, the Fed can purchase DM-denominated deposits of U.S. banks at German banks and pay for them by crediting the reserve accounts of these U.S. banks. The Fed then presents to the Bundesbank drafts drawn against accounts of these U.S. banks at German banks, which are subsequently cleared by the Bundesbank. The impact of this transaction on the financial institutions involved is outlined in figure 1. In general, the reserves of the U.S. banking system increase, while those of the German banking system fall. The changes in the reserve positions of the United States and Germany that result from this foreign exchange operation will cause the U.S. money stock to rise and Germany's money stock to fall.

Conversely, if the Bundesbank believes the DM to be undervalued (i.e., the dollar is overvalued), it could reduce the quantity of DM relative to dollars. This transaction is slightly more complicated than when the Fed intervenes in support of the DM. First, the Bundesbank must acquire dollars. It typically does this either by selling some of its non-negotiable U.S. Treasury securities to the Fed or by borrowing from the

⁸A net monetary foreign currency debtor is an individual or firm with greater monetary debts than monetary claims in a foreign currency. Thus, when that foreign currency depreciates, his foreign liabilities decline in value more than his foreign assets, and, on net, his wealth rises. Similarly, a foreign currency depreciation would lower the wealth of a net monetary foreign currency creditor.

⁹See Balbach (1978) for a detailed analysis of various forms of intervention.

¹⁰In the United States, the Federal Reserve Bank of New York intervenes for the Federal Reserve System and the U.S. Treasury. The decision to intervene, however, is made by the U.S. Treasury.

Figure 2

German Intervention to Support the Deutsche Mark

Federal Reserve Banks (FRB)		U.S. Commercial Banks (cb)		Bundesbank (B)		German Commercial Banks (Gcb)	
(1)	+ Treasury securities + \$ deposit of B			- Treasury securities + \$ deposit at FRB			
(2)	- \$ deposit of B + Reserves of cb	- DM deposits at Gcb + Reserves		- \$ deposit at FRB	- Reserves of Gcb	- Reserves	- DM deposits of cb

Fed in exchange for a dollar-denominated account through a swap arrangement already established between the two. These acquired dollars are then used to buy DM in the foreign exchange market.

In figure 2, step 1 depicts the acquisition by the Bundesbank of a dollar-denominated deposit at the Fed. Since this transaction is between central banks, it does not affect the reserves of the banking system in either country and, hence, does not affect either country's domestic money supply. In step 2, the Bundesbank purchases DM-denominated deposits of U.S. commercial banks held at German commercial banks with dollars. This transaction is cleared by U.S. banks presenting to the Fed dollar-denominated claims against the Bundesbank and receiving reserves in return. (At the same time, the Fed reduces its deposit liabilities to the Bundesbank.) Likewise, the Bundesbank clears the draft it purchased from U.S. banks by lowering its reserve liabilities to German banks. And finally, German banks, presented with a draft against deposits of U.S. banks, reduce their deposit liabilities to these banks by the amount of the reduction in their reserve deposits at the Bundesbank. The final result is the same as in the preceding case — the reserves of the U.S. banking system rise, while those in the German banking system fall.

Sterilized vs. Unsterilized Intervention

The two examples discussed above are instances of unsterilized intervention; that is, the domestic money supplies have not been insulated from the foreign exchange market transaction. If unsterilized intervention is undertaken in large amounts, it will affect not only the money supplies of both countries, but domestic prices and interest rates as well. If monetary author-

ities do not want their foreign exchange market intervention to affect their domestic economies, they may sterilize its impact with an offsetting sale or purchase of domestic assets.

Sterilized intervention would be the preferred procedure if the Fed did not want the U.S. banking system's reserves to change. Thus, if the unsterilized intervention interfered with the goals of domestic monetary policy, the Fed could sell U.S. Treasury securities in U.S. financial markets equal to the amount of reserves created by the intervention. With this transaction, the level of reserves in the U.S. banking system would return to its preintervention level, and, as a result, there would be no subsequent change in the U.S. money supply.

Similarly, the Bundesbank could neutralize the impact of intervention on the German money supply by injecting new reserves into its banking system. If sterilized completely, the foreign exchange operation would not affect either country's money supply. Thus, in the case of a completely sterilized intervention, private portfolios would contain fewer DM-denominated securities and more dollar-denominated securities, while the Fed's portfolio would contain more DM-denominated securities and fewer dollar-denominated ones.

THE EXCHANGE RATE CONSEQUENCES OF CENTRAL BANK INTERVENTION

Exchange rate movements reflect two fundamental characteristics that must be recognized to understand the impact of intervention. First, changes in exchange rates, like changes in the price of any asset, are highly

irregular and unpredictable in the short run, reflecting primarily new events that alter the market's expectations of future exchange rate movements. Second, since the exchange rate is the relative price of two currencies, its movements reflect changes in policies that affect either the supplies of these currencies or the demands to hold them. More specifically, exchange rates reflect anticipated relative inflation rates that are generated by both past and expected future policy actions of the countries involved. Therefore, currencies of countries with lower *expected* inflation rates are cheaper to hold and are in greater demand than those of countries with higher inflation rates, all other things equal. Consequently, it follows from PPP that currencies of higher-inflation countries tend to depreciate relative to those of lower-inflation countries.

The different impacts of sterilized and unsterilized intervention on the exchange rate can be analyzed in terms of these two characteristics. Suppose, as outlined above, that either the Fed or the Bundesbank purchases DM with U.S. dollars. This transaction increases the short-run flow demand for DM relative to the supply of DM and should result in an appreciation of the DM, all other things equal. This impact will be only transitory, however, unless the central bank continues to purchase DM day after day, thereby maintaining the higher flow demand for DM.

More importantly, since this transaction is unsterilized, it causes the U.S. money supply to rise and the German money supply to fall. If large enough, this intervention has two potential effects: a transient effect on the current markets for the two currencies and a permanent effect on expected future relative inflation rates. Other things equal, the resulting excess supply of U.S. money in the United States and excess demand for German money in Germany will cause the two countries' money markets to clear at lower and higher rates of interest, respectively. This immediate, but transitory, effect will cause the dollar to decline relative to the DM as German assets temporarily have higher yields than U.S. assets.

Whether this effect on the exchange rate is lasting or transient, however, depends crucially on the expectations of investors holding U.S. and German assets. If these expectations are unchanged, individuals holding U.S. assets would sell them — driving up their yields — and buy German assets — depressing their yields — thereby tending to offset the central bank's actions. That is, just as a single private individual in a competitive market can have no effect on asset prices by his sales or purchases, so even central banks will not affect

asset prices unless their activity is substantial or their actions affect market expectations.

This intervention may affect market expectations about relative asset yields and prices if market participants interpret the expansion of the U.S. money supply as an indicator of a permanent increase in the rate of monetary growth planned by the Fed. Such expectations of further easing of U.S. monetary policy will cause market participants to anticipate increases in the rate of U.S. inflation relative to German inflation. These expectations of relatively higher future U.S. inflation will decrease the desire of foreigners to hold dollars since they expect the dollar's purchasing power to continue to fall. Consequently, the DM value of the dollar will depreciate at a rate equal to the difference between the now higher anticipated rate of inflation in the United States and that in Germany.¹¹

If the intervention is sterilized, its immediate impact is the same as that for unsterilized intervention; that is, it generates a temporary increase in the flow demand for DM. The net effect of this sterilized intervention is simply that private portfolios will contain more dollar-denominated and fewer DM-denominated securities; neither country's money supply will be affected. Consequently, it is not clear what lasting impact this type of intervention will have on the DM/dollar exchange rate.

Because sterilized intervention entails a substitution of dollar-denominated securities for DM-denominated ones, however, the exchange rate will be permanently affected only if the investors view domestic and foreign securities as being *imperfect* substitutes. If this is the case, investors will be unwilling to hold the new portfolio at unchanged exchange and interest rates. In fact, at the original exchange and interest rates, an excess demand for DM-denominated securities will arise. Consequently, investors will attempt to acquire additional DM-denominated securities in order to return their portfolios to the desired proportion of dollar-denominated securities, thereby placing downward pressure on the DM value of the dollar.

If investors consider these securities to be *perfect* substitutes, on the other hand, no change in either the

¹¹This discussion is oversimplified in that it isolates only two currencies and the exchange rate between them. In the real world, there are numerous currencies and exchange rates. Attempts to affect the exchange rate between any pair of currencies necessarily affect not only the exchange rate between this pair, but all other exchange rates as well. Consequently, intervention to move one exchange rate in a desirable direction or to calm fluctuations in that exchange rate may cause another exchange rate to move in an undesirable direction or to become more volatile.

exchange rate or in interest rates will be necessary to motivate investors to hold this portfolio. In summary, when two domestic money supplies have been unaffected by an intervention activity, the intervention can have a permanent impact on the exchange rate only if foreign and domestic securities are imperfect substitutes.

INTERVENTION AND DOMESTIC MONETARY POLICY

The foregoing discussion has emphasized that the relationship between domestic monetary policy and intervention depends on whether the intervention is sterilized. Domestic monetary policy cannot be conducted independently of unsterilized intervention since, as discussed above, it is tantamount to conducting monetary policy through foreign exchange market operations. Thus, the exchange rate is a third alternative monetary target variable to those more frequently considered — namely, monetary aggregates or interest rates.

Because there can be only one monetary policy stance, the role of unsterilized intervention depends crucially on the importance that policymakers place on the exchange rate as an objective for monetary policy. In particular, the use of unsterilized intervention necessarily implies that the monetary authority places relatively more importance on reducing the risks and real economic disturbances associated with exchange rate movements than achieving domestic targets for inflation and unemployment. The manipulation of monetary policy to achieve exchange rate objectives inevitably will conflict — occasionally or frequently — with the policy stance required to achieve these domestic objectives.

Furthermore, exchange rate movements may be motivated not only by changes in the desire to hold domestic currency (which probably should be offset by changes in the domestic money supply), but also by a host of other factors, especially the policies followed by foreign policymakers. Directing domestic monetary policy at an exchange rate target, then, subjects the domestic economy to disturbances from both domestic and foreign sources. Consequently, the monetary authority loses its ability to control its own money supply independently of foreign events.

The desire to influence exchange rate movements without losing control of the domestic money supply is the primary motivation for using sterilized intervention. Whether a monetary authority can separate ex-

change rate management from money stock control, however, depends on whether certain conditions are met. First, international assets (including currencies) must be imperfect substitutes. Second, the magnitude of sterilized intervention undertaken must be large enough — given the degree of imperfect substitutability — that market participants cannot undo this effect by engaging in offsetting transactions.

SOME EVIDENCE ON THE EFFECTIVENESS OF INTERVENTION

Assessing the efficacy of intervention is difficult because data on central bank intervention are not made available; in contrast to domestic central bank transactions, which are reported in great detail, international transactions are reported only in a non-systematic, summary form. Three pieces of qualitative evidence, however, can be used to gauge the likely effectiveness of intervention. The first is an indirect assessment obtained by considering a domestic policy experiment, somewhat analogous to sterilized intervention, which occurred in the early 1960s. The second is an assessment of the potential for the U.S. monetary authorities to influence the foreign exchange market by comparing the volume of assets and the rate of transactions in these markets by private investors with the monetary authority's holdings and activities. The third is a direct assessment of U.S. and other central bank intervention activity revealed in a working group study prepared for the 1983 Williamsburg Economic Summit Meeting.

An Analogous Policy: Operation Twist

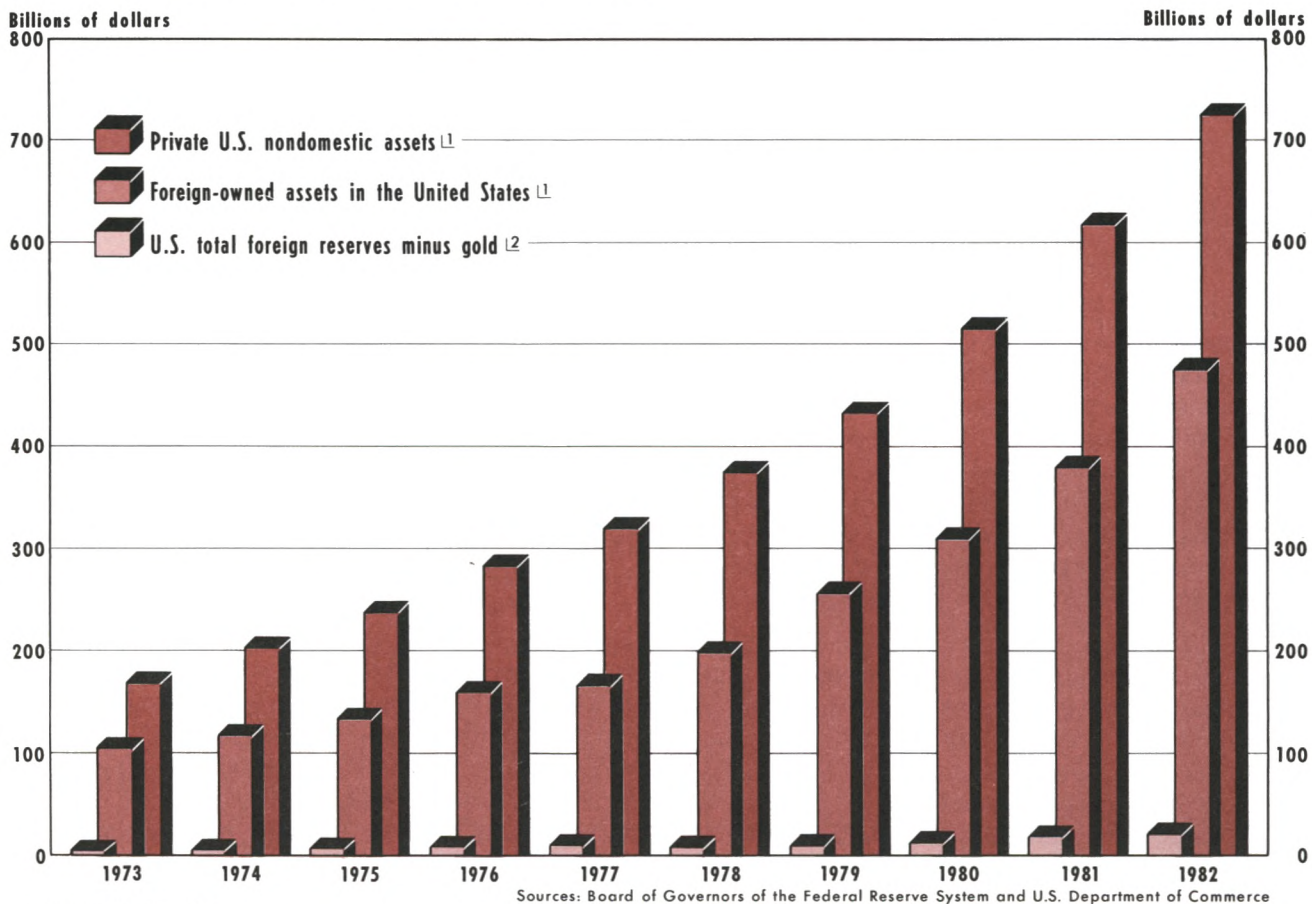
A historical example of a domestic policy experiment by the Federal Reserve that is similar to sterilized intervention is "Operation Twist." During 1961–62, the Federal Reserve sold short-term U.S. securities and used the proceeds to buy long-term U.S. securities; as with sterilized intervention, the transactions were offsetting so that the money supply was unchanged. The resulting increase in short-term government securities and the concomitant decline in long-term government securities in private portfolios were intended to raise the yield on short-term securities and lower the yield on long-term securities, thus, "twisting" the term structure.¹²

In this effort, the first condition discussed above was met — namely, long-term securities bear higher interest rates than short-term securities, and, thus, the

¹²See Malkiel (1966), pp. 219–43.

Chart 1

Relative Stocks of Holdings of Foreign Assets



^[1] Year-end outstanding.

^[2] Annual averages of quarterly data.

NOTE: Direct investment data prior to 1977 do not reflect 1977 benchmark revision.

two assets are imperfect substitutes. Yet, the effort is generally judged to have failed primarily because the policy was not executed vigorously enough.¹³ The point (as emphasized by Malkiel) is that a central bank policy of affecting the term structure for interest rates depends, for its effectiveness, on two points: the bank's ability to affect significantly the relative supplies of short- and long-term financial assets and its willingness to do so. In this case of intervention in domestic asset markets, the extent of the activity was inadequate to have any significant impact.

Similarly, when sterilized intervention in foreign exchange markets is undertaken, the immediate distribu-

tion of currencies and securities denominated in those currencies is altered; two market activities, however, are thereby set in motion that tend to undo any impact on relative interest rates and the exchange rate. First, private entities — banks, primarily, but also individual traders — sell or buy securities denominated in the currencies that have been affected. Second, actual currency flows and options to buy or sell currencies or forward contracts are changed. Thus, unless the central bank is prepared to take sufficient actions to alter market expectations, it will be unlikely to affect the exchange rates by sterilized intervention.

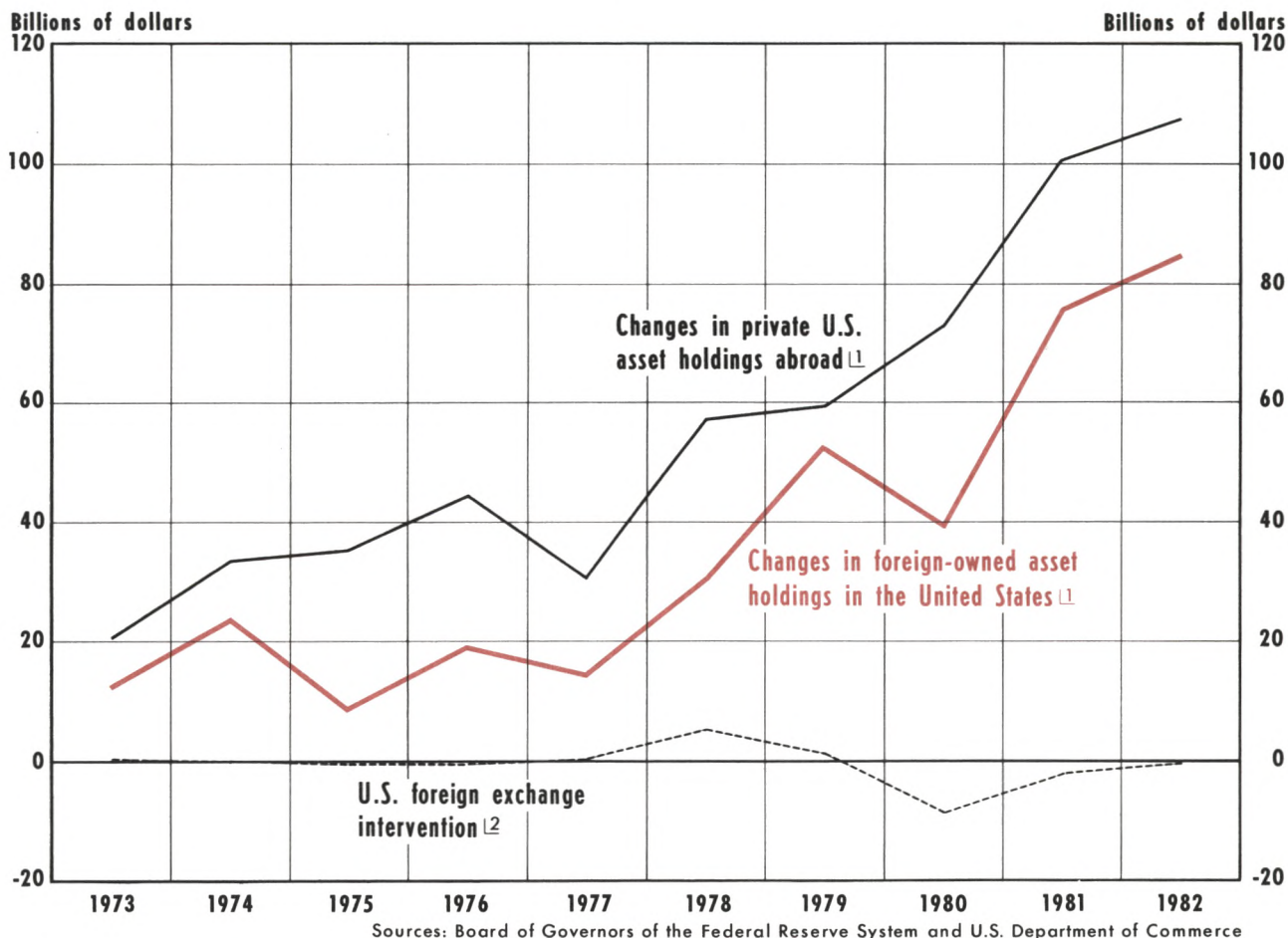
The Potential: Foreign Asset Holdings and the Size of the U.S. Foreign Exchange Market

The likelihood that intervention can affect exchange rates may be assessed by comparing either private and

¹³As Johnson (1963), cited in Malkiel, p. 234, concludes:

Whatever might have been expected of this policy . . . it was not in fact pursued in any effective sense. As a result primarily of Treasury funding operations, the maturity of the debt in the hands of the public has in fact been lengthened appreciably, instead of shortened as the policy would require.

Chart 2

Relative Investment Flows into Foreign Assets^[1] Annual rate.^[2] Positive values are purchases of dollars.

NOTE: Direct investment data prior to 1977 do not reflect 1977 benchmark revision.

central bank foreign asset holdings or central bank activity and the size of markets for foreign exchange. The relevance of foreign asset holdings is that changing any single exchange rate changes the price of these assets in two or more currencies. Consequently, exchange rate movements caused by intervention may be presumed to induce shifts in desired portfolios of assets — that is, flows of asset sales and purchases that tend to offset such changes.

Chart 1 shows the stocks of foreign assets held by U.S. individuals and institutions, U.S. assets held by private foreigners, and the foreign reserves (minus gold) of the U.S. Federal Reserve System and the Treasury. It is clear that private investors hold a much

larger share of assets traded in international markets than do the Fed and the U.S. Treasury. Consequently, to change the price at which these assets are valued would require very aggressive intervention.

Many have argued that the primary impact of intervention is on the flow demands for the currencies involved. If so, one should compare the flows of transactions in these markets rather than asset holdings.¹⁴ From this perspective, consider chart 2 — transactions in international markets. Comparing the rate of ac-

¹⁴This leaves aside, for the moment, the indirect effect of intervention through changes in expectations of future central bank policy, which will be considered later.

Table 1

Market Volume in Foreign Currency Transactions and Federal Reserve-Treasury Combined Intervention (millions of dollars)

Foreign Currency Transactions by U.S. Commercial Banks			
	April 1977 (44 banks)	March 1980 (90 banks)	April 1983 (119 banks)
All banks surveyed			
Monthly average	\$106,400	\$491,300	\$702,500
Daily average	5,300	23,400	33,500
Banks in 1977 survey	\$103,100 (41 banks)	\$325,800 (41 banks)	\$432,600 (40 banks)
Banks in 1980 survey	N/A	\$484,000 (87 banks)	\$648,200 (87 banks)
Combined Intervention by the Federal Reserve and U.S. Treasury			
	February–July 1977	February–July 1980	February–July 1983
Total sales of currency	\$212.4	\$3,982.7	0
Monthly average	35.4	663.8	—
Daily average ¹	1.8	33.2	—
Total purchases of currency	\$150.7	\$6,266.9	\$254.1 ²
Monthly average	25.1	1,044.5	—
Daily average ¹	1.3	52.2	42.4
Major episodes during period	April 15–May 4 Sold \$34.8 DM	Mid-March–April 8 Purchased \$1,396.2	July 29–August 5

N/A Not available

NOTE: Equivalent dollar values converted using exchange rates prevailing at date of transaction.

¹Assumes 20 business days in the average month.²Because the only transactions during the period were between July 29 and August 5, the period considered includes August 1–5. Consequently, the monthly average calculation is not applicable and the daily average is calculated only for these six days on which intervention took place.SOURCES: *Federal Reserve Bulletin*, September 1977, September 1980, September 1983; Press Release, Federal Reserve Bank of New York, July 12, 1977, and June 23, 1980, and "Summary of Results of U.S. Foreign Exchange Market Turnover Survey Conducted in April 1983," Federal Reserve Bank of New York, September 8, 1983.

quisition of foreign assets by U.S. investors with the rate of intervention by U.S. monetary authorities (combined U.S. Treasury and Federal Reserve) clearly demonstrates that the private U.S. investment activity on an annual basis swamps that of the authorities, and, in fact, so has the rate of purchase of U.S. assets by foreigners in recent years.

Another, perhaps even more relevant, comparison would be the transaction rates over intervals shorter than a year. That is, it might be argued that chart 2 shows net figures over an irrelevantly long time period: what matters is the gross volume of transactions in, say, a month or a day. From this perspective, consider the data in table 1, which reports the turnover statistics

for U.S. banks engaging in significant volumes of foreign currency transactions.¹⁵ As the table shows, both the volume (in the observed month) per bank and the number of banks with significant involvement in foreign currency markets have risen dramatically since 1977. The total volume has risen sevenfold, comprising a quadrupling in the per-bank volume (indicated by the changes in the activity of the banks originally surveyed in 1977) and a tripling (from 44 to 119) of the number of banks actively participating in foreign cur-

¹⁵The data in the first half of table 1 are from periodic surveys of U.S. banks that engage in significant foreign exchange market transactions. These surveys are conducted by the Federal Reserve Bank of New York. For more details about these surveys, see Revey (1981).

rency markets. If the volume in contracts during April 1983 is expressed in a daily average form, the market in U.S. banks alone is about \$33.5 billion. Almost two-thirds of these contracts are spot currency exchanges.

In comparison, the table also reports the combined Federal Reserve-U.S. Treasury intervention for the full six-month period containing each of the three survey dates along with representative episodes of significant U.S. intervention. As even a cursory review of the data reveals, U.S. intervention activity has been trivial relative to the volume of bank trading in currencies; only rarely has intervention been more than a tiny fraction of the private market volume. Consequently, the notion that the central bank has influenced the market price of currencies — their exchange rate — purely by affecting the flow volume of exchange is inconsistent with the recent record.

Some Direct Evidence: Report of the Working Group on Exchange Market Intervention

Central bank intervention — whether in domestic asset markets or international currency markets — can be effective only if the market is convinced that the monetary authority is both able and willing to affect the flows of transactions. In view of the growing size of private currency markets and the conflict with domestic inflation policies that effective intervention would require, such an effect on market expectations also seems to be beyond the grasp of the U.S. authorities.

Support for this conclusion is provided by the study of exchange market intervention conducted by the working group established at the Versailles Summit in 1982.¹⁶ This report is especially significant since it represents the most comprehensive analysis of the motives, methods and impacts of central bank intervention in foreign exchange markets that has been conducted using actual intervention data — data unavailable to most researchers.

While the working group found that sterilized intervention is not totally ineffective, its effect was much smaller than that of unsterilized intervention.¹⁷ Furthermore, the group found that intervention could be effective in the face of persistent market pressures only if it was supported by complementary changes in

domestic policy, especially monetary policy. When inconsistencies have arisen between domestic policy and exchange rate objectives, the group found that intervention (counter to the goals of domestic policy) was frequently useless and even counterproductive in the absence of supportive domestic policy. Consequently, the ministers, in their statement released with the working group's report, downplayed the importance of sterilized intervention as a separate policy tool:

We have reached agreement [that], under the present circumstances, the role of [sterilized] intervention can only be limited. . . . Intervention will normally be useful only when complementing and supporting other policies.¹⁸

CONCLUSION

Most discussions of the effectiveness of central bank intervention focus on expectations of market participants and how intervention alters them. Yet, even if the central bank is capable of altering market expectations about its future policies, such a change can be brought about only if the market is convinced that other policy goals — the domestic inflation rate, level of interest rates, stability of domestic credit markets, etc. — are subordinate to exchange rate manipulation. For the United States, at least, such a policy stance would not be credible. Thus, the efficacy of exchange rate intervention would seem to be diminished greatly by the public's knowledge of the primacy of other monetary policy objectives.¹⁹

The model's verdict was that the Bundesbank has little if any power to influence the exchange rate over that time span [one month] without altering current or expected future money-market conditions [i.e., without conducting unsterilized intervention].

¹⁸Statement on the Report of the Working Group on Exchange Market Intervention (1983), p. 2.

¹⁹Consider again the view of former Bundesbank President Eminger (Bank for International Settlements [1982], pp. 5–6):

To sum up: Exchange rate policies cover a wide spectrum: from simply 'having a view' on the exchange rate to smoothing out 'disorderly conditions' to avoiding excesses which are palpably far out of line with fundamentals and are disturbing. The instruments range from intervention to interest rate policy, general monetary and other economic policies, and to official borrowing or lending.

There is also a wide spectrum in the use of such policies from country to country. This is partly a question of size. For the United States, there is quite certainly no other solution but free floating. The problems of a more active exchange rate policy are mainly relevant for middle-sized industrial countries. It is therefore natural and understandable that the attitude towards exchange rate policy differs between the United States and other industrial countries.

There is also another important difference, which makes the United States a special case. Other industrial countries usually take the dollar as yardstick and intervene against the dollar. For the United States, it is more difficult to decide against which individual currencies they should measure the value of their currency, and against which to intervene in case of need. This is one of the several problems on which the oft-requested joint and concerted intervention policy would founder.

¹⁶Report of the Working Group on Exchange Market Intervention (1983). What follows is a synopsis of the major conclusions drawn in this report.

¹⁷Additional support, at least for Germany, is provided by Obstfeld (1983), pp. 184–85, as he concludes that:

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Dutch Disease or Monetarist Medicine?: The British Economy under Mrs. Thatcher

K. Alec Chrystal

THE performance of the British economy over the past five years has been the object of worldwide curiosity. Much publicity has been focused on the government of Margaret Thatcher and her apparently radical departure from the policies pursued by her predecessors.¹ This alleged policy departure is sometimes considered a "monetarist experiment."² Chart 1 illustrates some of the major macroeconomic changes in Britain since Mrs. Thatcher's election to Prime Minister. Inflation first rose through 1980, then fell by 1983 to its lowest level since the mid-1960s. In contrast, unemployment rose after 1979 to its highest level since the 1930s. By the end of 1983, unemployment was more than double that following the previous worst recession (1973–75) in the postwar period.

Critics of Mrs. Thatcher claim that these events are primarily the result of the tight aggregate demand (monetarist) policies of her government and, further, that the price paid for reducing inflation has been too

high. The purpose of this paper is to point out that this interpretation of events is misleading.

An important feature of the changing employment levels in Britain has been that job losses occurred almost entirely in the manufacturing sector. In 1979, this sector provided about 28 percent of total employment. Between the end of 1978 and the end of 1982, there was a 1.4 million rise in the number of unemployed. Over the same period, the number employed in manufacturing industries fell by 1.5 million. This job loss can be traced to a substantial and sustained collapse of manufacturing production (chart 2) between late 1979 and the end of 1980.

Thus, any explanation of unemployment's steep rise in Britain must be able to explain the collapse in the manufacturing sector, a collapse that was essentially completed within 18 months of Mrs. Thatcher taking office. Neither monetary nor fiscal policy, alone or taken together, has been so tight as to explain sufficiently what has happened in Britain. Rather, a more likely contributor to unemployment comes from the structural changes in the British economy caused by North Sea oil production. The scenario is now widely termed the "Dutch Disease," so-called because of the negative impact that Dutch oil and gas production had on employment and output in the non-oil traded goods sector of the Netherlands' economy.

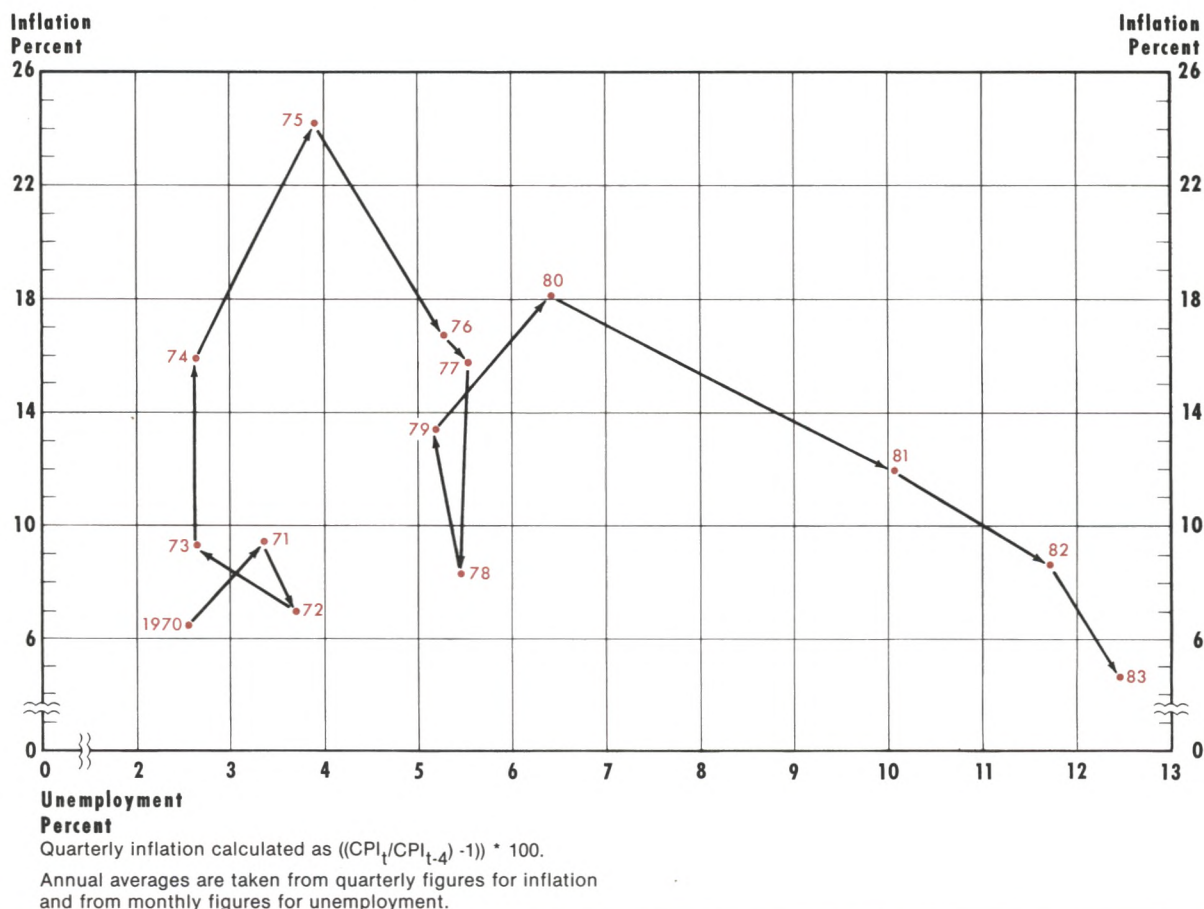
K. Alec Chrystal, professor of economics-elect, University of Sheffield, England, is a visiting scholar at the Federal Reserve Bank of St. Louis. Leslie Bailis Koppel provided research assistance.

¹Mrs. Thatcher came to power five years ago on May 3, 1979. She was reelected for a second term in June 1983 and may stay in office until June 1988 without recourse to a further general election.

²See, for example, Gould, Mills and Steward (1981), Kaldor (1982), and Buiter and Miller (1981).

Chart 1

Inflation and Unemployment



Before discussing the impact of North Sea oil production on the British economy, however, it is necessary to show why two other widely claimed causes — British policies and the worldwide recession — are inadequate explanations.

BRITAIN BEFORE THATCHER

Macroeconomic policy in the 1950s and 1960s was dominated by the commitment to maintain a fixed exchange rate. Fiscal policy was used to stimulate the economy whenever there appeared to be slack; expansion, on the other hand, was constrained by the balance of payments. Periodic runs on Britain's foreign exchange reserves led to policy reversals, causing a budgetary cycle of expansion and contraction that earned the nickname of "stop-go." A stable exchange rate was maintained, however, for nearly two decades (1949–67). Indeed, in retrospect, this period seems like a golden age. Inflation averaged 3 percent, unemployment averaged less than 2 percent and was sometimes

below 1 percent, and average real incomes grew about 3 percent per year.

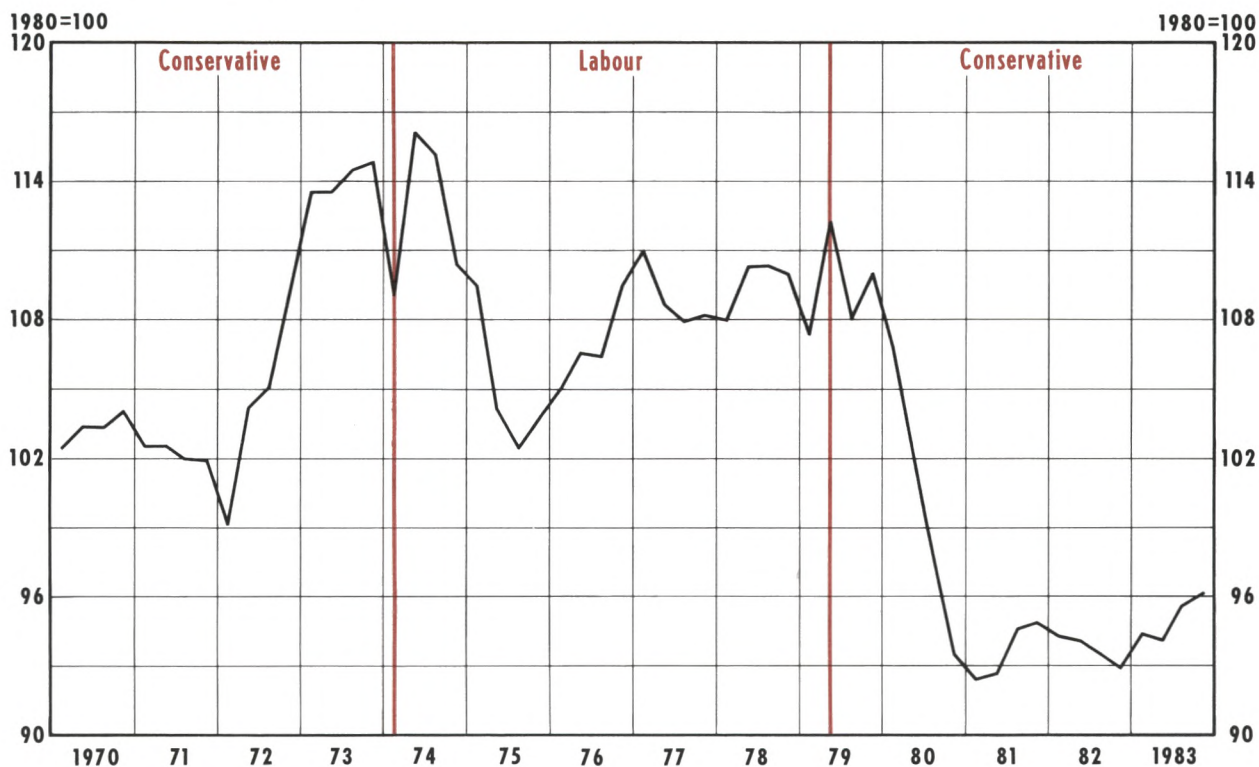
Monetary policy in this period was subordinated to the twin requirements of maintaining the exchange rate and funding public sector borrowing. The main policy instrument was the Bank of England's discount rate (Bank Rate), though this was augmented periodically by quantitative ceilings on bank lending. These ceilings were particularly important following the November 1967 devaluation of sterling until 1971.³

Heath's "Dash for Growth"

In mid-1970, when the Labour government of Harold Wilson lost a general election to the Conservative party

³In both the 1960s and 1970s, monetary and fiscal policies were augmented from time to time by incomes policies which attempted to regulate the growth rate of wages. There is some evidence that these policies temporarily restrained wage increases, but had no long-run impact on wage and price inflation. See Henry and Ormerod (1978).

Chart 2

Manufacturing Production Index

led by Edward Heath, the British economy was in good shape. Both the balance of payments and the government budget were in surplus. Inflation (6 percent) and unemployment (2.2 percent), although high by 1960s standards, were by no means at crisis levels — or so it seems in retrospect.

As unemployment drifted upward through 1971, however, the Heath government embarked upon a stimulative macroeconomic policy known alternatively as the “dash for growth” or the “Barber boom.”⁴ The stimulation took two forms. First, monetary policy became expansionary in September 1971 following the introduction of a reform package known as Competition and Credit Control. This program removed ceilings on bank lending without replacing them with an effective alternative control mechanism.⁵ As a result,

money and credit expanded rapidly. Through 1972 and 1973, the annual growth rate of sterling M3 reached levels well in excess of 20 percent (see chart 3).⁶

Second, an expansionary budget was introduced in March 1972. This largely involved cuts in personal taxation, but was later augmented by a substantial expansion in public sector investment programs.

Underlying this dash for growth was the belief that the growth of the British economy had been artificially constrained by the fixed exchange rate (or, equivalently, the balance of payments). In the past, restrictive fiscal policy had to be introduced every time there was a significant run on foreign exchange reserves.

Floating the exchange rate became acceptable, however, following the measures introduced by President

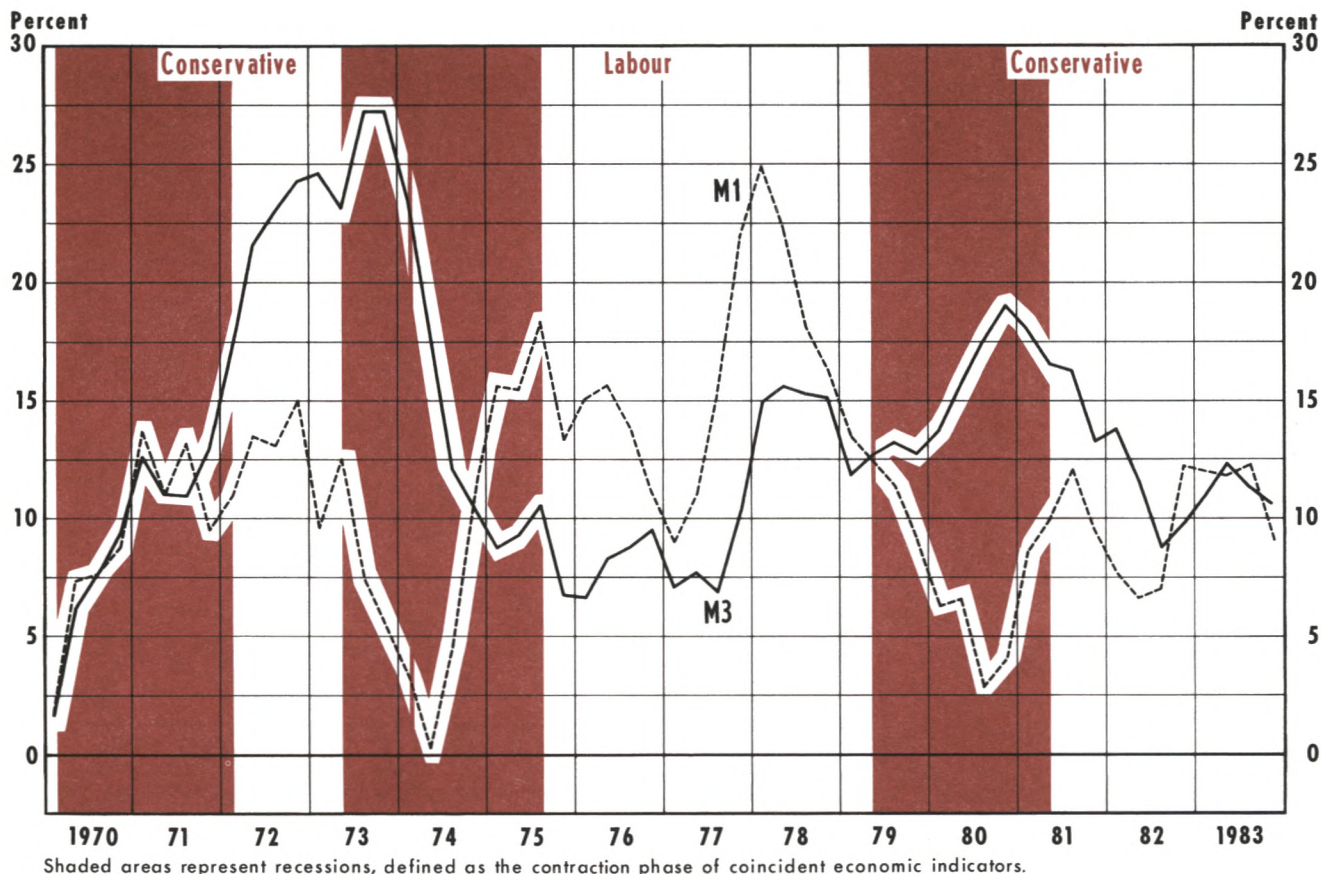
⁴The Chancellor of the Exchequer, chief minister in the Treasury, during the Heath government (June 1970–February 1974) was Anthony (later Lord) Barber, appointed July 26, 1970.

⁵See Hall (1983) for a detailed discussion of the scheme. The authorities presumably thought the monetary expansion would be temporary following the removal of ceilings. It proved, however, to be both substantial and sustained.

⁶The monetary aggregates referred to are defined as follows: M1 = notes and coins in circulation with the public + U.K. private sector sterling sight deposits; sterling M3 = M1 + private sector sterling time deposits + public sector deposits. Sterling M3 was the aggregate targeted after 1976, though after 1980 the authorities claimed to be monitoring both narrower and broader aggregates as well as sterling M3.

Chart 3

Annual Growth Rates of M1 and Sterling M3



Nixon on August 15, 1971, which among other things led to the floating of the U.S. dollar in foreign exchange markets. The pound floated from August 23, 1971, was repegged following the Smithsonian Agreement of December, but floated again on June 23, 1972, after a run on reserves. The float, which was introduced as a temporary measure, has continued ever since.

The expansionary policies were successful for a short time. Industrial production rose 7 percent in 1973 and unemployment fell from 3.7 percent in 1972 to 2.6 percent in 1973 and 1974 (chart 1). Investment, however, did not rise significantly and the boom was short-lived. The oil crisis combined with a sharp reversal in monetary policy to bring the expansion to an end. By 1975, industrial production was back to its 1970 level.

During this time, however, inflation accelerated, reaching 25 percent per year in 1975. Some blamed the inflation on the oil price rise; the major cause, however,

was the money stock increases of 1972–73 (see chart 3). As a result of this extremely fast money growth, inflation in Britain went much higher than in other industrial countries. In the United States, for example, it was about 11 percent in 1974 and about 9 percent in 1975.

A Tightening of the "Corset"

The reversal of monetary policy in December 1973 took the form of a return to quantitative ceilings on deposits. This scheme, which became known as the "corset," restricted banks' ability to compete for interest-bearing time deposits.⁷ A maximum percentage growth rate was specified for banks' interest-bearing eligible liabilities. If a bank exceeded this growth rate, it was required to place non-interest-bearing "Supplementary Deposits" with the Bank of England (much

⁷For a retrospective assessment of the corset, see *Bank of England Quarterly Bulletin* (March 1982), pp. 74–85.

like the Fed's required reserves). The corset remained in force until June 1980 (apart from two breaks: February 28, 1975, to November 18, 1976, and August 11, 1977, to June 8, 1978).

The upsurge of inflation became a major political concern. A voluntary wage restraint policy was introduced in mid-1975, and a commitment was made that money supply growth would cease to be a source of inflationary pressure in the economy. A target range for the growth rate of sterling M3 was introduced in 1976 by the Labour Chancellor Dennis Healey.⁸ The practice of announcing targets has continued to date. The targets have generally been achieved except in periods following relaxation of the corset.

While the inflationary monetary expansion of 1971–73 was moderated after the end of 1973, the fiscal deficit got bigger. From a financial surplus in 1970, public sector finances deteriorated to a position where in 1975 public sector borrowing exceeded 10 percent of GNP. This was partly due to the policies introduced by the Heath government, but also to the efforts of the subsequent Labour government, elected in February 1974, to hold down nationalized industry prices as well as those of some foods. This involved increased subsidies.⁹ The argument, initially accepted in official circles, was that an increased budget deficit represented an appropriate offset to the impact of the oil price rise.

By 1976, the size of the budget deficit had become a major public issue. A crisis was triggered by a substantial fall in the value of the pound. An application was made to the International Monetary Fund (IMF) for a loan to increase foreign exchange reserves. Why this was necessary is not clear, since the pound was floating, but the government introduced a major package of public spending cuts in order to meet IMF conditions for the loan. While current government expenditures on goods and services were held back to a noticeable degree, the major impact of the cuts was in public sector investment programs (see chart 4).

Despite the tightening of fiscal policy after 1976, the economy exhibited moderately strong real growth through 1979. Growth rates of real GDP (gross domestic product, which is gross national product less net income from abroad) were in the 2 percent to 3 percent range. The expansion was aided somewhat by a tem-

porary relaxation of monetary policy in the second half of 1977 and first half of 1978. Partly this expansion resulted from the removal of the corset; it also was induced, however, by substantial foreign exchange intervention *to stop the pound from appreciating*. U.K. foreign exchange reserves rose from \$3.4 billion at the end of 1976 to \$20.1 billion by the end of 1977. This intervention was clearly reflected in the rapid growth of M1 (see chart 3).¹⁰

POLICY CHANGES OF THE THATCHER GOVERNMENT

Whereas the 1970–74 Conservative government of Edward Heath had embarked on a money growth and public spending-led boom, Mrs. Thatcher came to power in 1979 committed to a very different strategy. The Thatcher government had two major goals. One goal was to reduce the level of public spending, in order to both eliminate the budget deficit and facilitate lower levels of taxation. This would reverse the alleged crowding out of private sector activity by the public sector and would restore the incentives necessary for industrial growth. Second, inflation was to be squeezed out of the economy by a gradual reduction of the rate of growth of the money stock.¹¹

In June 1979, Sir Geoffrey Howe, Mrs. Thatcher's Chancellor of the Exchequer for her first government (May 1979–June 1983), introduced a budget that lowered personal direct taxes and raised indirect taxes. The budget also included a rise in the tax on North Sea oil producers. Planned public expenditures were cut. The target range for the growth rate of sterling M3 was set at 7–11 percent, only 1 percent lower than that set by the previous Labour government. At the same time, however, the Bank of England's Minimum Lending Rate (MLR) was raised from 12 percent to 14 percent (and later raised to 17 percent in November).¹²

The June 1979 policy changes were intended to reduce inflation, which had begun to rise again in 1979. This macroeconomic policy strategy was formalized in

¹⁰This experience with intervention did much to convince the authorities that holding down the value of the pound without generating a rapid rise in the money supply was impossible.

¹¹The intention of eliminating inflation solely by monetary policy rather than incomes policies was one reason why Mrs. Thatcher earned the monetarist label. The nature of monetarism is outlined in Batten and Stone (1983). For a discussion of how views about macroeconomic policy had changed over time both in Britain and the United States, see Alt and Chrystal (1983).

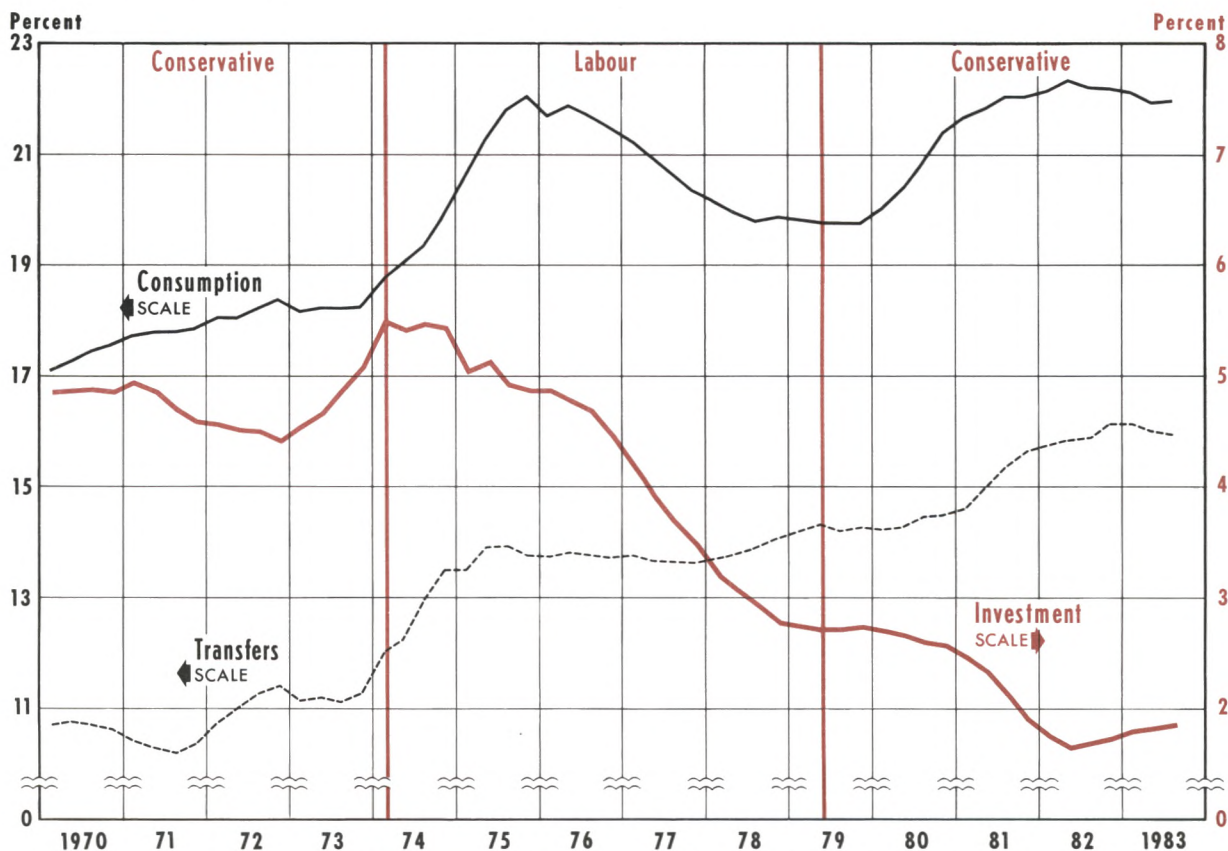
¹²Bank Rate was renamed Minimum Lending Rate in 1971. It was intended to be related to market rates, though from time to time it was still used as a policy instrument. See Hall.

⁸It was first announced that money growth would henceforth be noninflationary. A forecast for sterling M3 was then released. Only later did the forecast form the basis of a target range.

⁹A further problem was created by the fact that up to 1975 government expenditures were planned in real terms. When prices rose, nominal expenditure was increased to compensate. Subsequently, cash limits were introduced for public spending.

Chart 4

Government Transfers, Consumption and Investment as a Percent of GDP



NOTE: Figures are four-quarter moving averages of the ratio of expenditures, N.S.A., to GDP, N.S.A.

the March 1980 budget into a so-called Medium Term Financial Strategy (MTFS), which involved planned reductions in public spending over a four- or five-year horizon to reduce the budget deficit as a proportion of GDP. Reductions in tax rates also were considered. Monetary growth targets were to be reduced gradually over the same period, though there was no change in the range for 1980/81.¹³

The MTFS was effectively abandoned almost immediately. The Public Sector Borrowing Requirement target for 1980/81, set in the March budget, was £8½ billion. By November 1980, the forecast was revised upward to £11½ billion. The expansion of public spending was due partly to high wage settlements in the public sector and partly to an unexpected rise

in unemployment.¹⁴ The abandonment of the corset in June 1980 led to growth rates of sterling M3 well in excess of the upper target level.¹⁵

While Mrs. Thatcher intended to cut both taxes and public spending, the opposite generally has occurred.

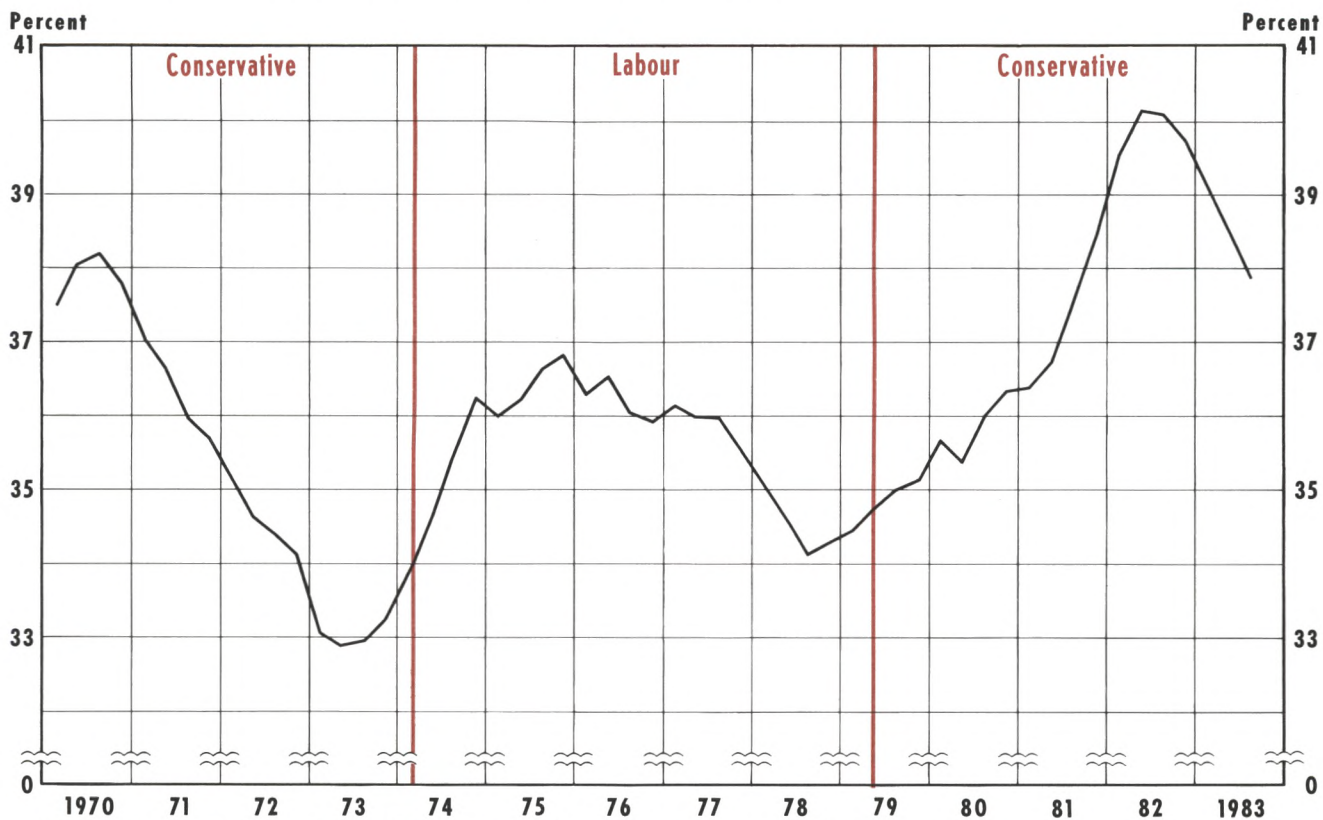
¹⁴The previous Labour government had set up a Pay Comparability Commission to inquire into public sector pay. This commission recommended substantial pay raises for many groups. Mrs. Thatcher honored these recommendations before winding up the commission and substituting a public sector "pay norm."

¹⁵Butler and Miller (1981) argued that monetary policy in Britain was too tight and resulted in an excessive appreciation of sterling. In Butler and Miller (1983), however, they admit that the evidence is not consistent with a monetary overshooting hypothesis. Indeed, they express concern for the credibility of a monetary policy that frequently exceeded targets. Since 1979, sterling M3 growth has consistently exceeded the inflation rate. M1 growth looks more restrictive, though this also is distorted by the ending of the corset. The freeing of banks to compete for time deposits led to a switch from checking accounts to time deposits. This substitution is voluntary and would not normally be considered to represent policy tightening.

¹³Budgets are normally submitted in March. They apply for the following financial year which runs April to April. The convention used here is that 1980/81 refers to the financial year April 1980 to April 1981.

Chart 5

Government Tax Revenues as a Percent of GDP



NOTE: Figures are four-quarter moving averages of the ratio of tax revenues, N.S.A., to GDP, N.S.A.

Tax revenue, for example, grew as a proportion of GDP until late 1982 (chart 5).¹⁶ Similarly, both real government consumption (current spending on goods and services) and real transfer payments have risen as a proportion of GDP since 1979 (chart 4). The major exception on the expenditure side is government investment (chart 4), which was cut until mid-1982. The cuts achieved in this category by the Thatcher government, however, were much smaller than those introduced by the previous Labour government.

ARE POLICY CHANGES PRIMARILY RESPONSIBLE?

It is hard to look at what happened in Britain after 1979 and be comfortable with the story that policy

changes made by the Thatcher government are entirely responsible. We already have seen that unemployment in 1983 reached a level well over double that associated with the 1973–75 recession. Yet monetary policy was probably no tighter in the Thatcher years than in the previous recession.

Fiscal policy, if anything, was tighter in the 1975–78 period than in the first three years of the Thatcher government. Table 1 presents the change in budget deficit as a proportion of GDP. The first column is based on unadjusted figures. The second column attempts to identify changes due to discretionary policy rather than cyclical factors. It also weights the tax and expenditure changes according to their impact on demand. An allowance for the fact that some taxes came from oil, which would have a different impact on demand from, say, personal income taxes, is therefore included in this measure; thus, it provides a better indicator of fiscal policy stance. Negative figures reflect a reduction of the deficit and, therefore, a tightening of policy.

¹⁶Revenue from taxes on North Sea oil producers has contributed significantly to this. In 1978, the yield on Petroleum Revenue Tax was close to zero. In 1983, the taxes on North Sea oil yielded £6.1 billion which was 13.5 percent of total tax revenue.

Table 1
Change in the British Budget Deficit
as Percent of GDP

	Unadjusted	Weighted Cyclically Adjusted
1974/75	2.57%	1.57%
1975/76	0.26	-1.16
1976/77	-1.79	-1.32
1977/78	-1.84	-2.20
1978/79	0.81	0.58
1979/80	-0.97	-0.56
1980/81	0.87	-0.51
1981/82	-2.60	-2.10
1982/83	0.80	0.30
1983/84	-0.10	-0.30

NOTE: Figures for 1983/84 are partly forecast.

SOURCE: *National Institute Economic Review* (February 1982), p. 95 and (February 1984), p. 8.

What emerges from these figures is that fiscal policy was mildly restraining in 1979/80 and 1980/81. It was tighter in 1981/82, but has been more or less neutral since then. It is noticeable, however, that the fiscal policy of the Thatcher government has been *less restrictive* than that of the previous Labour government in the three financial years 1975/76 to 1977/78, when the cumulative fall in the deficit as a percent of GDP (weighted and cyclically adjusted) amounted to 4.7 percentage points. The fall under Mrs. Thatcher in the three years 1979/80 through 1981/82 totaled only 3.2 percentage points.

WAS THE WORLD RECESSION PRIMARILY RESPONSIBLE?

Britain's economy exports about 25 percent of its GDP. It is conceivable that a decline in world demand could reduce the demand for British exports enough to cause a contraction of manufacturing production. No doubt the worldwide recession of the early 1980s is partly to blame; however, it does not seem to be the main event: the decline in manufacturing in Britain preceded the world recession by several months.

Table 2 shows that world trade in manufactured goods grew strongly through 1980, slowed in 1981, then declined marginally in 1982. The decline in sales of British manufactured goods, however, dates from 1979 at the latest, and the adjustment of production was

Table 2
World Trade, Production and
Unemployment

	Volume World Trade in Manufactured Goods 1975 = 100	Industrial Production OECD	U.K.	Unemployment Rate OECD	U.K.
1975	100	100	100	5.2%	4.7%
1976	112	109	103	5.3	6.0
1977	117	113	108	5.3	6.3
1978	123	117	112	5.2	6.3
1979	130	123	116	5.1	5.6
1980	137	123	108	5.8	7.0
1981	139	123	104	6.7	10.7
1982	136	118	106	8.2	12.4
1983	n.a.	122	109	8.7	12.9

NOTE: Industrial production figures for the United Kingdom include oil and gas.

SOURCE: *National Institute Economic Review* (February 1984), pp. 93-94.

largely complete by the end of 1980.¹⁷ In both 1979 and 1980, world trade in manufactured goods rose strongly.

The figures for industrial production tell a similar story: Organization for Economic Cooperation and Development (OECD) industrial production rose strongly in 1979, leveled off in 1980 and 1981 and declined in 1982. British industrial production fell about two years before the fall in the OECD figure, and by a considerably larger amount.¹⁸

Before 1976, unemployment in Britain had typically been below the OECD average. From 1976 through 1979, Britain's unemployment rate was a little higher, but followed a similar pattern to the OECD average. Since 1979, Britain's unemployment has risen much further than the OECD average.

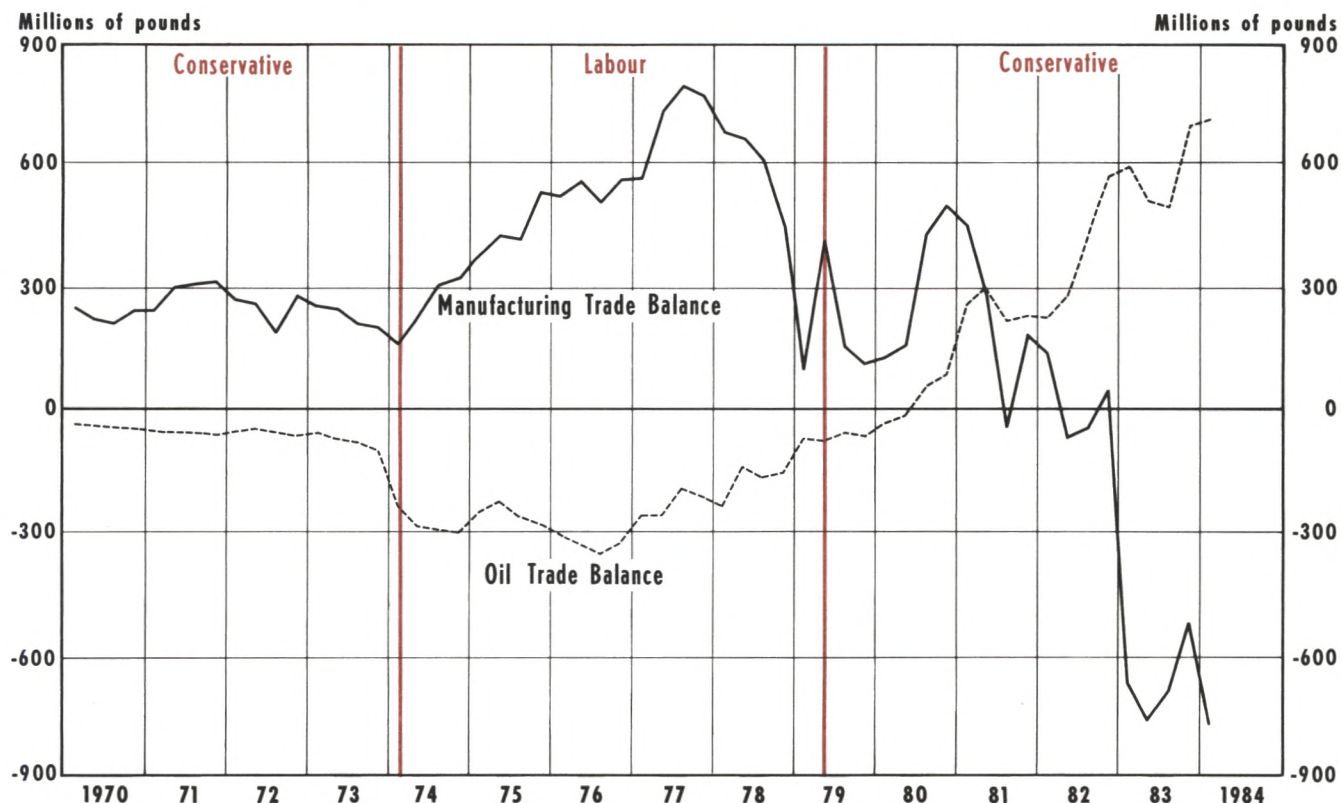
Thus, there is no strong case for believing that the world recession provides an adequate explanation of the contraction in Britain in 1980, even when combined with the Thatcher government's monetary and fiscal policies. Indeed, the world recession was most severe in 1982, a year in which Britain's manufacturing production actually recovered somewhat.

¹⁷Manufacturers' stocks of unsold output rose sharply in 1979 indicating a slump in sales. See *National Institute Economic Review* (February 1984), p. 11, chart 5. Production was subsequently cut back and stocks run down through 1980.

¹⁸Industrial production is a broader aggregate than manufacturing, it includes oil production among other things.

Chart 6

Oil and Manufacturing Trade Balance



THE NORTH SEA OIL EXPLANATION

The emergence of Britain as a major oil producer provides an explanation of some of the changes that occurred in the British economy over the past five years.¹⁹ Up to mid-1976, Britain was entirely dependent upon imported oil; in 1980, Britain became a net exporter of oil. Following such a structural change in the supply side of the economy, the trade balance in manufactured goods, according to theory, would move in the opposite direction of the oil balance.²⁰ The force

that brings this about is an appreciation of the exchange rate, which raises the price of domestic manufactured goods relative to overseas competitors' prices. Consequently, domestic consumers buy a higher proportion of foreign-produced goods, and foreigners buy relatively fewer domestic-manufactured exports. Thus, the manufacturing sector contracts.²¹

Chart 6 shows the oil trade balance and the manufacturing trade balance. Chart 7 shows the dollar-pound exchange rate and the relative wholesale price of British manufactured goods compared with other

¹⁹Some commentators such as Buiter and Miller (1981, 1983), Niehans (1981) and Darby and Lothian (1983) have dismissed the effects of North Sea oil. However, Forsyth and Kay (1980) argued that oil production would lead to a sizable contraction in manufacturing. Bond and Knöbl (1982), Laney (1982) and McGuirk (1983) all provide evidence that oil has substantially worsened the competitiveness of U.K. manufacturing. See *Bank of England Quarterly Bulletin* (1982), pp. 56-73, for a description of North Sea oil resources.

²⁰See, for example, Corden and Neary (1982).

²¹Strictly speaking, this contraction need only be relative to the rest of the economy. What has to be explained is the switching of spending from home-produced to foreign-produced manufactured goods. Our claim is that this was largely a relative price effect resulting from the oil-related decline of competitiveness of British manufacturing.

There are relative price effects among inputs as well as outputs. A rise in real wages has caused manufacturers to economize on labor for given output levels. Output per person employed in U.K. manufacturing rose 15 percent between the end of 1980 and mid-1983. Thus, the decline in employment in manufacturing has been greater than the output loss alone would have led to.

Chart 7

Dollar/Pound Exchange Rate and Relative Wholesale Prices



Source: International Financial Statistics, International Monetary Fund

¹¹ Data are averages of daily figures.¹² Wholesale prices are for manufacturing relative to 13 other industrial countries.

industrial countries.²² Until 1973, there was a small surplus in manufactured trade and a small deficit in oil trade. As the oil deficit grew, so did the manufactured goods export surplus. From III/1976 on, the oil deficit shrank, and was eliminated in 1980. By I/1984, there was a substantial oil surplus.

The manufacturing surplus initially continued to increase as the pound appreciated after 1976.²³ As

²²Niehans, and Darby and Lothian argue that the appreciation of sterling was due to slow base money growth in the early years of the Thatcher government. This is implausible. Why, for example, was sterling appreciating for two years before Mrs. Thatcher came to power, and why did it depreciate in 1981 when base growth continued to slow? None of the monetary explanations of the exchange rate can explain a sustained rise in relative goods prices over a long period of time, such as that evident in chart 7. Such changes require structural explanation such as is offered by North Sea oil. Many commentators presumed that monetary policy was tight simply because sterling was appreciating. Laney offers evidence that monetary explanations of the U.K. exchange rate broke down after 1977. The price of oil is an important explanatory variable after that date. He also shows that other new oil producers have had comparable experiences. Thus, the event of significance in 1979 may not be the election of Mrs. Thatcher but rather the rise in the price of oil.

²³As the currency appreciates, the sterling price of imports falls. In the short run, this improves the manufacturers' trade balance because

sterling appreciated further, however, relative demand for British and foreign goods shifted far enough to compensate for the relative rise in price of British goods. After mid-1977, the surplus in manufactured

the same volume of imports costs less. However, as spending patterns adjust to the new relative prices, the volume of exports starts to fall relative to the volume of imports. Once the volumes adjust more than the prices, the balance in manufactured goods starts to decline. This is just the reverse of the "J curve" effect of a devaluation. It arises because demand elasticities are smaller in the short run than in the long run. Because of this, the exchange rate may appreciate "too far" in the process of adjusting to the oil surplus. That is to say that the rise in the relative price of manufactured goods required in equilibrium is less than that actually experienced during transition. This is consistent with events in Britain where relative wholesale prices (chart 7) overshot their ultimate level. This is a different kind of overshooting from that associated with an unexpected tightening of monetary policy analyzed by Dornbusch (1976). The appreciation of the exchange rate is brought about not just by the impact of the changing oil balance on the current account but also by capital inflows which reinforce the process. The 1979 oil price rise boosted a process already under way. McGuirk estimates that a 23 percent fall in competitiveness was required in equilibrium to adjust the U.K. trade balance to the effects of oil at the 1980 oil prices. At the 1978 price of oil, this was only 12 percent. A fall in competitiveness is a rise in the relative price of British goods. This is sometimes referred to as a rise in the "real" exchange rate.

goods fell sharply, until by 1/1984 there was a substantial deficit in manufactured goods trade, roughly equal to the oil surplus.

In short, we have an explanation of events in Britain that requires neither a major contraction in domestic aggregate expenditure nor a major slump in total world demand to explain the collapse of manufacturing industry in Britain. The dominant factor was a major switch in spending patterns resulting from the rise in relative price of British manufactured goods. The proportion of domestic demand for these goods satisfied by imports rose sharply, while exports of manufactured goods stagnated. The volume of manufactured exports was about the same in 1983 as it was in 1976. Over the same period, the volume of manufactured goods imported *rose 63 percent*.

CONCLUSION

The government of Margaret Thatcher has been blamed by its critics for causing a major contraction of activity in Britain by applying monetarist policies. Without quibbling over whether those policies were indeed monetarist, this article argues that the case for blaming the rise in unemployment and the contraction of manufacturing on deflationary aggregate demand policies is not a strong one, even if one allows for the impact of the world recession. Rather, the production and sale of North Sea oil have had a big negative impact on the British manufacturing sector. The production of oil and the subsequent rise in its price caused an appreciation of sterling and a rise in the relative price of British manufactured goods. As a result, British manufactured goods became uncompetitive and production contracted sharply. Thus, it is impossible to write a balanced history of the British economy over the last few years without reference to North Sea oil production.

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