Review

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Federal Reserve Bank of St. Louis
Review
October 1985

In This Issue . . .

Leonall C. Andersen
1924–1985

It is with a deep sense of loss that we note the passing of our friend and colleague Leonall "Andy" Andersen. Andy's contributions to the economics profession, many of which were published in this *Review*, were numerous and significant. The focus of Andy's research after joining the Federal Reserve Bank of St. Louis in 1962 was on the impact of monetary and fiscal actions on economic activity. Among his best-known contributions was the article, "Monetary and Fiscal Actions: A Test of Their Relative Importance in Economic Stabilization," which, co-authored with Jerry Jordan, appeared in this *Review* in 1968.

Andy held numerous positions while at the St. Louis Fed, including director of research and, at the time of his retirement in 1978, economic advisor. Upon retiring from the bank, Andy held an endowed chair in money and banking at the University of Florida until 1981, when he became professor of economics at Gustavus Adolphus College in St. Peter, Minnesota, a position he held until his death on October 27, 1985.

★ ★ ★

The effects of ballooning federal budget deficits on the economy have been a major concern for some time. In the first article in this *Review*, "Two Views of the Effects of Government Budget Deficits in the 1980s," John A. Tatom explains the predicted effects of deficits based on the conventional analysis and a competing theoretical approach. The conventional analysis, according to Tatom, emphasizes that deficit-increasing fiscal policies initially result in increased demand for goods and services and a reduced supply of national saving. These two effects lead to increases in national output, employment, prices and interest rates. The down side of such policies is a decline in private saving and investment in business structures, equipment and inventory, and housing. Since the sharp increase in deficits in 1981–82, economic developments have been sharply at odds with these predictions.

Tatom explains that the alternative set of hypotheses emphasizes the substitutability between government and private expenditures and the importance of permanent instead of measured income in private spending decisions. These hypotheses indicate that deficit-increasing fiscal actions do *not* raise demand for goods and services or reduce the supply of national saving. Therefore, they do not affect output, employment, prices or interest rates. Fiscal deficits arising from government expenditures directly "crowd-out" private spending, especially investment, while those arising from tax reductions have no direct effect on national saving, investment or interest rates.

Comparing the changes in the shares of private saving and investment in GNP in 1980 and 1984, Tatom indicates that both have risen sharply, instead of declining as the conventional view would predict. The author explains that investment incentives provided in the 1981 tax act played a central role in raising the private saving rate and the share of real business investment in real GNP to

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In This Issue . . .

record levels in 1984. These increases are more broadly consistent with the alternative hypotheses than with the conventional view.

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The plight of the nation's farmers has received a great deal of attention this year. Much of it has focused on the deteriorating financial condition of farmers overburdened with debt and faced with falling land values and commodity prices. In the second article of this *Review*, Michael T. Belongia and Kenneth C. Carraro examine the performance of the major lenders to the farm sector to gain some perspective about the sector's financial condition. These financial institutions are the Farm Credit System, agricultural banks and the Farmers Home Administration (FmHA).

Belongia and Carraro first offer a brief description of these three agricultural lenders. They suggest that institutions that sharply increased their lending to agriculture during the 1970s and early 1980s, when inflation, foreign demand for U.S. farm products and real commodity prices were increasing or were expected to increase rapidly, should be experiencing the greatest deterioration in portfolio quality. The available data indicate that the performance of agricultural loans, as measured by delinquencies and loan losses, has worsened at all three lenders since 1982. In terms of profitability, however, agricultural banks have suffered less severe downturns than Farm Credit System lenders. The Farmers Home Administration (FmHA), which is a governmental agency and therefore does not report profitability data, also has exhibited greater forbearance on delinquent farm loans. Although nearly 25 percent of their farm ownership loans were delinquent in 1984, only 0.22 percent of all FmHA farm loans were written off.

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Two Views of the Effects of Government Budget Deficits in the 1980s

John A. Tatom

FEDERAL budget deficits in the United States have become a major concern since they rose to nearly $200 billion in fiscal 1983. In the absence of new policy efforts, the deficit is projected to continue at $200 to $250 billion per year for the rest of this decade.

Deficits, according to most popular analyses, raise aggregate demand for goods, services and credit, which boosts output, employment, prices and interest rates and reduces private investment.[1]

This article examines the empirical and theoretical basis of this mainstream view. It also presents an alternative set of hypotheses, which indicates that fiscal policy actions are largely and directly offset by private spending changes, rendering the aggregate demand and interest rate channels of influence insignificant.

THE CONVENTIONAL ANALYSIS AND RECENT EXPERIENCE

Conventional wisdom holds that recent and prospective U.S. budget deficits have significantly raised interest rates and have promoted the crowding out of investment. But this view is based on the conventional deficit/aggregate-demand hypothesis that also holds that an expanded deficit should increase both output and the price level. The latter conclusions became center stage in 1980–81 when the Reagan economic program was debated. Their empirical validity, which remains largely unquestioned, was strongly rejected after mid-1981 when, with the deficit expanding, inflation plummeted from double-digit levels and the economy entered the longest and most severe recession since the 1930s.

Interest rate developments were also at odds with the conventional view. Chart 1 shows the total government deficit as a percent of GNP and the AAA bond yield since 1950. The surge to historically high interest rates occurred well before the 1981–82 surge in the deficit.[2] The recent rise in the deficit occurs from the third quarter of 1981 to the fourth quarter of 1982, when the AAA bond yield declined from about 15 percent to 12 percent. Then, in 1983–84, the deficit declined sharply relative to GNP, but the AAA bond yield rose.

The principal difficulty in finding a positive relationship between deficits and interest rates arises from the fact that both the budget deficit and interest rates move cyclically and in opposite directions. Hence, it is not surprising, especially for short-term interest rates, that empirical studies often turn up supposedly sig-

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[1]Most introductory textbooks emphasize the boost to aggregate demand, interest rates and prices arising from "expansionary" fiscal policy actions. See, for example, the macroeconomics sections of Dolan (1983), McConnell (1984), or Samuelson and Nordhaus (1985). These texts also discuss some of the theoretical reservations about these channels of influence raised below. Note that the hypothesized reduction in investment does not exceed the initial rise in aggregate demand for goods and services that arises from deficit-increasing fiscal actions.

[2]Similarly, the appreciation of the dollar precedes the deficit surge. The steady upward appreciation of the trade-weighted exchange rate for the U.S. dollar began at the end of 1979 (when interest rates soared) and was not noticeably affected by the 1981–82 deficit surge.

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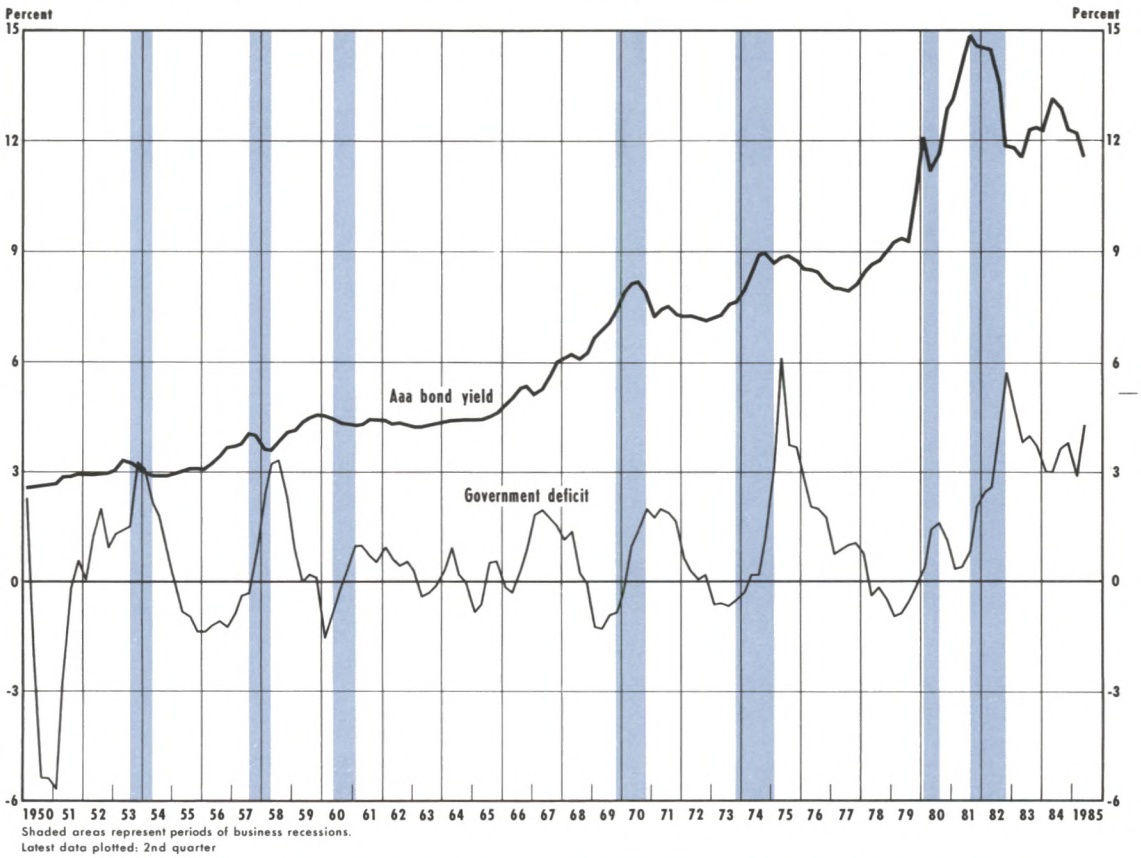
Chart 1
Aaa Bond Yield and Total Government Deficit as a Percent of GNP



Shaded areas represent periods of business recessions.
Latest data plotted: 2nd quarter

nificant *negative* statistical relationships between interest rates and deficits. When one uses deficits constructed on a high-employment basis — that is, with systematic cyclical influences removed — there still is no evidence of a positive relationship between deficits and either short- or long-term interest rates over the period 1955–83.[3]

[3]See Tatom (1984). Efforts to control for future inflation expectations to capture real interest rate changes do not affect the observed absence of a deficit effect on interest rates. Also, some analysts conjecture that the debt/GNP ratio positively influences the interest rate. Regressions of quarterly changes in the AAA bond yield or three-month Treasury bill rates on changes in the ratio of net federal debt to GNP, controlling for changes in the capacity utilization rate and the inflation rate one quarter ahead, yield a negative but insignificant relationship for the debt ratio over the period I/1955 to III/1984.

The independence of interest rates from the deficit has been observed by Evans (1985). Also see Feldstein and Eckstein (1970), Sargent (1973), and the recent Treasury study (1984). Plosser (1982) details many of the theoretical and econometric difficulties of previous tests of the interest rate/deficit hypothesis.

Has Recent Crowding Out Reduced Investment?

Chart 2 shows private domestic investment as a share of GNP. Investment has declined and risen cyclically since 1980, but these swings obscure the strength of investment over the past four years. When the capacity utilization rate is relatively low, the demand for new capital can be met more easily by the reemployment of existing capital instead of investment in new facilities. Thus, the share of investment in GNP and the capacity utilization rate tend to move in tandem or to be positively correlated. In 1984, the capacity utilization rate was well below its 1979 level, when the prior peak investment ratio was achieved. Nevertheless, the share of private domestic investment in GNP in 1984 virtually matched this peak level.

Even plant and equipment (nonresidential fixed) investment has been quite high by historical standards, despite the recessions in 1980–82. When nominal

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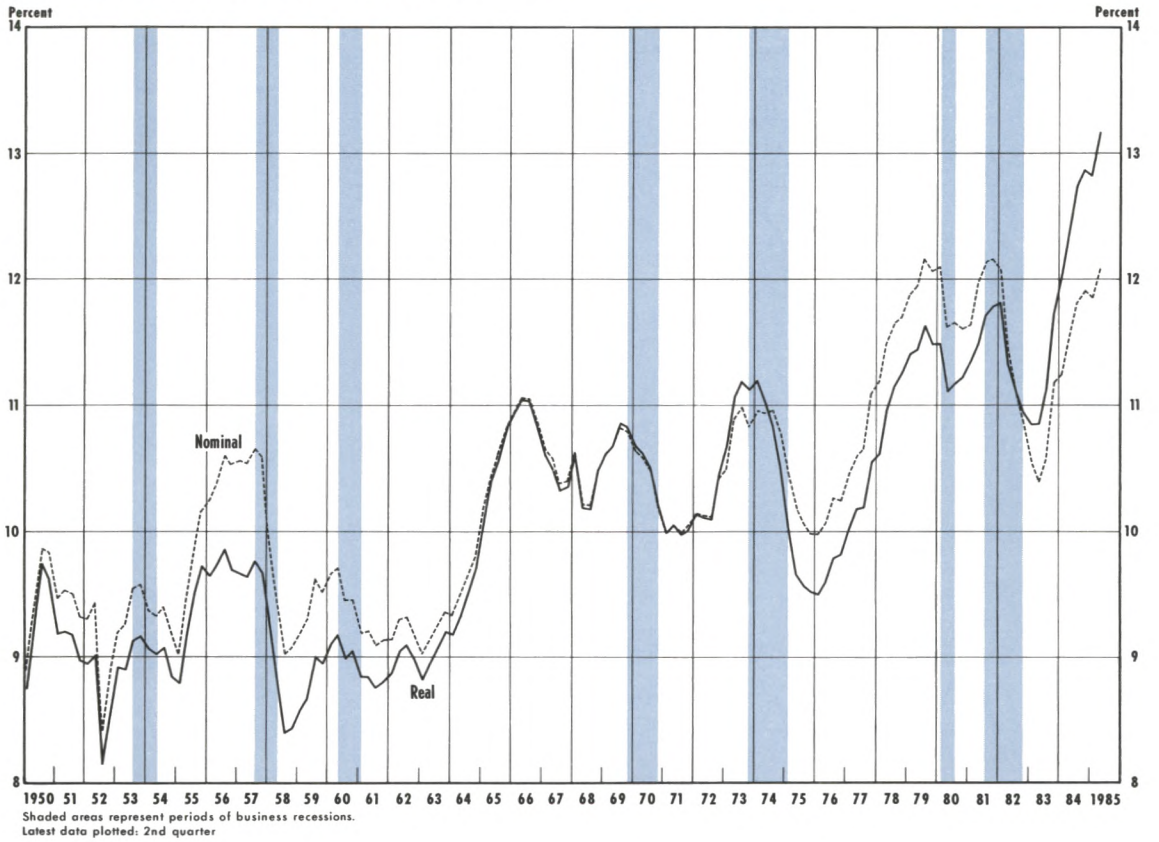
Chart 2
Nonresidential Fixed Investment as a Percent of GNP



nonresidential fixed investment and GNP are adjusted by their respective deflators, in order to measure real investment as a share of real GNP, the recent strength of plant and equipment spending relative to real GNP represents a postwar peak performance. This share is shown in chart 3. Note that, even at the depths of the previous two recessions, real plant and equipment purchases were about as large a share of real GNP as the 11 percent attained at the peaks of previous investment booms in 1966 and 1969.[4] The conventional argument, that investment has been unusually weak due to the higher real rates of interest, is not obviously important in explaining recent investment experience.

[4]The reason for the greater real strength is that the relative price for new plant and equipment declined sharply since 1980. The nonresidential fixed investment deflator declined 14.2 percent relative to the GNP deflator from 1980 to 1984.

THE MACROECONOMIC EFFECTS OF FISCAL POLICY

A closer look at the theoretical mechanism underlying conventional analyses of the deficit reveals some of the potential shortcomings of these analyses. In the textbook view of the effects of fiscal policy on the economy, increased government deficits expand aggregate demand, spending, output and employment, regardless of whether larger deficits arise from increases in purchases, transfer payments or reductions in taxes. So-called balanced-budget increases in transfer payments, in which a rise in transfer payments is matched by a rise in taxes, leave aggregate demand unchanged (ignoring distribution effects), while tax-financed increases in government purchases raise aggregate demand.

Such conventional analyses also take into account crowding out — reductions in private spending that

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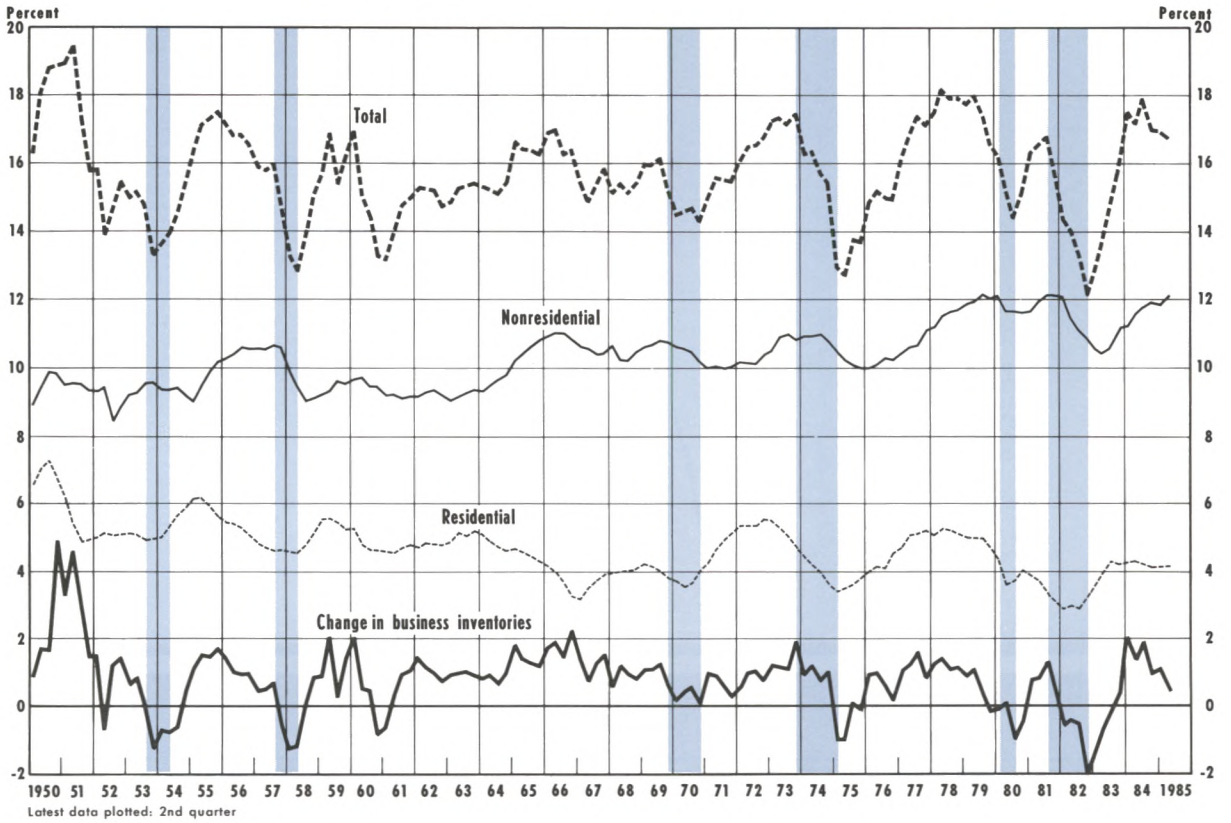
Chart 3
Private Domestic Investment as a Percent of GNP



occur due to fiscal policy changes. Increases in the deficit, so the argument goes, result in increased competition in credit markets, thus bidding up interest rates. Also, if fiscal policy actions raise aggregate demand, the increased competition in the market for goods and services bids up the general level of prices. For both reasons, real private spending is reduced, or crowded out. Households reduce their current real consumption expenditures and increase saving; firms reduce real investment spending in response to a higher interest rate.

Fiscal Policy Crowding Out: Saving, Investment and the Interest Rate

The important link between fiscal policy, aggregate demand and interest rates and the concept of crowding out of private expenditures can be illustrated in the market for saving. In figure 1, the demand for saving is taken to be the demand for funds to finance investment. Other things that influence investment remaining the same, the demand for investment or for saving to finance it, is inversely related to the interest rate. The supply of saving consists of private saving — household disposable income less desired consumption expenditures — and government saving — the excess of tax receipts over government expenditures, or the budget surplus. In figure 1, the national saving schedule is drawn as upward-sloping, indicating that, given income, households reduce consumption expenditures and save more at higher interest rates. In equilibrium at point A, the interest rate equates the supply and demand for national saving at interest rate i_0.

In the conventional analysis, fiscal policy actions affect national saving, investment and the interest rate by (1) directly changing the budget surplus or government saving, and/or (2) altering private saving. Such changes shift the national saving schedule. Given GNP

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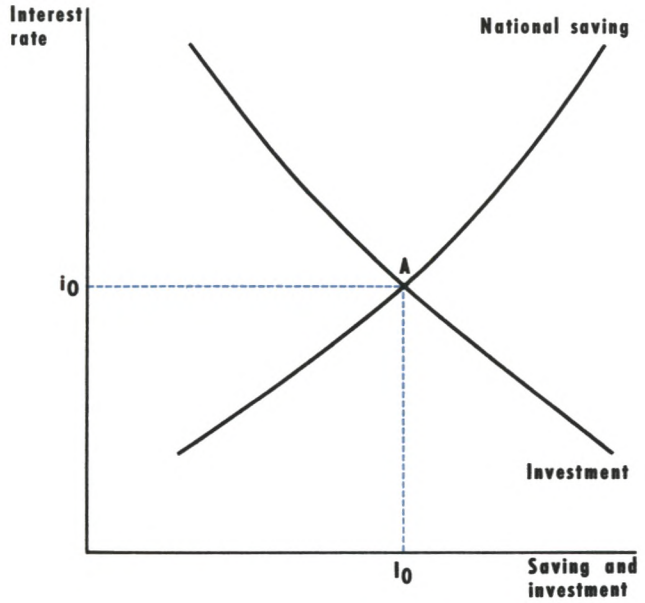
Figure 1
National Saving, Investment and the Rate of Interest



and interest rates, a fall in taxes or a rise in transfer payments (financed by borrowing) adds to disposable income, increasing both private consumption expenditures and private saving. Since part of the tax cut or transfer payment is spent for consumption, the rise in private saving is less than the deficit increase. Thus, *national* saving declines.

Such a decline also indicates that desired aggregate demand for goods and services has risen so that it must exceed the given level of GNP; the aggregate demand increase equals the reduction in national saving. With no change in GNP, the interest rate must rise to equate national saving and investment. In response to the higher interest rate, investment is crowded out, or declines, but some of the initial shortfall in national saving is eliminated since individuals also increase private saving.

A rise in government purchases also affects national saving. In contrast to a tax cut or a rise in transfer payments, a rise in government purchases does not change disposable income, so consumption expenditures and private saving remain unchanged. But the rise in purchases raises the budget deficit or reduces government saving. National saving falls by exactly the change in aggregate demand for goods and services, as was the case above for the tax or transfer payment change. In this case, however, the rise in aggregate demand is the government's, while before it was the policy-induced change in private consumption expenditures. As before, however, interest rates will tend to rise, increasing private saving and reducing consumption and investment expenditures.

Tax-financed changes in government purchases, on the other hand, reduce private saving, given the interest rate and GNP. The higher tax reduces disposable income and therefore both consumption expenditures and private saving. The reduction in private saving is less than the tax increase, because private expenditures on goods and services also decline. Since the government deficit does not change with such a fiscal action, the decline in national saving equals the reduction in private saving. The reduction in national or private saving again indicates a rise in aggregate demand for goods and services. Tax-financed changes in transfer payments have no effect on aggregate demand for goods and services or the national saving schedule in figure 1, since the government deficit and disposable income remain unchanged. Thus, private and total spending on goods and services and private and national saving are unaffected.

In summary, the initial effects of fiscal policy actions on private and national saving are the critical counterparts of any initial change in aggregate demand for goods and services; both indicate the extent of upward pressure on interest rates. The analysis here illustrates the importance of both of these initial shifts. It also indicates why crowding out tends to occur. In the conventional analysis, however, crowding out is generally presumed not to be complete.[5]

Crowding In

The growth in aggregate demand associated with reductions in national saving can raise or "crowd in" GNP. When GNP rises, disposable income, consumption expenditures and private saving rise; the initial reduction of private and national saving is offset by

[5]The Council of Economic Advisers (1985), pp. 70–77, suggests that economic theory and evidence support "complete" crowding out, where the total real demand for goods and services is unaffected by fiscal policy actions. Whether this crowding out, primarily of investment, arises through interest-rate or price-level crowding out or direct substitution of public for private expenditures is not indicated.

The Congressional Budget Office (1985) also provides a detailed discussion of the effects of deficits. A recent review by Brunner (1984) provides the best recent discussion of the theoretical issues associated with the macroeconomic theory of fiscal policy. Also, see Carlson and Spencer (1975).

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increases in both as GNP increases. The full adjustment of GNP, however, with interest rates constant, cannot raise national saving back to its initial level, so the interest rate increase and crowding out will still occur. Note, however, that GNP cannot increase, just as interest rates cannot rise, unless the initial reductions in national saving occur.

Some Reservations: The Permanent Income Hypothesis and Ex Ante Crowding Out

An alternative set of hypotheses about the effects of fiscal policy actions on the economy, sometimes called classical or Ricardian, emphasizes two theoretical considerations called the permanent income hypothesis and *ex ante* crowding out. According to this view, consumption expenditures are a function of *permanent* income; consequently, variations in saving (and saving relative to GNP) have a large cyclical component.[6] The permanent income hypothesis also entails a government budget constraint, which indicates that the present value of current and future government expenditures must equal the present value of current and future taxes. This constraint implies that the method of financing government expenditures is irrelevant; that is, whether current expenditures are financed through taxation or borrowing (future taxes with an equivalent present value) has no influence on the economy.[7] Thus, changes in taxes are offset by equal changes in private saving, and national saving is unaffected.

The second consideration is that government expenditures are, to some degree, substitutes for private expenditures.[8] For example, an increase in government expenditures for school lunches may reduce private consumption expenditures on such goods; increased public expenditures for transportation services may reduce private demand for such investment goods; increased transfer payments provide assistance that may substitute for private saving and investment. To the extent that such substitution occurs, growth in government purchases crowds out private purchases with no net effect on economic activity; such growth in government purchases results in offsetting reductions in private expenditures including investment. Similarly, growth in transfer payments can affect the mix of desired private spending. No excess demand for national saving occurs, nor is aggregate demand for goods and services altered; thus, GNP and interest rates are not affected by fiscal policy.

The emphasis in this view of fiscal policy is on *ex ante* crowding out, in which fiscal policy actions are largely offset by direct private sector responses.[9] An increase in government purchases does not have to affect the interest rate; either national saving could remain unaffected by government purchases, as these substitute for private consumption, or investment demand could be reduced equally, as government purchases substitute for investment purchases. Similarly, national saving and private investment can be reduced due to increased transfer payments. Thus, aggregate demand, interest rates and the price level may not be affected by fiscal actions.[10]

If *ex ante* crowding out leads to private expenditure changes that fully offset fiscal policy actions, then the effects of fiscal actions on the private and national saving will not be the same as in the conventional analysis. One fundamental difference is that a rise in taxes will reduce private saving by an equal amount. Thus, a tax hike will result in an equal reduction in private saving, leaving national saving unchanged.[11] This implies that the effects of government expenditures on national saving are the same whether they are tax- or bond-financed.

Another major difference is that a rise in govern-

[6]Textbook analyses typically distinguish between permanent and temporary changes in fiscal actions, based on the permanent income hypothesis. Temporary changes in taxes or transfer payments are generally regarded to have little effect on private spending or national saving since such changes do not alter perceptions of permanent income or wealth. A type of temporary, or at least transitory, change in the budget arises from the "cyclical deficit." When unemployment rises due to a cyclical fall in income, tax receipts decline and federal expenditures, especially transfer payments for unemployment insurance, rise. As a result, the budget deficit rises.

[7]This consideration has come to be called the Ricardian Equivalence Theorem. It is developed by Barro (1974, 1979) and has received strong support from Plosser (1982), Aschauer (1985), Tanner (1979) and Kormendi (1983). See also Kochin (1974).

[8]Bailey (1971) discusses at length the theoretical possibilities that fiscal actions directly influence private sector behavior.

[9]There are exceptions to the conclusion that fiscal actions do not affect aggregate demand. See Hall (1980) and Barro (1981) for discussions of the real output effects of temporary increases in government purchases, especially defense expenditures, even in a Ricardian world.

[10]The absence of effects of fiscal actions on GNP has been a feature of reduced-form estimates like the St. Louis equation for some time. See Hafer (1982) and the references there for recent analyses. Permanent adverse effects of government expenditures on investment are found in Carlson (1982). Also see the references in footnote 1.

[11]In the conventional view, a rise in taxes initially reduces disposable income by an equal amount and results in a fractional reduction in private saving. The fraction, called the marginal propensity to save, is generally regarded to be relatively small, on the order of 20 to 30 percent.

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Table 1
The Share of Government Budget Components in GNP: 1980 and 1984

	1980	1984	Change
Total government expenditures	33.0%	34.3%	1.3%
Purchases of goods and services	20.4	20.4	0.0
Transfer payments	12.6	13.9	1.3
Total government receipts	31.8	31.0	−0.8
Total government surplus	−1.2	−3.4	−2.2

ment purchases will reduce private consumption or raise saving, if such purchases are a substitute for private consumption expenditures. Similarly, a rise in transfer payments will reduce private saving and investment, if such payments are substitutes for saving. This can occur independently of distribution effects that in either view can yield a reduction in private saving. Finally, in the classical view, the effects of government expenditures on national saving can be associated with equal shifts in investment demand that reflect the extent to which government expenditures and investment are substitutes.[12]

Recent Fiscal Policy Developments and Saving and Investment

A comparison of the implications of the two views above can be facilitated by a look at the experience in the 1980s. Table 1 shows the principal components of the total government surplus as a share of GNP in 1980, before the ballooning of the federal deficit, and 1984, the latest year available. From 1980 to 1984, the deficit widened from 1.2 percent to 3.4 percent of GNP. The share of government purchases was unchanged, while the share of transfer payments rose. The rise in the deficit was accounted for primarily by a rise in transfer payments and, to a smaller extent, by a decline in taxes.[13] These changes are explained to only a small extent by relative differences in the cyclical performance of the economy in 1980 and 1984. The average unemployment rate of 7.5 percent of the civilian labor force in 1984 was only slightly higher than the 7.1 percent in 1980. When unemployment is higher, government transfer payments (especially unemployment compensation) are higher, and, due to cyclical losses in income, tax payments are lower than they would be otherwise.

In the conventional analysis, the effect of the changes in the fiscal stance of the government sector shown in table 1 on saving is to raise the private saving rate (PSR) by a fraction — on the order of about 25 percent — of the increased deficit (2.2 percent) or roughly 0.5 to 0.6 percentage points. Since the expected rise in the PSR is smaller than the rise in the deficit, the national saving rate (NSR) would be expected to fall by the difference, about 1.6 to 1.7 percentage points. Associated with this shift in the national saving rate is an increase in the share of GNP allocated for consumption expenditures and an excess demand for funds to finance investment. In the conventional view, aggregate demand should have risen, improving the cyclical performance of the economy and raising prices, and interest rates should have risen; the latter, of course, should have lowered investment.

In the classical view, part of the increased deficit arose from the reduction in receipts as a share of GNP; this part is expected to be largely offset by a rise in the PSR, leaving the national saving rate unchanged. The remainder of the rise in the deficit, the rise in the share of transfer payments, would be expected to reduce private saving and investment to the extent that households view transfer payments as substitutes for such avenues of wealth accumulation. Thus, the PSR and NSR could be expected to decline by some fraction of the 1.3 percentage-point rise in transfer payments. As a net result of these two forces, the PSR should rise by up to 0.8 percentage points, and the NSR should decline slightly. Interest rates and the cyclical components of real GNP and employment should be unchanged.

Comparing 1984 with 1980, two central differences in expectations emerge between the conventional and classical views. These differences concern interest rates and the cyclical performance of the economy. The cyclical performance of the economy was slightly worse in 1984 than in 1980. Interest rates were generally higher in 1984 than in 1980, despite a decline in inflation. For example, in 1980, the consumer price index rose 13.5 percent, while rising only 4.3 percent

[12]Several recent studies have examined the effects of fiscal actions on personal consumption expenditures in tests of *ex ante* crowding out. See Aschauer (1985), Feldstein (1982) and Kormendi (1983). These tests allow for direct substitution of government purchases for private consumption expenditures and transfer payments for private saving; they do not address the extent to which government expenditures directly affect private investment expenditures.

[13]The decline in the share of government receipts in GNP matches the decline in the share of corporate profit tax liability in GNP.

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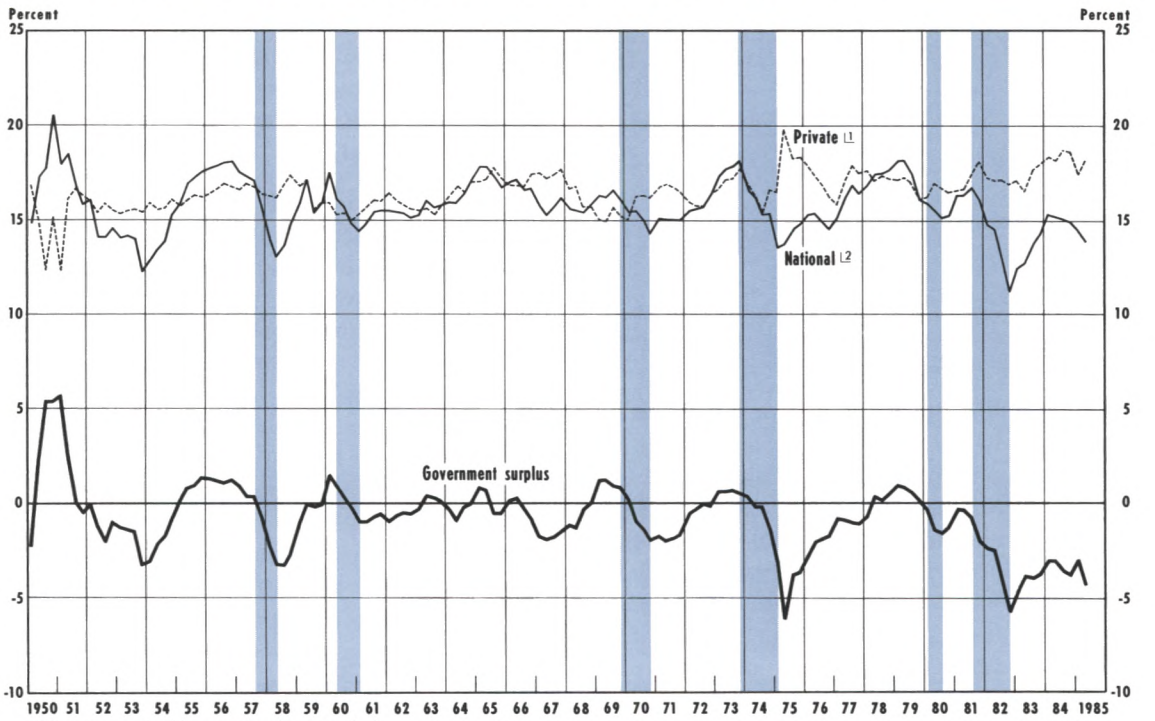
Chart 4

Government Surplus, National Saving and Private Saving as a Percent of GNP



NOTE: Data are national income and product account basis.
[1] The ratio of gross private saving to GNP.
[2] Private saving plus the government surplus as a percent of GNP.
Shaded areas represent periods of business recessions.
Latest data plotted: 2nd quarter

in 1984. The average Aaa bond yield, however, averaged 11.94 percent in 1980, while averaging 12.71 percent in 1984. Thus, cyclical developments are more consistent with the classical view, but interest rate developments, considering these two years, are more consistent with the conventional wisdom.[14]

Of course, other factors that influence interest rates and cyclical performance are not likely to have remained the same, and more careful control for these factors is necessary to discriminate between the hypotheses. Some insight into the importance of these other factors can be gained by examining the other implications of these hypotheses.

While the implications of fiscal developments in these two years for the saving rates are similar in the two views, it is useful to examine what happened to these rates. Chart 4 shows the private saving rate, government surplus share and national saving rate from 1950 to the end of 1984.[15] The PSR has been fairly constant compared with the NSR. For example, from I/1950 to IV/1984, the PSR averaged 16.5 percent, exhibited no trend and had a standard deviation of only 1.02 percentage points.[16] Such behavior, however, may

[14]In fact, interest rate movements have not followed the deficit over the whole period, only in the two years indicated. This apparent contradiction arises from the fact that most of the increase in the deficit occurred in 1982 when interest rates had been declining and continued to decline, while the rise in interest rates over this period occurred in 1980 and 1981, and the decline in inflation occurred in 1981.

[15]In the national income and product accounts, private saving includes both personal and business saving. Private saving plus government saving equals national saving. Government saving is the budget surplus of the federal, state and local governments. Gross private domestic investment equals national saving plus net foreign saving.

[16]This near constancy has been formulated as "Denison's Law" which indicates that private saving is proportional to high-employment or trend GNP but is cyclical, rising in expansions and declining during recessions. Denison's Law is developed in Denison (1958), Hickman (1966) and David and Scadding (1974). The latter indicate that Denison's Law provides strong support for Friedman's (1957) permanent-income theory of consumption.

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Table 2

Shares of Components of Gross Private Saving in GNP: 1980 and 1984

	1980	1984	Change
Gross private saving[1]	16.5%	18.4%	1.9%
Personal saving	4.2	4.3	0.1
Business saving:	12.4	14.2	1.8
Undistributed corporate profit[2]	1.2	3.2	2.0
	(1.8)	(1.6)	(−0.2)
Corporate capital consumption allowance[2]	6.8	6.7	(−0.1)
	(6.2)	(8.2)	(+2.0)
Noncorporate capital consumption allowance with capital consumption adjustment	4.3	4.3	0.0
Addendum: Corporate capital consumption adjustment	−0.6	1.5	+2.1

[1]Figures do not add due to rounding.

[2]The top entry for each of the components of corporate business saving includes the capital consumption adjustment. The figure in parentheses excludes the capital consumption adjustment.

obscure the conflicting effects of various influences on the PSR.

The NSR appears to be strongly cyclical, declining sharply in recessions. This pattern must arise from cyclical movements in government saving since the PSR does not appear to be cyclical. Cyclical differences may not have exerted a strong influence in comparing 1984 to 1980 performance, however.

From 1980 to 1984, the PSR rose sharply from an average of 16.5 percent to 18.4 percent. Based on the conventional analysis, this rise is sharply higher than that expected. Similarly, the national saving rate fell from 15.4 percent to 15.0 percent, much smaller than the decline expected from the conventional analysis, but it may also be smaller than that expected from the classical view.

The counterpart of strong saving, domestic investment, has been even stronger since 1981. In the national income and product accounts, gross saving equals gross investment, except for a minor statistical discrepancy. Gross private domestic investment as a share of GNP rose 2.1 percentage points to 17.4 percent in 1984, despite the 0.4 percentage-point fall in the national saving rate. This difference is accounted for by the inflow of net foreign saving, the largest share of which was due to domestic firms channeling their own funds from investment abroad into domestic investment. In 1980, U.S. assets abroad rose $96.3 billion, but this pace of investment plummeted to $20.9 billion in 1984. The pace of foreign investment in the United States increased slightly over the period. Foreign assets in the United States rose $98.8 billion in 1984, up slightly from the $84.7 billion pace in 1980. As a result, net foreign investment fell from an $11.6 billion outflow in 1980 to a net inflow of $77.9 billion in 1984.

The recent behavior of investment suggests a strong candidate for the significant omitted factor accounting for the strength of domestic saving and the rise in interest rates. This factor, the investment incentives in the 1981 tax act, accounts for the relative strength of investment, despite the higher level of interest rates in 1984 than in 1980. More direct evidence of these effects can be seen in the dominant component of saving in the United States, business saving.

Table 2 provides a summary of components of private saving in 1980 and 1984. The rise in the private saving rate was virtually all due to an increase in the business saving rate. The latter, in turn, arose almost completely because of an increase in the corporate capital consumption adjustment as a share of GNP. This figure corrects reported profits and capital consumption (depreciation) allowances for the understatement or overstatement of true economic depreciation, including losses from the use of historical rather

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Table 3

The Federal Budget as a Share of GNP

	1980	1981	1982	1990[1] 1983	1984	Current Services	Administration
Share in GNP of:							
Expenditures	22.4%	23.2%	24.3%	25.3%	24.0%	23.5%	20.9%
Receipts	20.4	21.1	20.6	19.5	19.2	19.5	19.5
Deficit	2.0	2.0	3.7	5.8	4.8	3.9	1.4

[1]Unified Budget Estimates from *Budget of the United States Government 1986.*

than replacement cost in computing depreciation allowances. The sharp change in this adjustment reflects the slowdown in inflation from 1980 to 1984, reducing the extent of underdepreciation due to historical cost accounting; more important, the change in the adjustment reflects the acceleration of depreciation allowed by the 1981 tax act. The latter is indicated by the large jump in the size of the corporate capital consumption allowance (without capital consumption adjustment) relative to GNP. This jump accounts for the reported rise in the share of undistributed corporate profits (with adjustment) despite the lack of improvement in the cyclical performance of the economy.

Thus, other things have not been equal in the determination of saving and investment. Tax cuts arising from accelerated depreciation have added substantially to the private saving rate and made possible the cash flow to finance the deficit induced by such a loss in government revenue, without interest rate changes. But the new incentives also induced a substantial rise in the share of investment in GNP, especially in the share of plant and equipment investment and a redirection of investment by U.S. firms from abroad. Not surprisingly then, yields on most private assets rose sharply from 1980 to 1984.

The changes in saving and investment rates from 1980 to 1984 conform more closely to the expectations of the classical view than to those of the conventional analysis, especially when the investment incentives of the 1981 tax act are taken into account. In the absence of more detailed statistical analysis, however, the data do not yield decisive evidence supporting either view to the exclusion of the other. The strength of investment — arising from improved incentives, despite nearly unchanged cyclical performance of the economy and a sharply higher real rate of interest — has been associated with a substantially smaller decline in the national saving rate and a much larger rise in the private saving rate than that suggested by the conventional view, however.

The Implications of Federal Deficits For Crowding Out in the 1980s

Table 3 shows the growth in federal expenditures as a share of GNP from 1980 to 1984 and unified budget estimates for 1990. The latter are constructed assuming either no further policy changes or the implementation of administration proposals. In the absence of policy changes, expenditures are higher in each year than in 1980, resulting in an implicit crowding out of investment.[17] While expenditures and deficits peak as a share of GNP in 1983, the declines to 1990 are small.[18]

The *ex ante* crowding-out view suggests that tax changes have no effect on national saving, but that changes in government expenditures reduce investment to the extent that such expenditures lower national saving.[19] Increases in government expenditures

[17]The Congressional Budget Office (1985) discusses the effect of such deficits on the ratio of federal debt to GNP, including the view that it is the level of the debt relative to GNP rather than the deficit that affects interest rates. Their current services estimate of this ratio rises to near 50 percent of GNP in 1990, roughly its level in 1959. The view that the comparable decline in this ratio from 1959 to 1974 reduced interest rates is noticeably absent from contemporary or earlier studies. Also see footnote 3 above.

[18]The growth in the government budget deficit from 1980 to 1982 was cyclical in nature and would not have raised interest rates in any case. Investment demand is typically more strongly cyclical than budget deficits so that, even if the conventional view were correct, interest rates would not have risen due to cyclical deficit increases. Barro (1983) and Tatom (1984) detail the cyclical deficits since 1980.

[19]Since gross domestic investment equals national saving plus net foreign saving, the fiscal effects on saving must be mirrored in similar changes in investment, other things equal.

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have little effect on interest rates or GNP, in this view, although they do change the mix of GNP and, depending on how they are financed, alter the mix of national saving.[20]

In the absence of policy changes to reduce the share of government expenditures in the nation's output, crowding out will remain a serious concern. The administration has proposed cutting the share of federal expenditures in GNP by 1990. This proposal focuses on reductions in government purchases.[21] Such a policy would boost capital formation and economic growth by raising private and national saving rates. According to the classical view, however, this may have little effect on interest rates. This view indicates that deficit reduction efforts that focus on raising taxes will have no short-term impact on economic performance, but will instead simply reduce private saving by a corresponding amount.[22]

SUMMARY

Popular analyses of recent and prospective U.S. government deficits suggest that deficits have raised output, prices and interest rates and crowded out private investment. The implication of this view is that future budget cuts, in the short run, will retard the growth of aggregate demand but will lower interest rates, leading to a strengthening of private investment and long-run growth.

There are reasons to question the relevance and the accuracy of the conventional view. It provides an inconsistent view of recent economic developments with inaccuracies ranging from the forecast of booming output, employment and inflation for 1981 and beyond, to the forecast of rising interest rates. In addition, the evidence here shows that the expected crowding out of investment has been offset by other factors, resulting in an investment boom since 1980.

The alternative hypotheses examined here indicate that fiscal policy actions are largely and directly offset by the private sector. Thus, tax changes are offset by adjustments to private saving, with no direct effect on national saving or investment. This classical view of fiscal policy also emphasizes that increased government purchases are directly offset by reduced private expenditures (especially investment).

According to the classical view, policy actions to reduce the deficit are not likely to affect interest rates and may not affect the investment boom. For example, if deficit reduction entails simply raising taxes, private saving will fall by a like amount and no additional investment will occur. To the extent that deficit reduction focuses on expenditures, however, investment will be strengthened, but without the inducement of lower interest rates.

The evidence from the recent experience suggests that the classical view is correct and indicates the importance of business tax cuts in raising domestic saving, investment and interest rates and reducing U.S. investment abroad. The evidence is not decisive as to which view more generally and accurately depicts the effects of fiscal policy on the economy, however. But both views indicate that domestic investment and economic growth are impeded by deficits arising from government expenditure growth, and that they are ultimately improved by restraint in such growth. Proposals to deal with the deficit without raising taxes focus largely on reducing government nondefense purchases. The successful implementation of these plans would ultimately raise private saving and investment, alter the composition of national output and promote economic growth.

[20]The link between deficits and the price level depends on whether increased deficits raise aggregate demand and on the extent to which deficits are accommodated by monetary growth. The classical view indicates that increased deficits do not raise aggregate demand and, hence, cannot be inflationary. The second issue, however, whether deficits contribute to money stock growth and, hence, inflation, is not examined here. This link between the deficit and inflation is developed more fully in Hein (1981). See Hamburger and Zwick (1981) for an alternative view.

[21]A detailed analysis of the unified budget proposals indicates that they focus on reductions in federal aid to state and local governments, agriculture and other purchases. These expenditures are principally either part of total government purchases directly, or they finance such purchases at the state and local government level. See Carlson (1985).

[22]The earlier discussion does not distinguish between the type of taxes. Thus, the effects discussed are for average relationships. One of the most important qualifications that this raises concerns business tax changes that change investment incentives. The 1981 improvements in tax incentives for investment certainly lowered taxes and raised the deficit and may, at unchanged interest rates, have left national saving unchanged, as the classical view suggests. But the increased investment demand played a major role in boosting interest rates and thereby affected economic performance. Recent proposals to remove those incentives would reverse many of these effects on economic performance, even if the overall taxes and deficits are unchanged.

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The Status of Farm Lenders: An Assessment of Eighth District and National Trends

Michael T. Belongia and Kenneth C. Carraro

SINCE 1982, sharp declines in real farm income and the asset values supporting over $200 billion in farm debt have created substantial increases in farm loan defaults and farm bank failures. Large and increasing loan losses have generated a great deal of concern that the rapidly deteriorating quality of farm debt may have severe consequences for the long-term structure of American agriculture and adverse short-term effects on the aggregate economy as well.[1]

This article reviews a variety of performance indicators for the three major lenders to the farm sector and assesses both the timing and breadth of portfolio deterioration. The lending institutions examined are agricultural banks, the Farm Credit System (FCS) and the Farmers Home Administration (FmHA). The performance of these lenders in the Eighth Federal Reserve District is compared with their performance in the rest of the United States.

FARM LENDERS: A BRIEF PROFILE

An agricultural bank is defined as a commercial bank with a ratio of farm loans to total loans that is above the average farm loan ratio at all banks. At the end of 1984, the average farm loan ratio was approximately 17 percent. Currently, there are 589 banks in the "official" boundaries of the Eighth Federal Reserve District and 1,383 agricultural banks in the region defined more broadly that have a higher farm loan ratio and meet the current definition of an agricultural bank. The broader definition of the Eighth District is used to make comparisons with Farm Credit Bank districts.[2] Figure 1 represents these alternative designations of the District's borders.

Nationally, 4,970 banks, or 35 percent of all commercial banks are defined to be agricultural banks. Collectively, they hold $30 billion, or 60 percent, of the total farm debt held by commercial banks. Of the farm debt held by agricultural banks, 83 percent ($24.8 billion) is

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[1]Estimates of farm loan defaults under different scenarios are provided by Bullock (1985). Ranges commonly cited for losses on all farm loans are $25–50 billion over the next four years. Losses within the Farm Credit System alone have been estimated to be $350–400 million in 1985 with additional losses in 1986. Also, an estimated 12 percent of the Farm Credit System's loans are not adequately secured by property and assets and could produce "significant" future losses; see "Farm Agency Estimates" (1985).

Schink and Urbanchuck (1985) describe the channels through which farm loan defaults could affect interest rates, GNP and employment and estimate these effects for different magnitudes of loan losses. An alternative assessment of how farm loan defaults might affect the aggregate economy is provided by Belongia and Gilbert (1985).

[2]Officially, the Eighth Federal Reserve District includes Arkansas, northern Mississippi, southern Illinois and Indiana, western Kentucky and Tennessee and eastern Missouri. Farm Credit districts, however, cover entire states. The Fourth and Sixth Farm Credit districts, headquartered in Louisville and St. Louis, do not include Mississippi but cover all of the remaining states and Ohio. To provide a representative, but unofficial Eighth District, we define it as the states covered by the Fourth and Sixth Farm Credit districts: Arkansas, Illinois, Indiana, Kentucky, Missouri, Ohio and Tennessee. Comparisons with the nation refer to data for all states other than those included in this definition of the Eighth District.

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Figure 1

Official Eighth District

The area used to represent the Eighth District for this article includes the 4th and 6th Farm Credit Districts of Louisville and St. Louis and is bounded by the heavy black line.

non-real estate debt, or operating debt, associated with the variable costs of farm production. Because farm lending by commercial banks is primarily for short-term operating debt, their chief source of competition is the Production Credit Associations (PCAs) of the Farm Credit System.

The cooperative Farm Credit System (FCS) is a system of federally chartered, but privately owned, banks and associations, which are organized as cooperatives. These banks are supervised and examined by the Farm Credit Administration, an independent agency of the United States government, and are mandated by their charter to make loans only for purposes directly related to agriculture. The FCS consists of 12 districts and 37 banks: 12 Federal Land Banks (FLBs), 12 Federal Intermediate Credit Banks (FICBs) and 13 Banks for Cooperatives (BCs).

The FCS obtains loanable funds by the sale of securities through the system's Wall Street funding arm, the Federal Farm Credit Banks Funding Corporation. The FICBs function as intermediaries that package these loanable funds for, as of October 1985, 318 Production Credit Associations (PCAs), who in turn, make loans directly to farmers for annual operating expenses. The FLBs make loans to farmers for the purchase of farmland through a network of 390 Federal Land Bank Associations that function as loan originating offices. Banks for Cooperatives make loans to farmer-owned cooperatives, such as supply stores. As of December 31, 1984, the Farm Credit System, exclusive of the Banks for Cooperatives, held $67.9 billion, or 32 percent, of total farm debt. Of this total, FLBs held $49.1 billion and PCAs held $17.9 billion. FICBs held the remaining $0.9 billion in the form of loans to other financial institutions.

The Farmers Home Administration (FmHA) is the so-called "lender of last resort" to farmers. It extends credit to farmers through direct loans, guarantees of farm loans made and serviced by commercial banks, and various emergency loan programs. FmHA, for the most part, lends to farmers when they have trouble servicing debt acquired from other lenders or if credit is not available at "reasonable" interest rates from their current lenders. As of 1984, FmHA held $25.7 billion, or 12 percent, of total farm debt.

TRENDS IN THE ALLOCATION OF FARM DEBT

A convenient place to begin a review of farm debt holdings and problems is an analysis of trends in loans outstanding at the various lenders. Table 1 presents the market shares of non-real estate agricultural debt held by the major lenders since 1970 for both the Eighth District, broadly defined, and for the remainder of the U.S. Non-real estate debt represents financing for annual operating expenses such as feed, fertilizer and seed, as well as for the purchase of farm machinery and livestock. The category of "All Others" includes such lenders as private individuals, dealers and merchants.

The trends in the District and the United States are roughly parallel and indicate that both commercial banks and the FCS gained their highest market shares in the mid-1970s and until recently have been steadily losing market share to the FmHA. By the end of 1984, commercial banks at both the District and national levels reversed the 10-year downtrend, showing significant market share gains over 1983.

Table 2 presents the market shares held by lenders for farm real estate loans. The lender category of "Insurers" has been added to reflect the significant pres-

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Table 1

Farm Non-Real-Estate Debt Outstanding at Major Lenders (percent of market held by each lender)

	Banks		PCAs		FmHA		All Others	
	U.S.	District	U.S.	District	U.S.	District	U.S.	District
1970	43.4%	43.1%	19.1%	22.5%	3.5%	2.6%	34.0%	31.8%
1971	46.1	45.7	22.2	25.6	3.5	2.6	28.3	26.1
1972	46.2	43.4	22.3	26.2	3.0	2.2	28.5	28.2
1973	48.6	46.2	21.9	28.0	2.8	2.1	26.8	23.8
1974	51.7	46.8	23.0	28.5	2.7	2.0	22.5	22.6
1975	50.0	46.4	25.6	30.8	2.9	2.4	21.5	20.3
1976	49.1	44.0	25.1	31.6	4.3	4.0	21.5	20.4
1977	48.7	44.1	24.3	31.5	4.0	3.3	23.0	21.1
1978	43.8	41.3	21.6	29.6	5.7	3.6	28.9	25.5
1979	40.6	41.3	20.3	29.6	9.2	4.6	29.8	24.5
1980	38.5	39.1	21.7	29.8	12.0	7.5	27.8	23.6
1981	36.6	36.0	22.5	28.3	14.4	10.3	26.5	25.4
1982	34.4	33.7	21.5	28.1	15.5	13.3	28.6	24.9
1983	33.9	33.7	19.5	20.2	13.9	13.5	32.8	32.6
1984	37.5	39.7	19.1	18.4	14.0	15.0	29.3	27.0

NOTE: Due to rounding, percentages may not add to 100.
SOURCE: U.S. Department of Agriculture.

Table 2

Farm Real Estate Debt Outstanding at Major Lenders (percent of market held by each lender)

	Banks		FLBs		FmHA		Insurers		All Others	
	U.S.	District	U.S.	District	U.S.	District	U.S.	District	U.S.	District
1970	10.3%	18.9%	23.1%	21.9%	7.9%	7.4%	19.7%	19.4%	39.0%	32.4%
1971	10.5	19.5	23.9	22.1	8.1	7.7	18.6	18.1	38.8	32.7
1972	11.1	20.6	25.0	22.5	8.2	7.8	17.5	16.6	38.2	32.5
1973	11.5	21.6	26.5	23.3	8.2	7.5	16.3	15.1	37.5	32.5
1974	11.5	22.4	28.4	24.6	7.8	7.1	15.5	13.7	36.9	32.3
1975	11.0	22.0	30.7	27.6	7.3	6.8	14.7	12.0	36.3	31.6
1976	10.4	21.1	32.7	30.1	6.9	6.4	14.3	11.0	35.7	31.4
1977	9.9	20.9	34.0	31.6	6.8	6.1	14.1	10.8	35.2	30.6
1978	9.8	20.8	34.2	32.3	6.5	5.6	14.6	11.5	34.8	29.7
1979	9.6	19.9	34.8	33.3	6.0	5.1	15.2	12.8	34.3	28.9
1980	8.2	16.7	34.9	33.9	8.5	7.8	14.6	13.0	33.8	28.6
1981	7.5	14.9	37.9	36.6	8.2	7.6	13.7	12.9	32.6	28.0
1982	6.4	13.3	41.7	39.8	8.4	8.0	12.5	12.0	31.0	26.9
1983	6.3	12.6	43.7	41.0	8.3	8.4	11.8	11.5	30.0	26.5
1984	7.0	13.3	43.7	40.2	8.2	8.9	11.5	11.0	29.6	26.6

NOTE: Due to rounding, percentages may not add to 100.
SOURCE: U.S. Department of Agriculture.

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ence of a number of insurance companies in farmland lending. The "All Others" category for real estate lending mainly represents debt held by individuals. The trends are again consistent across the District and the United States. Although commercial banks in the District hold a larger share of the farm real estate debt than banks in the remainder of the U.S., banks in both areas have seen steady declines in market share after initial gains in the early 1970s. Insurance companies and the category of "All Others" also have exhibited secular declines in market share in both areas. The share losses of these three lender groups have accrued almost entirely to the Federal Land Banks of the FCS. At both the District and U.S. levels, the FCS has nearly doubled its market share with steady growth over the period since 1970. The FmHA share, however, has remained largely unchanged over the same period, although minor gains are evident in the District.

In summary, the market share data indicate that, for farm operating debt, the FmHA has posted sharp gains since the mid-1970s at the expense of commercial banks and the PCAs. The farm real estate market, however, has been dominated by the sharp gains made by the Federal Land Banks relative to the share losses of most other major farm lenders.

MEASURES OF PORTFOLIO QUALITY

The major causes of the recent farm debt defaults are erroneous forecasts — both by farmers and their creditors — of continued high and accelerating inflation and increased real returns to assets employed in agriculture.[3] So long as land prices continued to rise with inflation, the collateral base against which farmers could borrow increased, and the value of dollars used to repay the debt decreased. In conjunction with tax advantages for land ownership and the availability of subsidized credit for land purchases, it made sense to buy farmland at prices of $3,000–$4,000 per acre — *if* the purchaser believed the land could be resold at a higher price. Similarly, under the expectation of world food shortages and increases in real commodity prices, the price of land in agricultural production would be expected to rise.[4] Under these conditions, both farmers and their lenders agreed that extending more credit on a rising nominal asset base was a prudent business decision. Unfortunately for both parties, however, their forecasts of inflation and commodity prices were seriously in error.

This description of events suggests that institutions who increased their lending to agriculture sharply between 1974–81 — when inflation, foreign demand for U.S. farm products and real commodity prices were increasing or were expected to increase sharply — should be experiencing the greatest deterioration in portfolio quality.[5]

On the basis of this criterion, the Farm Credit System and FmHA should be experiencing relatively more trouble with portfolio performance than other farm lenders. To assess this thesis, we now turn to a discussion of measures of loan quality and portfolio performance.

Portfolio Quality at FLBs and PCAs

A common measure of loan quality is the percentage of loans on which payments are delinquent. This percentage tends to be a leading indicator of ultimate loan losses because borrowers who eventually default on debt first experience problems with making their scheduled payments. If efforts to reschedule the loan and to service only its interest obligation fail, the delinquent loan becomes, after some lag, a loan loss. The data required for this analysis are difficult to obtain and are not entirely comparable across different lenders and even across different geographical areas for the same lender group. The shaded insert discusses the data used in this article and some caveats that should be exercised when making comparisons or drawing inferences from these series.

Chart 1 plots loan delinquency rates for FLBs in the U.S. and the Eighth District, broadly defined; chart 2 plots the loan loss series for FLBs. In each case, these series are defined to be the dollar value of loans on which payments are delinquent or the dollar value of loan losses as a percent of total loans outstanding.

The FLB series indicate that these institutions have experienced similar patterns and rates of loan delinquencies and losses both in the District and in the remainder of the U.S. Loan losses at District FLBs,

[3]See Belongia (1985).

[4]See, for example, *Will There Be Enough Food?* (1981).

[5]Market share data as a proxy for loan quality should be applied with some caution. Moreover, it should be noted that this measure is better suited to long-term land mortgages than to short-term operating loans. The reasoning is as follows: If market share for mortgage lending declined in the 1970s, subsequent portfolio quality might be improved because fewer new loans (that turned out to be poor loans) were extended and the old loans carried forward were of higher quality if, for no other reason, because a larger share of the principal had been repaid. For annual operating loans, however, market share in a given year may be unrelated to loan quality. In fact, the lower interest rates offered by PCAs in much of the 1970s may have attracted the more creditworthy farmers.

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The Data

Agricultural Banks

All FDIC-insured commercial banks are required to file a quarterly Report of Income and Condition. These reports are commonly referred to as "call reports" and are roughly equivalent to a bank's balance sheet and income statement. Two loan item categories identify the volume of agricultural production loans and farm real estate loans outstanding on the reporting date.

Banks have been required to report loan delinquency data only since 1982. Bank loans are considered past due when interest or principal payments are more than 30 days delinquent. These data are generally verified in the course of normal inspections by bank regulatory agencies such as the FDIC, Federal Reserve or Comptroller of the Currency.

Farm Credit System

Most data used in this article are derived from statistics published in the Farm Credit Administration's annual reports. In many cases, the Farm Credit Banks of St. Louis and Louisville cooperated to provide data not available elsewhere. Until 1984, no guidelines were available to assure that reporting standards for loan delinquency information were consistently applied across the 12 Farm Credit Districts. This fact introduces an inconsistency in the data because 1984 data were collected using definitions that were possibly different from those used in earlier periods.

Farmers Home Administration

Data on the FmHA were derived from the FmHA report 616 and include only loans made under the following farm programs: Farm Ownership, Farm Operating, Economic Emergency and Disaster Emergency. FmHA judges a loan as delinquent when principal or interest payments are 15 days or more past due.

Chart 1

Percent of Total Loans Delinquent

Federal Land Banks

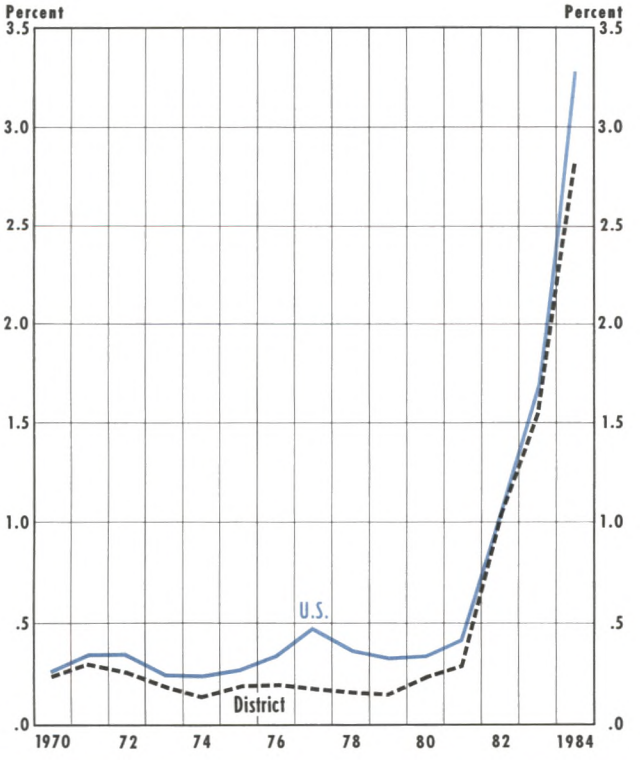

Chart 2

Loan Losses as a Percent of Total Loans

Federal Land Banks

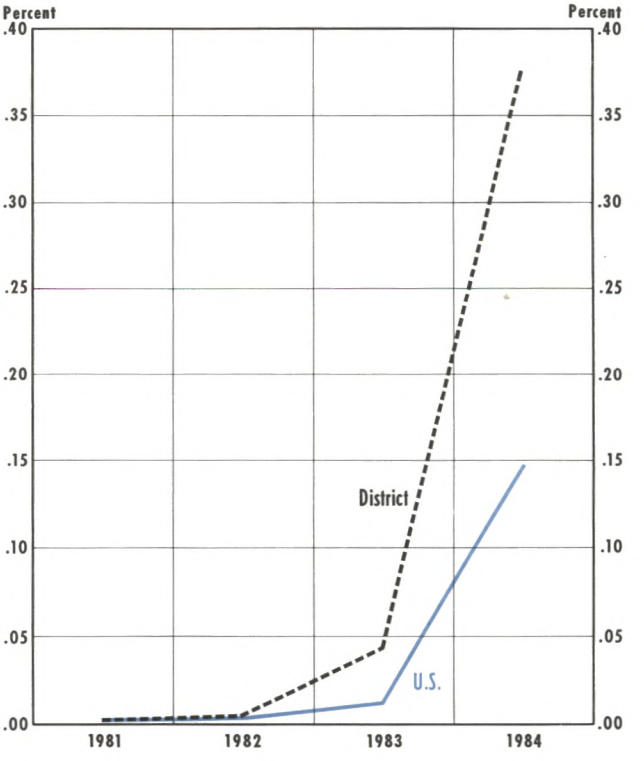

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Chart 3
Percent of Total Loans Delinquent
Eighth District Production Credit Associations

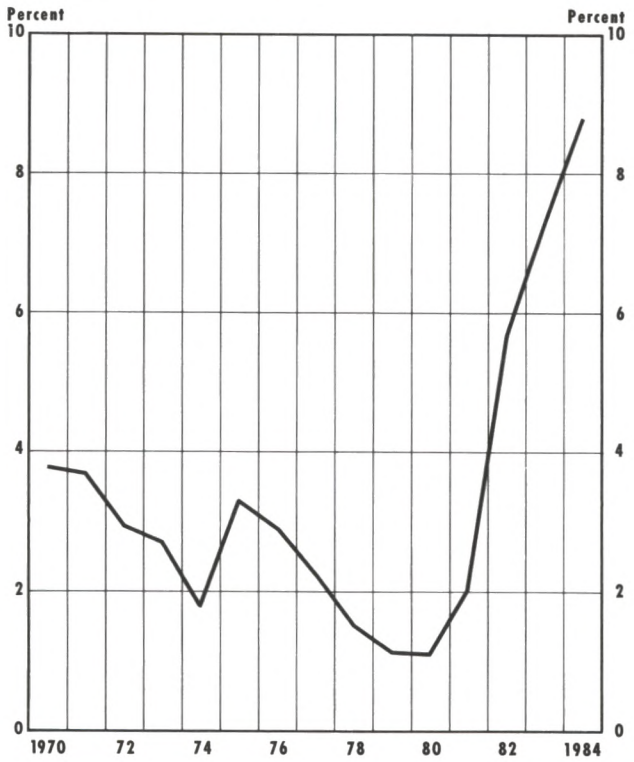
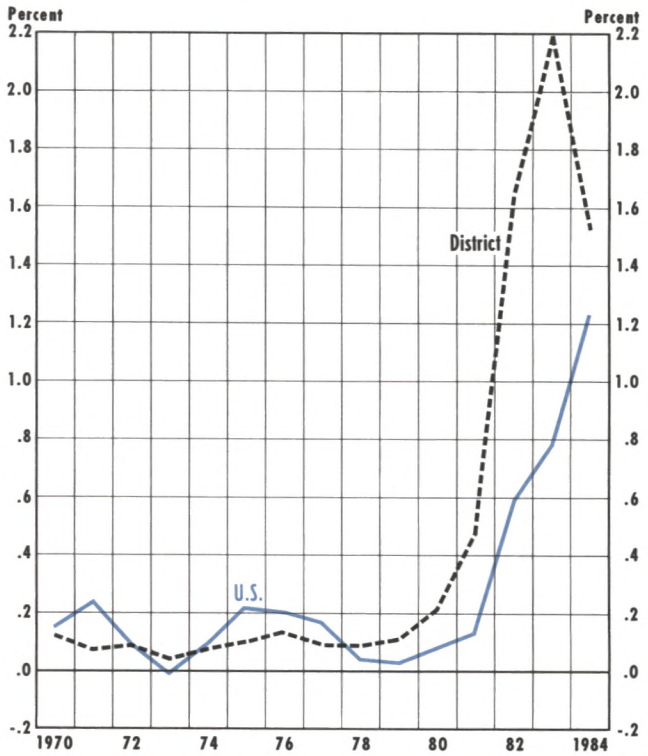


Chart 4
Loan Losses as a Percent of Total Loans
Production Credit Associations



however, have risen slightly more sharply than at FLBs in the remainder of the U.S.[6] Moreover, there appears to be a lag of about two years in each case between the time delinquencies rise sharply (1982) and later reveal themselves in higher loan losses (1984). Note, however, that while the patterns of delinquency and loan loss rates have been similar, loan losses have been about one-tenth of prior years' delinquencies. Chart 1 also shows that delinquency rates were nearly constant between 1970–81. Prior to 1981, losses at FLBs were less than two-tenths of one percent of all loans outstanding.

PCA loan delinquency data are not available on a consistent basis for both the District and the remainder of the U.S. For this reason, only the District delinquency data are shown in chart 3. They also reveal a dramatic increase in delinquency rates beginning in 1982. It must be pointed out that the absolute levels of delinquency rates for PCAs are not comparable with the FLB rates portrayed in chart 1.

Loan loss data for PCAs, however, are available for both the District and the U.S. and are presented in chart 4. Write-offs in 1984 as a percent of total loans were eight times higher than the percentage in 1981. In contrast to FLB loans, however, there appears to be almost no lag between the time these delinquencies are reported and the time they result in loan losses. The likely reason for this difference is that PCAs make

[6]U.S. and District FLB delinquency rates are derived from Farm Credit Administration annual reports and include the items of "nonaccrual loans" and "delinquent principal and advances."

[7]District PCA delinquency rates were obtained directly from the Farm Credit Banks of Louisville and St. Louis on the following basis: for 1970 and 1971 the information includes loans 30 days past due; from 1972 to 1983 the information is for loans 60 days past due; the 1984 data are calculated according to the new FCA standards for nonperforming loans. The national data available for the 1970 to 1983 period include loans which are termed "loans in process of liquidation" and which are not comparable to the District data. In spite of the different nature of the two series, the data exhibit very similar behavior when plotted against each other on the basis of annual percentage changes rather than as absolute levels of delinquency.

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Chart 5
Return on Equity
Federal Land Banks

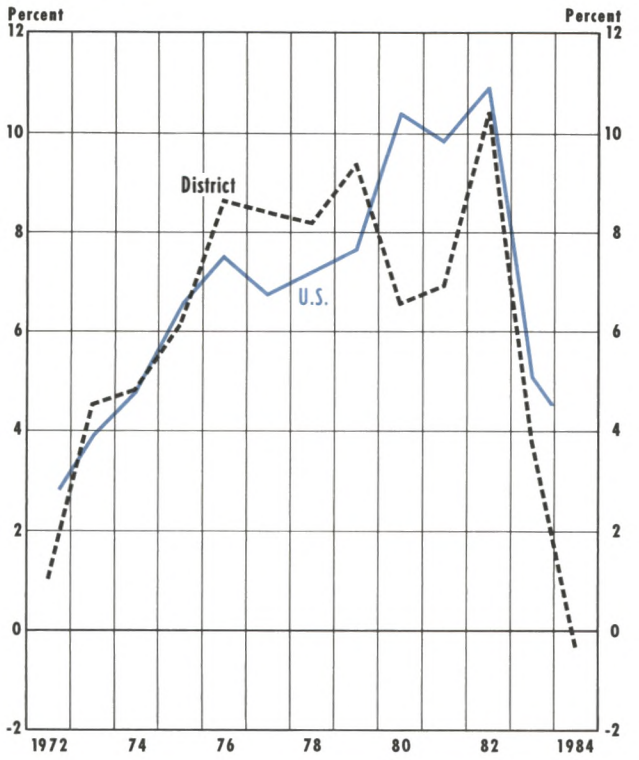
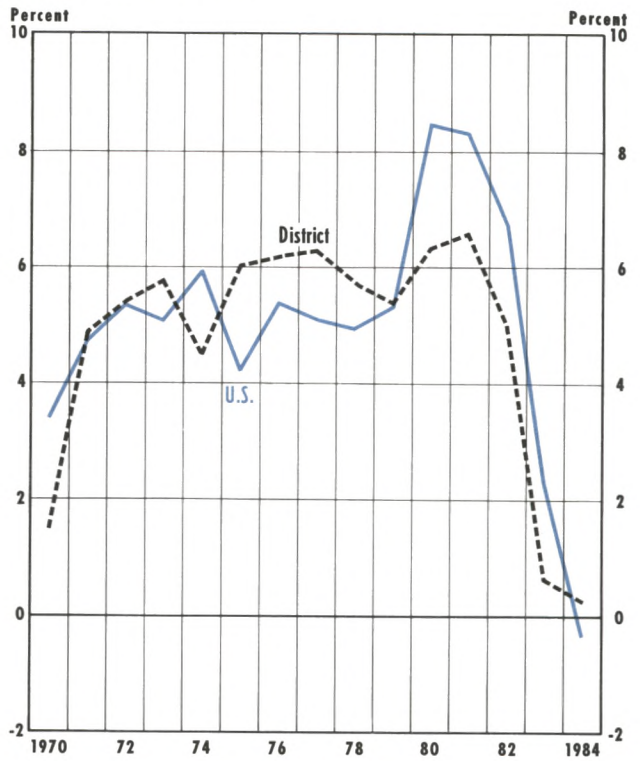


Chart 6
Return on Equity
Production Credit Associations



loans for an individual year's operating expenses and usually schedule repayment shortly after the year's harvest. For this reason, unlike the FLBs' multi-year loans for land purchases, PCAs tend to exhibit a closer short-run relationship between delinquencies and losses. As in the case of FLBs, it is necessary to note that, while the patterns of delinquency and loan loss rates are similar, losses have been one-fifth of delinquencies.

With rising rates of delinquencies and loan losses one also would expect the returns to equity and assets held by these lenders to decline. Charts 5 and 6 plot the returns to equity for FLBs and PCAs, respectively, in the U.S. and the District. In chart 5, similar patterns for returns in the U.S. and the District are revealed with the District showing lower average returns since 1979 and a sharper decline since the 1982 peak of 10.4 percent. Returns to equity for PCAs (chart 6) peaked in 1980 for the U.S. and 1981 for the District and have fallen sharply in just two years. Returns to assets have followed similar patterns for these lenders at both District and national levels.[8]

Agricultural Banks

The conjecture was that agricultural banks, which did not increase market share or dollar volume of farm loans as aggressively in the 1970s, would show somewhat lower measures of loan delinquencies and losses and better returns to assets and equity than members of the Farm Credit System. Another important factor supporting this expectation is the fact that the loan portfolios of agricultural banks are diversified outside of agricultural lending. This loan diversity could help protect bank earnings from the wide swings of returns on equity experienced by the FCS lenders who extend credit only for purposes directly related to agriculture.

[8]Returns to assets for FLBs peaked in 1982 at 1.12 percent nationally and .99 percent in the District. By 1984, these values had declined to .42 and –.03 percent, respectively. Between 1981 and 1984, returns to assets at District PCAs fell from 1.07 to 0.05 percent.

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Chart 7

Agricultural Loans Past Due as a Percent of Production Loans

Agricultural Banks

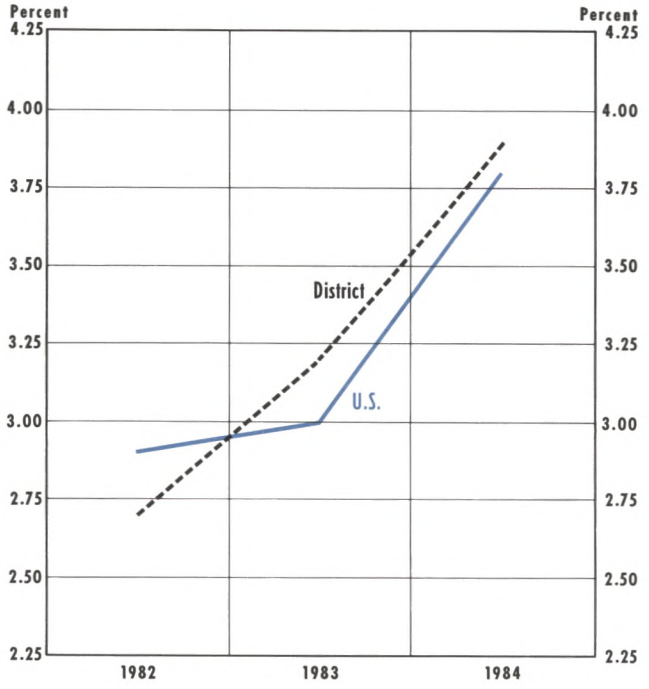
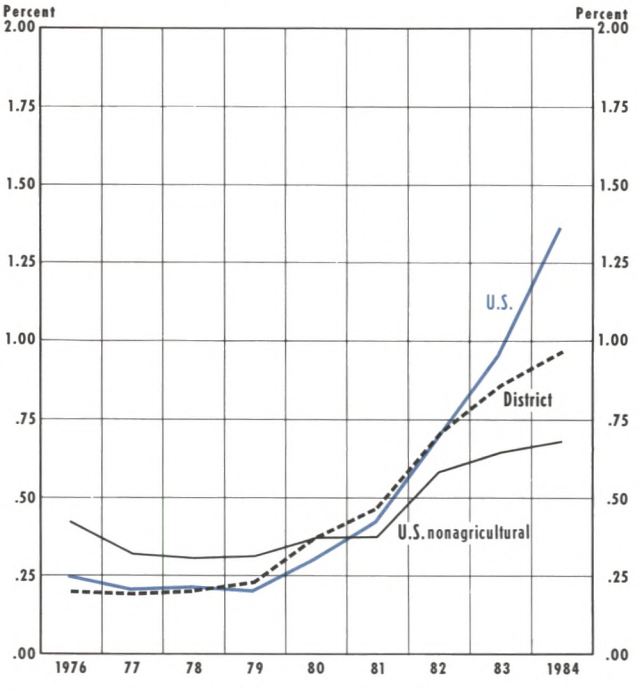


Chart 8

Total Loan Losses as a Percent of Total Loans

Agricultural and Nonagricultural Banks



Agricultural loan delinquency data have been collected from commercial banks since 1982. Only banks with total assets greater than $100 million, however, are required to report the volumes of agricultural loans considered in nonaccrual or renegotiated status. These two categories include loans on which interest payments are not being paid or are being paid more slowly than originally established. Since a large majority of agricultural banks are smaller than $100 million and therefore do not report nonaccrual and renegotiated agricultural loans, chart 7 plots only the percentage of agricultural production loans that are considered past due by 30 days or more at agricultural banks.[9] These data, therefore, are not directly comparable with the PCA data summarized earlier in chart 3. Nonetheless, these limited data suggest that agricultural banks also have experienced rapid increases in delinquent farm debt both in the District and in the remainder of the U.S.[10]

Loan loss data for agricultural banks provide additional information to supplement that provided by past due rates. Because loan loss data are not available specifically for agricultural loans, chart 8 is a plot of all loan losses at agricultural banks and at small nonagricultural banks in the nation (less than $100 million in total assets) expressed as a percentage of all loans at these banks since 1976. It indicates that loan losses at agricultural banks have been increasing steadily since 1979. The rate of increase has been such that the percent of loan losses has risen by a factor of nearly seven since 1979. Losses at comparably sized nonagricultural banks were larger than losses at agricultural banks until 1981. Now the rate of losses at nonagricul-

[9]The set of banks defined as agricultural banks will change over time as the shares of agricultural loans in some banks' portfolios become less than or greater than the cutoff point. Over time, however, the number of agricultural banks has remained fairly constant, ranging between 5,668 in 1974 and 4,970 in 1984.

[10]For the small number of agricultural banks reporting all agricultural loan delinquency items (29 banks in the District for 1984 and 75 in the remainder of the U.S.), the delinquency rate rose from 4.2 percent in 1982 to 9.0 percent in 1984 for the District. In the remainder of the U.S., however, the overall delinquency rate rose only from 6.1 percent in 1982 to 6.3 percent in 1984. Given the small number of agricultural banks reporting these data, caution in their interpretation must be used.

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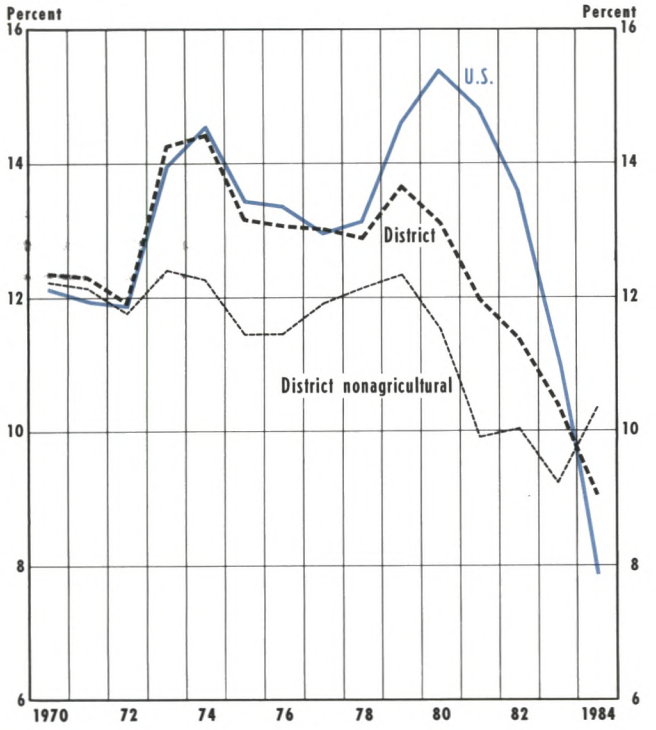
Chart 9
Return on Equity
Agricultural and Nonagricultural Banks



tural banks is only half that experienced by agricultural banks.

Based on returns to equity data at agricultural banks and at small nonagricultural banks of the District (chart 9), profitability in the District peaked in 1974 and has been falling steadily since then, with the exceptions of 1979 and 1980. At the national level, agricultural bank profitability peaked in 1980 before starting a sharp decline. As in the case of loan losses, agricultural banks' declining profitability was greater than that experienced by nonagricultural banks. Returns to equity at District agricultural banks have fallen by nearly 34 percent since their recent peak in 1979, while the returns to equity ratio for nonagricultural banks in the District has fallen by only 16 percent since 1979.

One further means of assessing the viability of agricultural banks is by comparing the volume of "risky" loans for which repayments are uncertain with a bank's ability to absorb the potential loss. With this in mind, banks whose viability may be threatened can be defined as those for which the volume of delinquent loans exceeds the sum of total bank capital and loan loss reserves.[11] The latter two items represent the resources of a bank to absorb loan losses. At the national level, the number of agricultural banks that fall into the threatened bank category has nearly tripled from 1982 to 1984, going from 76 to 202. In the District, however, the number of such threatened institutions has doubled from 23 to 46 over the same period. Thus, concern about rapid increases in farm bank failures, although certainly important in the Eighth District, appears to be even more important for institutions beyond the borders of the Eighth District.[12]

In summary, agricultural banks have suffered rising rates of delinquency and loan losses and declining profitability. When compared with PCAs, which represent their most significant competitors in the agricultural lending arena, however, banks appear to have survived recent downturns in the agricultural economy in much better fashion. Although loan loss rates for PCAs and agricultural banks are comparable, delinquency rates have increased, and profitability decreased more quickly at PCAs than at agricultural banks.

The Farmers Home Administration

The FmHA's role as "lender of last resort" dictates that its borrowers are from a high-risk category. Loan delinquency data for both real estate and non-real-estate farm loans bear this out. Charts 10 and 11 document the steady rise in delinquency rates for both loan categories. Comparisons of delinquency rates at FCS lenders (charts 1 and 3) with those of the FmHA are instructive. The FmHA appears to have experienced rising delinquency rates earlier than 1981 when the FCS lenders began to show marked increases in delinquencies. This finding is to be expected given the character of the FmHA's borrower clientele. FmHA borrowers would be more likely to exhibit repayment problems when a downturn in the agricultural economy occurs than would the more creditworthy borrowers of the FCS or of agricultural banks. This also highlights an important aspect of the

[11]The FDIC compiles the official list of "problem banks" by rating all insured banks on the basis of five categories: capital, assets, management, earnings and liquidity. Banks receiving a rating of four or five on a scale from one to five are placed on the problem bank list. Our definition, which focuses on capital and asset quality, is likely to provide a parallel indicator of banks threatened by bankruptcy should a large share of delinquent loans become loan losses.

[12]Melichar and Irwin have reported that one-half of potentially vulnerable agricultural banks are located in five states: Iowa, Nebraska, Kansas, Minnesota and Missouri; only Missouri is in the Eighth District.

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Chart 10
Percent of Total Farm Operating Loans Delinquent
Farmers Home Administration

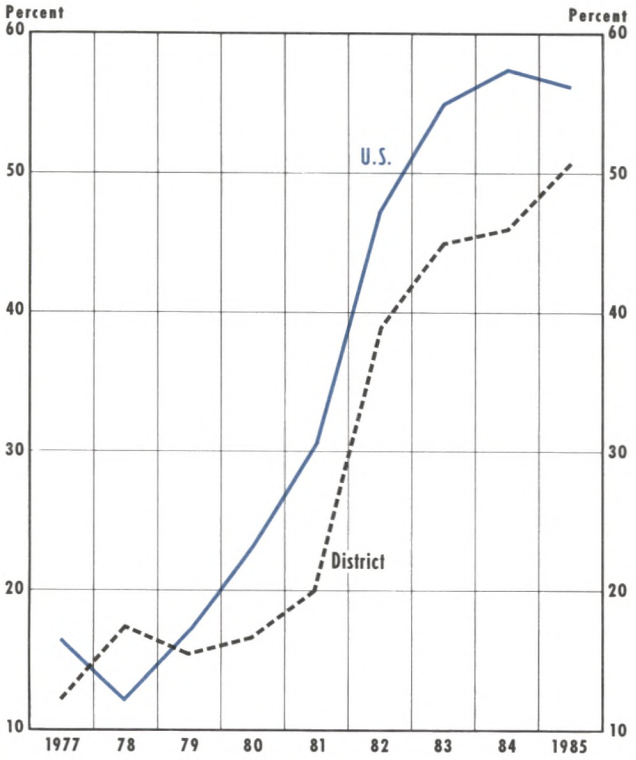
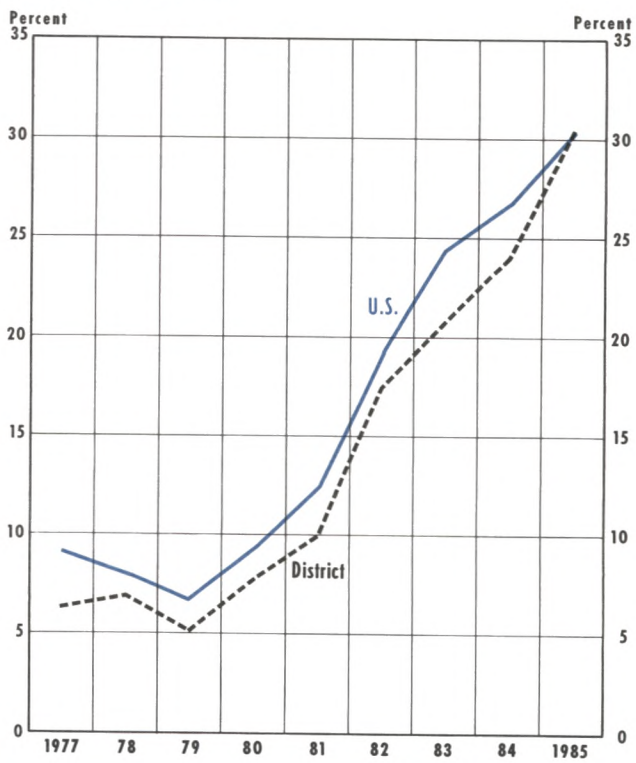


Chart 11
Percent of Total Farm Ownership Loans Delinquent
Farmers Home Administration



FmHA — as a lender of last resort, the FmHA provides an informal subsidy to the FCS and agricultural banks through its direct lending programs. By lending in some cases to farmers who had received FCS or bank financing but who are no longer considered creditworthy, the FmHA allows these lenders to delay foreclosure and to continue to receive loan payments from such borrowers. Moreover, under the Economic Emergency Credit Act, FmHA refinanced loans originally made by the FCS and commercial banks and repaid the original lenders from proceeds of the FmHA loan.

Given the extremely high and rapidly growing delinquency rates on FmHA loans, one would expect, other things equal, to find commensurately higher levels of loan losses. Loan loss data for FmHA farm loan programs are available only on a consolidated basis (i.e., farm ownership and operating loan losses are not segregated). Chart 12, however, shows low, although rising, rates of loan write-offs. For example, the 1984 delinquency rate on FmHA farm ownership loans was near 25 percent, but only 0.22 percent of all FmHA loans were charged off. This contrasts with the FLB's 1984 delinquency rate of 3 percent and loan charge-offs of 1.5 percent. This discrepancy between institutions can be explained by the greater degree of forbearance that the FmHA has exhibited with respect to its delinquent borrowers. As evidence of this forbearance, data on the length of time that loans are carried in the delinquent status can be examined. While not available on a District scale, national FmHA data indicate that, as of June 30, 1985, more than 45 percent of the volume of delinquent FmHA farm loans has been in that status for more than four years. Only 9 percent of the delinquencies nationwide were less than one year past due.

CONCLUSIONS

The Farm Credit System and agricultural banks did not show substantial deterioration of loan portfolio quality until 1982. The FmHA, however, began to exhibit rising delinquency rates in 1979. The deterioration has been more pronounced among those lenders

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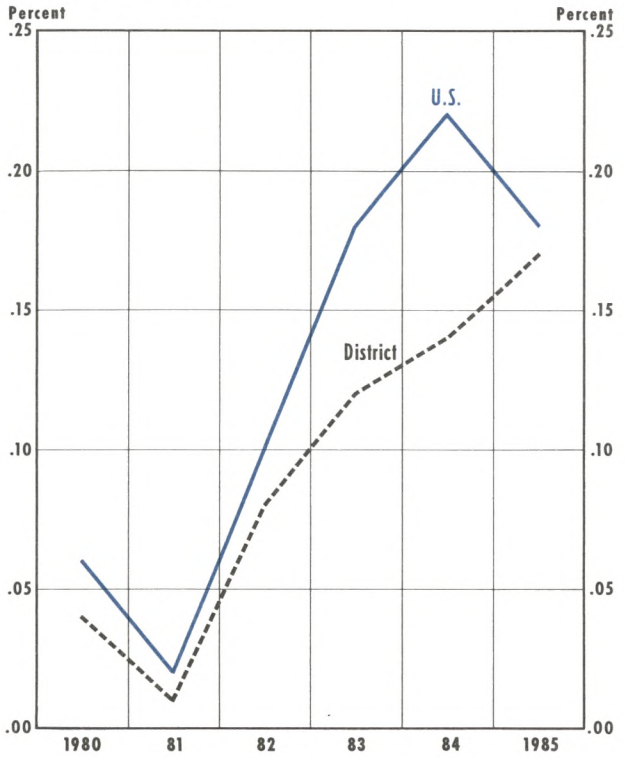
Chart 12

Farm Loan Write-offs as a Percent of Total Farm Loans

Farmers Home Administration



who aggressively expanded their lending to agriculture in the 1970s. In particular, the Federal Land Banks of the Farm Credit System expanded their market share during the 1970s and experienced some of the sharpest declines in portfolio quality in recent years. The mandate of the FCS to lend mainly to agricultural interests inhibits its ability to diversify its portfolio and raises the risks associated with concentrated lending to one sector. Hence, sharper declines in overall portfolio quality for branches of the FCS, relative to agricultural banks, took place. Finally, the data revealed little difference in the measures of portfolio quality or institutional earnings at the Eighth District and national levels.

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