Causes and Consequences of the 1989-92 Credit Slowdown: Overview and Perspective

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This article is the overview essay for a volume, Studies on Causes and Consequences of the 1989-92 Credit Slowdown, *published by the Federal Reserve Bank of New York In addition to the present essay, the volume contains twelve papers dealing with a broad range of issues concerning the credit slowdown, including the importance of credit demand relative to credit supply factors, the role of bank and nonbank credit sources, the impact of credit supply shifts on the economy, and the implications of those shifts for monetary policy*

The volume is available from the Public Information Department of the Federal Reserve Bank of New York Purchase information appears on page 85 of this issue of the Quarterly Review

Between early 1989 and late 1992, U S economic growth averaged less than 1 percent, well below the long-run trend growth of the economy This sluggish pattern of growth persisted in the face of substantial easing in monetary policy Indeed, the economy failed to recover significantly after the 1990-91 downturn Apparently the favorable effects of monetary easing were not sufficient to overcome numerous factors depressing the economy lower defense spending, commercial real estate depression, relatively tight fiscal policy, global competition, corporate restructuring, historically low levels of consumer confidence, and the overextended financial positions of households, businesses, and financial institutions

The sluggish real growth was accompanied by an unprecedentedly sharp slowdown in credit growth over 1989-92 Many observers have identified high debt service burdens of the nonfinancial sectors and widespread balance sheet problems of borrowers and lenders as crucial elements underlying both the credit slowdown and the persistent weakness of the economy Others have attributed the sluggish economic performance to supply-side factors underlying the credit slowdown, which resulted in a prolonged period of substantially reduced credit availability to businesses and households. More recently, concerns about credit availability appear to have eased as credit growth has shown some signs of recovery.

Against the background of these developments, this overview provides a broad perspective on the causes and consequences of the 1989-92 credit slowdown It begins by presenting a general conceptual framework for the analysis and then reviews the evidence from the collection of studies on the credit slowdown The article also discusses implications of the evidence for monetary policy and offers some tentative general observations on the recent credit slowdown experience

Overall, studies reviewed here provide substantial evidence of credit supply problems, or a "credit crunch," during the 1989-92 period for both bank and nonbank credit sources The evidence on the consequences of credit supply constraints is less compelling, but the studies do indicate, at least collectively, that credit constraints have played some role in weakening economic activity The depressing effects of the credit crunch appear not to have been the primary or dominant cause of the economic slowdown, however As for the implications for monetary policy, credit supply problems have clearly contributed to reducing the effectiveness of monetary policy, although it is difficult to isolate their effects from those of other factors disrupting or altering the channels of policy influence to the economy.

Credit slowdown vs. credit crunch: A general framework

There is no generally accepted definition of the term "credit

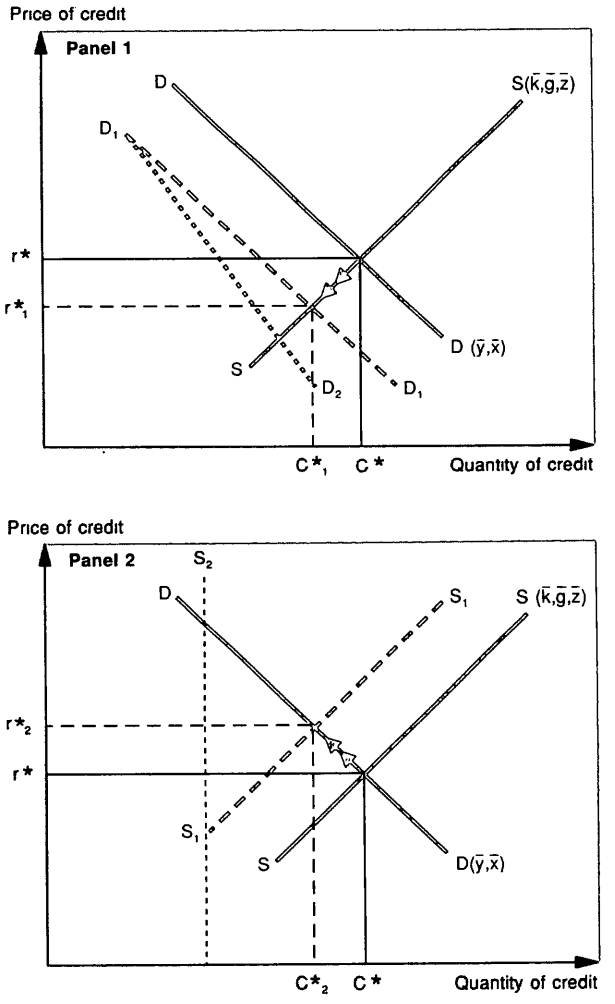
crunch," but it is usually taken to mean a sharp reduction in the supply or availability of credit at any given level of interest rates. To clarify terminology and to provide a broad context for the issues involved in identifying a credit crunch, we begin with the more encompassing notion of credit slowdown or decline At the broadest level, an observed slowdown or decline in credit may result from either the demand side or the supply side. At a given lending rate or price of credit, the demand for credit may fall because of other (nonprice) determinants of credit demand. In the usual graphical supply-demand framework, the demand schedule for credit may shift down and to the left. This is shown in Chart 1, panel 1, under very simplistic market conditions, where the price of credit includes both the loan rate and nonrate loan terms, such as collateral, maturity, and covenants From a macroeconomic perspective, this type of shift may occur because of lower credit demand stemming from either cyclical weakness in economic activity or structural factors—such as changes in the tax code, inventory techniques, or the borrowers' desired debt-to-income ratio—that reduce the perceived need for credit permanently. In general, shifts in credit demand induced by cyclical weakness in economic activity are relatively commonplace while credit demand shifts due to structural changes are somewhat less frequent but not unusual

A downward shift in credit demand tends to put downward pressures on loan rates and other loan terms and, given an unchanged supply schedule, leads to easier loan terms at the new credit market equilibrium. Moreover, if a downward credit demand shift is caused by structural factors, it may also be accompanied by a steepening (flattening) of the demand schedule; the demand for credit may become less (more) responsive to changes in the price of credit (Chart 1, panel 1, D_2 schedule).

On the supply side, a credit slowdown or decline may reflect reduced willingness to lend at prevailing interest rates and demand conditions. Factors that can cause reduced willingness to lend include, among others, balance sheet difficulties of lenders (poor quality assets, high loan losses, and so forth), higher capital requirements and regulatory constraints on lenders, and increases in actual or perceived riskiness of borrowers' credit quality. The last factor is intended to capture credit supply shifts resulting from changes in a borrower's balance sheet conditions. Specifically, a deterioration in the quality of a borrower's balance sheet reflecting, for example, a drop in asset prices, weakens his ability to repay existing debts or to borrow new funds.[1] The decline in creditworthiness of the borrower, in turn, may reduce the lender's willingness to extend a loan, causing a decline in the supply of credit. In this situation, the supply shift reflects reduced credit availability to borrowers whose credit quality has been impaired,

Chart 1

Credit Demand and Supply



D = initial credit demand schedule, where all determinants other than the price of credit (loan rate and nonrate loan terms) are held constant ($\bar{y}$ is a proxy for aggregate demand in the economy and $\bar{x}$ represents all other variables)

S = initial credit supply schedule, where all determinants other than the price of credit are held constant ($\bar{k}$ is a proxy for capital, $\bar{g}$ is a proxy for regulatory and supervisory constraints, and $\bar{z}$ represents all other variables)

C^*= initial equilibrium credit

r^* = initial equilibrium price of credit

D_1 and D_2 represent the credit demand schedule after shifts, while S_1 and S_2 represent the credit supply schedule after shifts. C^*_1, C^*_2, r^*_1, and r^*_2 represent new equilibrium values for credit and the price of credit

[1] More generally, the deterioration in the quality of the borrower's balance sheet (and the associated decline in creditworthiness) may result either from a cyclical decline or from noncyclical shocks (economy-wide or partial) such as an asset price drop in one or more sectors As explained below, it is very difficult to separate credit supply effects from demand effects of general cyclical shocks to the economy

but there is no change in the lender's desire to lend to those borrowers whose creditworthiness has remained unchanged. Note that the drop in borrowers' creditworthiness could be treated, in principle, as a drop in credit demand by borrowers of given risk characteristics (unchanged creditworthiness) in that there are fewer such borrowers. Nonetheless, at a practical level, it is more convenient to look at the effect of changes in borrowers' credit quality—especially those resulting from noncyclical shocks—on the willingness of lenders to supply credit.

In any event, the reduced willingness to lend may show up as a leftward shift in the credit supply schedule (Chart 1, panel 2). In this case, borrowing is rationed by price as loan rates and nonrate loan terms tend to tighten and the new credit market equilibrium is attained at higher interest rates and generally more restrictive loan terms, other things equal.

The reduced willingness to lend may not show up as a simple leftward shift of credit supply envisaged in the context of a market-clearing environment, however. Instead, lenders may resort to increased nonprice credit rationing; that is, loans are rationed by quantity rather than by variations in prices (interest rates and nonrate loan terms). In this case, lenders do not feel that they can protect themselves against risk by charging higher credit prices. Put another way, the credit supply schedule is not fully operative; in the extreme case, the schedule shifts leftward and becomes vertical, with the supply of credit becoming completely insensitive to interest rates (Chart 1, panel 2, S_2 schedule). In practice, the existence of nonprice credit rationing does not preclude the role of interest rates and other loan terms; some borrowings may be rationed by price and others by quantity or by both. Nonprice credit rationing may take many different forms: some borrowers obtain loans while other borrowers with identical creditworthiness do not; loans for certain types of borrowing or to certain classes of borrowers are unavailable; some apparently creditworthy borrowers are denied loans at prevailing interest rates because lenders do not perceive them to be creditworthy.[2]

The papers in this volume deal with both demand and supply factors in the credit slowdown since 1989, but the emphasis is on sorting out the role of supply-side factors and their implications for nonfinancial economic activity. Accordingly, the term credit crunch as used here refers to a slowdown or decline in the *supply* of credit, whether rationed by price or nonprice mechanisms, or simply to credit supply problems. This definition is clearly much broader than the narrow use of that term to describe situations of nonprice credit rationing. It is also broader than another frequently mentioned definition of credit crunch: " a widespread, sudden, sharp, indiscriminate, and rather brief credit shutdown" (Wojnilower 1993).[3]

In a macroeconomic context, the existence of credit supply problems implies that the observed credit slowdown or reduction cannot be fully explained by cyclical developments in aggregate demand, except insofar as cyclical developments may have significant adverse effects on borrowers' creditworthiness as perceived by lenders. There are, of course, numerous identification problems in sorting out supply from demand factors in the credit slowdown. For example, a sharp reduction in the willingness to lend may lead to a decline in output, inducing a reduction in the demand for credit. In these circumstances, the credit slowdown will be reported as reflecting lower demand for credit even though it was, in fact, caused by an initial shock to the supply of credit (Friedman 1993a, 1993b).

More generally, with demand and supply factors operating simultaneously and interacting with each other, it is very difficult to distinguish shifts in the supply schedule from developments on the demand side. Lenders usually tend to tighten credit standards and terms for lending when the overall economy slips into a recession because, on average, business and household loans entail higher risks than before. But the extent of lenders' response depends not only on the degree of perceived economic weakness and its effects on borrowers' credit quality but also on the state of their own balance sheets. From the perspective of borrowers, this situation would look like a contraction in credit supply, while lenders may believe this to be a response to developments in aggregate demand. Strictly speaking, there is no change in the lenders' willingness to extend credit to borrowers of given circumstances (that is, unchanged creditworthiness). At the same time, the reduced supply is not a response to lower demand for credit. The constriction in the supply of credit has clearly been caused by a decline in the willingness of lenders, albeit one that reflects the adverse effect of the weaker economy on the creditworthiness of borrowers and balance sheets of banks. Any sorting out of the demand and supply aspects in this case would be further complicated by the fact that the recession itself would reduce the demand for credit.

Identifying demand and supply factors in the recent credit slowdown is particularly difficult because of the conjunction of the prolonged cyclical weakness in the economy with a correction of earlier credit excesses. Those credit excesses, as noted below, reflected the unusually rapid increases in debt in the mid-1980s and became unsustainable over time as both borrowers and lenders experienced balance sheet and other difficulties, with cyclical develop-

[2] See Jaffee and Stiglitz (1990) for a detailed survey of various aspects of credit rationing

[3] For other perspectives on defining a credit crunch, see Peek and Rosengren (1992), Owens and Schreft (1992),and Wojnilower (1992a) For other perspectives on the current credit crunch, see Bernanke and Lown (1991), Cantor and Wenninger (1993), Jones (1993), Jordan (1992), Kaufman (1991), Kliesen and Tatom (1992), Peek and Rosengren (1992), Sinai (1993), Syron (1991), and Wojnilower (1993) For detailed analysis of earlier crunches, see Wojnilower (1980) and Wolfson (1986)

ments reinforcing pressures for correction. In this highly "endogenous" process, the demand for credit is believed to have fallen simultaneously with reductions in banks' capacity and willingness to lend.

Notwithstanding these difficulties, the twelve studies in this volume examine a broad range of issues concerning the 1989-92 credit slowdown. Five of these studies (Lown/Wenninger, Cantor/Rodrigues, Johnson/Lee, Demsetz, Seth) look at various aspects of the role of bank and nonbank credit sources in the slowdown of private nonfinancial debt, focusing on the importance of credit demand relative to credit supply factors. One study (Hamdani/Rodrigues/Varvatsoulis) reviews survey data on credit tightening from lenders and borrowers, and another study (Mosser/Steindel) explores the role of economic activity and other "fundamentals" in explaining the recent credit slowdown. Three studies (Harris/Boldin/Flaherty, Mosser, Steindel/Brauer) investigate the effects of credit supply problems on various aspects of nonfinancial economic activity. Finally, two studies (Hilton/Lown, Hickok/Osler) consider some special aspects of the credit slowdown: one attempts to assess the impact of credit supply shifts on the broadly defined money stock, M2, and the other provides a broad overview of the nature and extent of the credit slowdown abroad, largely based on the experience in France, Japan, and the United Kingdom.

The remainder of this article reviews evidence from the twelve studies under four broad headings: the extent of the credit slowdown; factors behind the credit slowdown; consequences of the credit crunch for nonfinancial economic activity; and implications of the credit crunch for monetary policy. The last section offers a few tentative concluding observations on the recent credit crunch experience.

Extent of the recent credit slowdown

Collectively, the studies in this volume show that the U.S. economy has experienced a broadly based and sharp credit slowdown in recent years. In documenting and describing the credit slowdown from the viewpoint of various types of borrowers (business, household, real estate, small business) or lenders (banks, other depositories, finance companies, insurance companies, foreign banks, bond markets), most of the studies begin by examining the extent of credit slowdown in the recent period. Since the timing of the slowdown is not uniform across all borrowers and lenders, however, these studies do not target a common time period for the recent credit slowdown. Nor do they judge the recent credit slowdown against a common historical benchmark. Instead, each study provides a comprehensive look at relevant credit developments from its particular vantage point using whatever time periods make most sense.

Nevertheless, it may be useful to provide a common time frame for summarizing the extent of the slowdown in private nonfinancial debt and its main components on both the lending and the borrowing sides. I use the flow of funds data to highlight the breadth and depth of credit slowdown over the three years from 1989-IV to 1992-IV, taken as a whole, relative to long-term trends in the periods 1960-82 and 1982-89. Because inflation was greater in the earlier periods than in the most recent period, comparisons of nominal credit growth rates may be misleading. I have, therefore, presented data in both nominal and real terms in many cases. For simplicity and convenience, however, I have used the GDP deflator to convert nominal dollars into real dollars rather than search for specific sectoral deflators. (Sectoral deflators might change precise real dollar values but they are unlikely to alter the broader contours of constant dollar data obtained on the basis of the GDP deflator.) The points made here provide a broad overview of the extent of the credit slowdown to nonfinancial borrowers from both bank and nonbank sources, and may be viewed as a summary of details in various studies.

Private nonfinancial debt

Using data on nominal and real debt and ratios of debt to GDP, I begin by looking at the extent of the slowdown in private nonfinancial debt in terms of its three broad decompositions: business versus household debt, mortgage versus nonmortgage debt, and corporate versus noncorporate debt. As shown in Table 1, private nonfinancial debt growth declined sharply to about 3 percent, at an annual rate, over 1989-92 from long-term trend rates of 9 1/2 to 10 1/2 percent. Both businesses and households experienced large debt slowdowns, but the rate of decline was much greater for the business sector. Nonfinancial business sector debt growth averaged less than 1 percent in the recent period, compared with a long-term trend rate of 10 percent, while household debt growth averaged 5.6 percent in the recent period, about one-half the average growth rate over 1982-89.

In real terms, private nonfinancial debt actually declined somewhat over 1989-92 compared with trend rates of nearly 7 percent and 4 1/4 percent over 1982-89 and 1960-82, respectively. For both the business and household sectors, real debt trend growth rates were significantly higher in the 1982-89 period than in the earlier period. Credit to the nonfinancial business sector declined by nearly 3 percent, on average, in real terms over 1989-92, following more than 6 percent average growth over 1982-89. The sharp declines in private and business debt growth in recent years have reversed the rising trends of ratios of private and business sector debt to GDP (Chart 2 and Table 1) despite a sustained period of weak growth of nominal GDP.

With nonmortgage debt of both businesses and households slowing to about 2 percent at an annual rate over 1989-92, the greater decline in total business debt growth relative to household debt growth in recent years appears to be largely the result of differences in home and business

mortgage debt developments (Table 2). Home mortgage debt advanced at a hefty 7 percent annual rate in the 1989-92 period, although its rate of growth decelerated substantially from the historically high average growth rate over 1982-89. By contrast, business debt for real estate development declined at an average annual rate of about 2 percent during 1989-92, down from an average annual growth rate of close to 10 percent in the earlier period.

In real terms, both mortgage and nonmortgage components of business debt declined significantly in the 1989-92 period But businesses have experienced a much sharper decline in credit flows for mortgages than for other activity in recent years.

Recent business debt developments have also differed significantly by the size of borrowers As a group, large or corporate business borrowers fared better than small or noncorporate borrowers in the recent credit slowdown. Credit to corporate borrowers increased at an annual average rate of nearly 2 percent during the last three years, down from an 11.3 percent average increase over 1982-89 (Table 3) By contrast, noncorporate borrowers experienced an outright credit decline of 1.3 percent, at an annual rate, in the 1989-92 period, compared with growth rates of about 11 percent in 1982-89. It is interesting to note that noncorporate borrowing is the only category among those reported here that showed significantly lower *real* debt growth in the 1982-89 period than in the earlier period

Bank and nonbank credit sources

The slowdown in private nonfinancial debt growth was broadly spread across depository (banks and thrifts) and nondepository credit sources (Table 4) Banks and thrifts, however, experienced a sharper decline in credit growth over 1989-92 than did *overall* nondepository credit growth. Total depository credit actually declined at an annual rate of about 2 percent over 1989-92 following 9 3 percent aver-

Table 1

Nonfinancial Debt

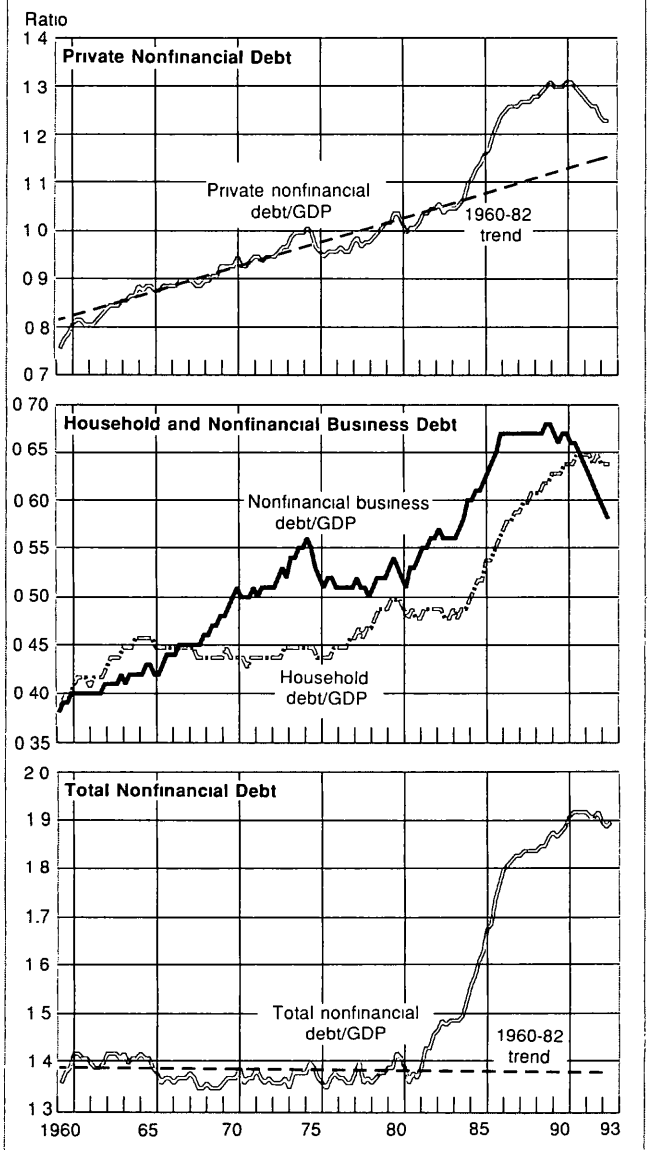
Fourth Quarter-over-Fourth Quarter Percent Change, Annual Rate

	Total Nonfinancial	Private Nonfinancial	Nonfinancial Business	Households
Current Dollars				
1960–82	8 6	9 6	10 0	9 2
1982–89	11 0	10 6	10 1	11 1
1989–92	5 2	3 1	0 7	5 6
Constant 1987 Dollars†				
1960–82	3 1	4 2	4 5	3 8
1982–89	7 2	6 8	6 3	7 3
1989–92	1 7	-0 4	-2 8	2 0
Ratio of Debt to GDP				
1960–82	0 2	1 2	1 6	0 8
1982–89	3 5	3 1	2 6	3 6
1989–92	0 3	-1 8	-4 2	0 6
Memo 1992-IV current dollar share of total nonfinancial debt	100 0	65 3	31 4	33 9

† GDP deflator was used to construct constant dollar series

Chart 2

Ratios of Debt to GDP



Sources Board of Governors of the Federal Reserve System, Flow of Funds Accounts, U S Department of Commerce

Table 2

Private Nonfinancial Debt

Fourth Quarter-over-Fourth Quarter Percent Change, Annual Rate

	Private Nonfinancial	Mortgage			Nonmortgage		
		Total	Business	Home Mortgage	Total	Business	Household
Current Dollars							
1960–82	9 6	9 6	10 3	9 3	9 6	9 9	9 1
1982–89	10 6	10 9	9 7	11 5	10 3	10 3	10 3
1989–92	3 1	4 2	-1 9	7 1	2 0	1 9	2 3
Constant 1987 Dollars†							
1960–82	4 2	4 2	4 8	3 8	4 2	4 4	3 7
1982–89	6 8	7 1	5 9	7 8	6 5	6 5	6 5
1989–92	-0 4	0 7	-5 4	3 6	-1 4	-1 6	-1 1
Memo 1992-IV current dollar share of private nonfinancial debt	100 0	50 2	14 3	35 9	49 8	33 8	16 0

† Based on GDP deflator

age growth over 1982-89, while total nondepository credit growth slowed to a 7 percent average rate in the recent period from about 12 percent in the preceding period. Both depository and nondepository credit growth rates are, of course, much lower on a constant dollar basis At this level of aggregation, the bulk of the deceleration in private nonfinancial credit growth over 1989-92 relative to the 1982-89 average rate is accounted for by depository sources, with both banks and thrifts making substantial contributions to the slowdown

The outright decline in total depository credit over 1989-92 reflects, to a considerable extent, the collapse of the savings and loan industry In fact, the commercial bank credit component—which represents about 70 percent of total depository credit—advanced at a 2 percent average annual rate over the 1989-92 period, compared with a long-

Table 3

Nonfinancial Business Debt

Fourth Quarter-over-Fourth Quarter Percent Change, Annual Rate

	Total†	By Size of Borrower		By Type of Borrowing	
		Large‡	Small§	Mortgage	Other
Current dollars					
1960–82	10 0	8 7	14 1	10 3	9 9
1982–89	10 1	11 3	10 9	9 7	10 3
1989–92	0 7	1 8	-1 3	-1 9	1 9
Constant 1987 dollars¶					
1960–82	4 5	3 3	8 5	4 8	4 4
1982–89	6 3	7 5	7 1	5 9	6 5
1989–92	-2 8	-1 7	-4 8	-5 4	-1 6
Memo 1992-IV current dollar share of private nonfinancial debt	48 1	31 4	15 0	14 3	33 8

† All corporate and noncorporate debt
‡ Corporate sector, excluding farm debt
§ Nonfarm, noncorporate debt
¶ Based on GDP deflator

Table 4

Nonfinancial Private Credit Growth

Fourth Quarter-over-Fourth Quarter Percent Change, Annual Rate

	Depository Credit	Nondepository Credit	Bank Credit	Depository Loans	Bank Loans
Current dollars					
1960–82	9 7	9 6	10 1	9 7	10 3
1982–89	9 3	11 8	10 1	9 0	9 9
1989–92	-2 0	7 0	2 0	-2 7	1 1
Constant 1987 dollars†					
1960–82	4 2	4 1	4 7	4 3	4 8
1982–89	5 5	8 0	6 3	5 3	6 1
1989–92	-5 4	3 5	-1 5	-6 1	-2 4
Memo 1992-IV current dollar share of private nonfinancial debt	39 9	60 1	28 1	36 3	25 5

† GDP deflator was used to construct constant dollar series

term trend rate of around 10 percent This modest bank credit growth was more than fully offset, however, by a 45 percent (13 1/3 percent at an annual rate) decline in credit by savings and loan associations

While overall nondepository credit growth has held up better than overall depository or bank credit growth, many components of nondepository credit did not fare much better than bank credit As explained in the Cantor/ Rodrigues study, credit growth to businesses experienced roughly similar slowdowns in commercial paper, finance company lending, and bank loans in recent years relative to earlier trends

Comparing the contribution of depository and nondepository sources to business credit developments reveals that banks and thrifts accounted for about four-fifths of the fall in business mortgage debt growth in 1989-92 relative to 1982-89 (Table 5). The slowdown in nonmortgage business debt in the recent period relative to the earlier period was somewhat more evenly divided between depository and nondepository sources. For the nonfinancial business sector as a whole, most of the deceleration in the average credit growth from the 1982-89 period to the 1989-90 period reflected the slowdown in depository credit, banks accounted for somewhat more than one-half of the depository contribution

On the household side, the collapse of the savings and loan industry and the lending slowdown by other thrifts were responsible for most of the slowdown in home mortgage debt growth in 1989-92 relative to 1982-89. The pace of commercial bank credit flows for home mortgages actually picked up somewhat during the 1989-92 period Banks, however, made the largest contribution to the slowdown in nonmortgage household credit, accounting for more than half of the total slowdown in that component

Selected aspects of bank business loans

Data reported above clearly indicate that commercial banks have played a major role in the 1989-92 credit slowdown for both business mortgages and nonmortgage business loans For the nonfinancial business sector as a whole, the slowdown in bank loans accounted for more than one-third of the deceleration in average credit growth from 1982-89 to 1989-92

Both large (corporate) and small (noncorporate) business borrowers from banks experienced outright declines in bank loans over 1989-92, but the rate of decline was considerably greater for noncorporate borrowers (Table 6). Specifically, over the 1989-92 period, nonmortgage bank loans to noncorporate borrowers declined at a 4 1/2 percent annual rate, more than twice the pace of decline for corporate borrowers

In the absence of bank loan sales, bank credit flows to businesses would probably have been even weaker in recent years The study by Demsetz indicates, however, that adjustments for bank business loan sales to nonbanks and nonfinancial institutions over the 1986-92 period actually increase the severity of the recent slowdown in commercial and industrial loans on banks' books because business loan sales have decreased in recent years (Note that the flow of funds data for nonfinancial borrowers reported here already incorporate loan sale adjustments) Even so, the liquidity provided by loan sales and securitization has most likely enabled banks to maintain higher levels of total loan origination than would have been the case otherwise Cantor and Rodrigues point out in their study for this volume that mortgage-backed securities have grown about 70

Table 5
Contributions to the Credit Slowdown
From 1982–89 to 1989–92

	Business			Household		
	Mortgage	Other	Total	Mortgage	Other	Total
Decline in credit growth rate†	11 6	8 4	9 4	4 4	8 0	5 6
Percent of total decline contributed by						
Depository sources	**82.8**	**58.3**	**69.1**	**84.1**	**67.5**	**78.6**
Banks	38 8	21 4	37 2	-6 8	55 0	23 2
Thrifts	44 0	36 9	31 9	90 9	12 5	55 4
Nondepository sources	**17.2**	**41.7**	**30.9**	**15.9**	**32.5**	**21.4**

† Annual average credit growth rate over 1982–89 *minus* annual average growth rate over 1989–92

percent since 1988 and that securitization of business and consumer credit has proceeded even more rapidly over that period [4] Clearly, recent sharp advances in securitization have, to some extent, cushioned the credit slowdown

As described in detail in the study by Lown and Wenninger, the bank credit slowdown was spread fairly broadly across various regions of the country, but Northeast (New England and Mid-Atlantic) and Pacific regions experienced very large outright declines in total and business bank loans over 1989-92 Other regions also experienced contractions in commercial and industrial loans, although in some cases the rates of decline were relatively modest

Within the banking system, the bulk of the recent bank credit slowdown is attributable to domestic banks as opposed to foreign banking offices in the United States (Chart 3) Total loans of U S.-chartered banks showed less than 1 percent annual average growth over 1989-92, and business loans actually declined outright at a 4 5 percent annual rate. By contrast, total U S loans of foreign banking offices in the United States advanced at an annual rate of about 14 percent over the recent three-year period, only slightly below the average increase over the 1982-89 period Business loans by foreign banking offices did register a significant slowdown in the recent period, but they continued to increase at a hefty annual pace of about 9 percent

These trends in foreign bank loans to U S borrowers are analyzed in more detail by Rama Seth in her study for this collection She finds that as a group, foreign banks supported total U S credit growth during the recession, although many foreign banks, especially those from Japan, Italy, and the United Kingdom, cut back on loans over that period While Seth is unable to provide a full accounting of the continued strong loan growth at foreign banks, she notes that their desire to increase market share and their capital strength may have been important in maintaining the relative strength of foreign bank lending

The differing patterns of loan developments for foreign relative to domestic banks have substantially reduced the domestic bank shares of total and business loans (Chart 3) Moreover, the flow of funds data used here understate the extent of foreign bank loans to U S residents because offshore foreign banks' U.S lending is excluded (McCauley and Seth 1992) Adjusted for offshore data, the true shares of U S -chartered banks are considerably smaller than shown in Chart 3

Factors behind the credit slowdown

Studies in this volume investigate demand and supply factors underlying the slowdown in private nonfinancial debt for both bank and nonbank sources of credit The evidence includes descriptive and econometric analysis and is based on hard data as well as survey materials for borrowers and lenders On the demand side, the studies look for both cyclical effects—the credit slowdown viewed as a by-product of the economic slowdown—and noncyclical demand influences On the supply side, the evidence for both price and nonprice rationing of credit is considered

Cyclical and noncyclical demand influences

At an impressionistic level, the recent credit slowdown cannot be fully explained by the 1990-91 recession and the slow growth period surrounding the recession Several studies in our collection—especially those by Cantor/Rodrigues, Lown/Wenninger, and Mosser/Steindel—provide noneconometric data analysis of cyclical effects on various debt or credit components The general thrust of the authors' analysis of cyclical effects is captured by data in Table 7, although collectively these studies cover a much broader range of issues and detail Briefly, the growth rate of private nonfinancial debt in nominal and real terms has been substantially lower in the period surrounding the recent recession than over comparable periods for the four earlier major recessions, on average, or considered individually Broadly, this pattern holds for major aggregate borrowing components and for both bank and nonbank credit The only significant exception is the flow of home mortgage debt from both bank and nonbank sources, which has been

[4] Cantor and Demsetz (1993) show that over the two years to the second quarter of 1992, the growth in loans for home mortgages, consumers, and businesses inclusive of off-balance-sheet lending (securitization and loan sales) exceeded the growth in loans on the books of banks, thrifts, mortgage companies, and finance companies as a group

Table 6

Nonfinancial Business Loans by Banks

Fourth Quarter-over-Fourth Quarter Percent Change, Annual Rate

		Nonmortgage Business Loans			
	Total	Total†	Large Business‡	Small Business§	Mortgages
Current dollars					
1960–82	10 6	10 3	10 0	14 0	12 0
1982–89	9 9	7 2	8 0	7 1	16 5
1989–92	–1 7	–2 3	–2 2	–4 5	–0 7
Constant 1987 dollars¶					
1960–82	5 2	4 9	4 5	8 5	6 5
1982–89	6 1	3 5	4 3	3 3	12 7
1989–92	–5.2	–5 7	–5 6	–7 9	–4 2
Memo 1992-IV current dollar share of private nonfinancial debt	13 7	8 7	6 9	1 4	5 0

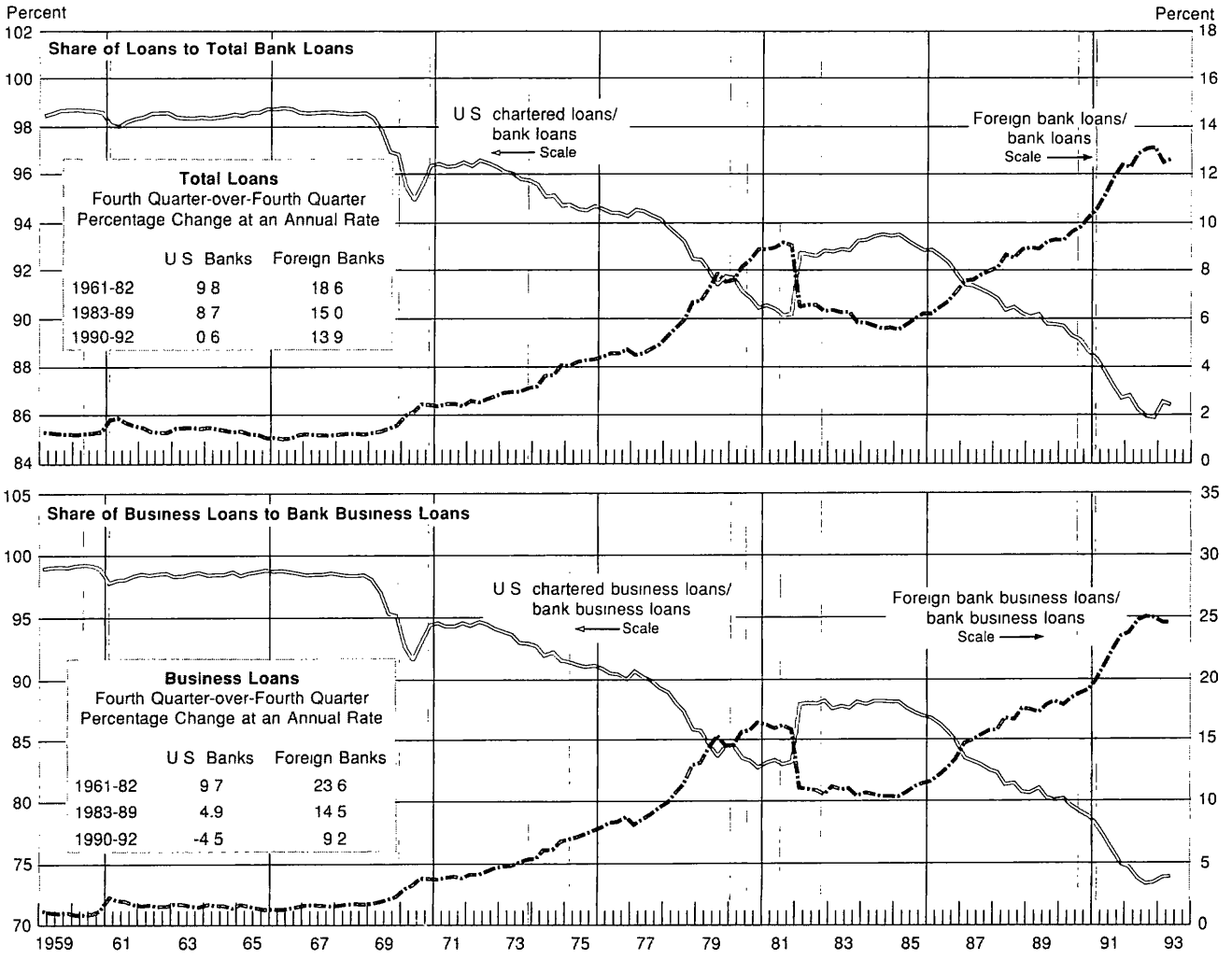
† All corporate and noncorporate business
‡ Nonfarm corporate business
§ Nonfarm, noncorporate business
¶ Based on GDP deflator

significantly stronger in real terms over the period surrounding the latest recession than around the last three major recessions since 1970

The comparison of credit flows reported in Table 7 probably understates, to some extent, the contribution of cyclical developments to the private credit slowdown around the current recession relative to the earlier episodes. As shown in Chart 4, the pace of economic activity, nominal and real, was weaker in the current cycle than it had been on average in the earlier cycles Nevertheless, as pointed out by Lown/Wenninger and others, the differences in the pace of activity do not fully explain the sharp credit slowdown in the current episode relative to the earlier episodes. Moreover, the credit weakness itself may be responsible, in part, for the slower pace of economic activity in the current cycle With changing relationships between credit flows and economic activity, it is very difficult to assess the contribution of weaker than average growth in the current cycle to the

Chart 3

Comparison of Domestic and Foreign Bank Loan Shares



Source Board of Governors of the Federal Reserve System, Flow of Funds Accounts

Note Shaded areas indicate periods designated recessions by the National Bureau of Economic Research

severity of the credit slowdown But one simple way to get a very rough sense of this contribution is to use the average relationship between real credit flows and economic growth for the earlier cycles as a benchmark to calculate the implied credit flows associated with recent growth performance This type of exercise suggests that the weaker than average pace of economic activity accounts for only about 35 percent of the gap between the private credit growth in the current cycle and the average private credit growth in the past four cycles

Some noncyclical or structural demand shifts may also have contributed to reducing the demand for credit in recent years Such shifts are "permanent," by definition, but their influence on demand may be difficult to separate from that of cyclical forces Some studies in this volume note the relevance of structural demand shifts in recent developments in credit flows In particular, the Lown/Wenninger and Mosser/Steindel papers discuss the influence of a possible downward shift in inventory demand relative to sales, especially in the manufacturing sector, on the demand for commercial and industrial loans Because of just-in-time and other management techniques, the amount of inventories needed for a given level of sales and, therefore, the financing requirements for those inventories have declined in recent years. Even though such a shift is likely to have been gradual and to have started before the recent credit slowdown, a considerable portion of the unusual weakness in commercial and industrial bank loans over the recent period may be explained, Lown and Wenninger argue, by the need to finance a lower than normal level of inventories

Econometric analysis yields results that are broadly consistent with the less formal data analysis, namely, demand influences as reflected in standard macroeconomic variables are unable, by themselves, to explain adequately the recent credit slowdown. At the outset, it is worth noting that the estimates discussed here generally do not distinguish between cyclical and noncyclical demand influences The estimated equations simply attempt to explain particular credit flows using aggregate demand components and other appropriate macroeconomic factors as explanatory variables. Movements of explanatory variables, in this context, capture all relevant normal or long-run influences on credit flows

Using cash flow and income or aggregate demand components as explanatory variables, Mosser and Steindel estimate total loan equations for nonfinancial corporations, consumers, home mortgages, and business mortgages. They find that swings in economic activity–related fundamentals seem to account for only about one-quarter to one-half of the slowdown in corporate and consumer borrowings. In the case of consumer credit, the authors reestimate equations by adding home equity lines to take account of shifts between consumer credit and home equity loans resulting from the Tax Reform Act of 1986, the results are roughly similar to those without the home equity variable. For business and home mortgage components, estimates are unstable, although for home mortgages, the estimated equations are able to explain the recent slowdown in loans Mosser and Steindel provide a particularly detailed analysis of corporate and consumer loans, and argue that most of the prediction errors for those loans do not seem to reflect any exogenous shift in the relationships between credit demand and explanatory variables

For bank loans, Lown and Wenninger estimate four sets of equations, one each for commercial and industrial loans, business mortgages, home mortgages, and consumer loans The equations are estimated with vector autoregression methodology to approximate reduced-form relation-

Table 7

Credit Growth over Various Business Cycles

Percent Change, Annual Rate

	Private Nonfinancial	Business Nonfinancial	Household	Mortgage		Nonmortgage
				Business	Home Mortgage	
Current dollars						
Average, current cycle	3 1	0 7	5 6	-1 9	7 1	2 0
Average, earlier cycles(A)†	8 8	9 2	8 5	10 2	8 5	8 6
Average, earlier cycles(B)‡	9 0	9 7	8 3	10 6	8 2	9 0
Constant 1987 dollars§						
Average, current cycle	-0 4	-2 8	2 0	-5 4	3 6	-1 4
Average, earlier cycles(A)†	3 9	4 2	3 5	5 2	3 6	3 7
Average, earlier cycles(B)‡	3.2	3 9	2 5	4 7	2 4	3 2

Note Business cycle periods cover four quarters before trough, trough quarter, and seven quarters after trough

† Average of the 1958, 1970, 1975, and 1982 cycles

‡ Average of the 1970, 1975, and 1982 cycles

§ Based on GDP deflator

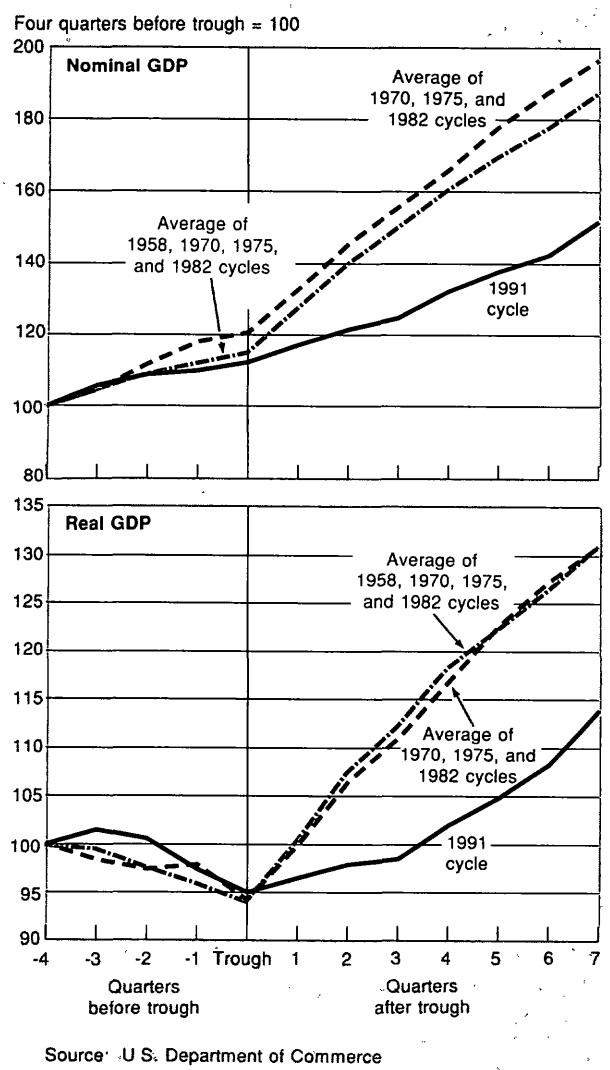
ships, using a range of economic activity and interest rate variables. Broadly, the estimated equations for business mortgages and consumer loans underpredict the credit slowdown, while those for home mortgages more than fully account for the extent of the slowdown. For commercial and industrial loans, Lown and Wenninger are unable to reach any firm conclusions because of unstable regressions.

Cantor and Rodrigues estimate equations for total bank business loans and for nonbank business credit using GDP, investment, and inventories as explanatory variables. The prediction errors from both the bank and nonbank equations are large, indicating that macroeconomic activity variables do not provide an adequate explanation for the slowdown in either bank business lending or nonbank business credit

In summary, aggregate demand influences are unable to explain a substantial part of the recent slowdown or decline in nonfinancial business borrowings from bank and nonbank sources; this is true for both mortgage and nonmortgage business borrowings. Demand factors also fail to account for the recent slowdown in consumer credit, and taking account of shifts between consumer credit and home equity loans does not significantly alter this result. Recent developments in total home mortgage debt and home mortgage bank loans, however, appear to be adequately explained by the evolution of aggregate demand influences

Chart 4

Economic Activity in Various Business Cycles



Source: U.S. Department of Commerce

Supply-side factors

With a significant fraction of the credit slowdown left unexplained by standard aggregate demand variables, one must turn to the supply side Indeed, the prediction errors or residuals from equations estimated with demand variables may be viewed as representing one measure of the supply-side influence on the credit slowdown. Of course, even if we could account for all of the recent credit slowdown with the help of demand variables, that result by itself would not necessarily imply that supply-side factors did not contribute importantly to the credit slowdown Such a result might simply reflect, for example, the fact that demand influences overwhelm supply-side factors More generally, with both credit demand and supply falling, if the drop in credit demand is larger, actual credit developments will tend to be dominated by demand influences, making it difficult to estimate the net contribution of supply-side factors.

Four studies in this collection—Lown/Wenninger, Cantor/Rodrigues, Johnson/Lee, and Hamdani/Rodrigues/Varvatsoulis—have devoted considerable attention to the role of supply-side factors in the credit slowdown Their analysis covers bank and nonbank sources of credit and survey data. Overall, the evidence points to significant credit supply problems for both bank and nonbank sources of credit

On the bank side, Lown and Wenninger look at a number of supply-side factors and provide both descriptive and econometric evidence on the role of those factors They find that in the 1989-92 period, spreads between bank lending rates and bank funding costs for both corporate and consumer loans were at or above their previous record levels They also note that the percentages of short- and long-term loans requiring collateral increased sharply over 1989-92. Both indicators are consistent with a leftward shift in the bank loan supply schedule.

Other noneconometric evidence discussed by Lown/Wenninger and others suggests that banks engaged in nonprice credit rationing or, more generally, experienced reduced ability or willingness to lend. Banks sharply increased their holdings of securities relative to loans, and

some of the increase appeared to be noncyclical.[5] Survey data from banks indicate significant tightening in credit standards on mortgages and other business loans during 1989-92.

Weakening bank capital positions—reflecting, in part, deteriorating bank loan quality and increasing charge-off rates—seem to have played a significant role in credit supply problems over 1989-92. Lown and Wenninger argue that poorly capitalized banks reduced their lending more sharply than well-capitalized banks during 1990-91. Drawing on a more comprehensive examination of the relationship between bank capital positions and bank credit, Johnson and Lee reach a somewhat stronger conclusion along the same lines. Specifically, the results indicate that banks with weak capital positions did less lending than banks with strong capital positions during the 1990-92 period.

Lown and Wenninger also argue that the increased emphasis by the regulators on bank capital and the riskiness of bank loan portfolios may have contributed to the bank loan slowdown, although the role of the regulators and examiners is difficult to separate from other factors. While Lown/Wenninger and Johnson/Lee explore the effects of capital positions on bank lending, none of the studies in this volume explicitly investigate the role of regulators and regulatory changes in the credit slowdown process.[6]

Using state-level data, Lown and Wenninger estimate cross-sectional regressions for bank loan growth with employment, capital, and loan-loss reserves as independent variables; the latter two variables are intended to capture the effect of banking conditions (that is, supply-side factors) on loan growth. The results suggest that capital and/or loan-loss reserves contributed significantly to weak bank lending in 1990 and 1991 and that the effects of these supply-side factors were greatest for the New England region, followed by the Mid-Atlantic and the West South Central regions. By applying the cross-sectional regression coefficients to changes in the explanatory variables by region, Lown and Wenninger provide a quantitative sense of the contribution of supply-side factors to the overall bank credit slowdown. Specifically, they suggest that supply-side problems accounted for roughly 15 to 40 percent of the slowdown in bank lending from 1989 to 1990.

Also using cross-sectional data, Demsetz estimated equations for bank loan sales with expected economic activity, assets, capital ratios, nonperforming loan ratios, and other bank characteristics as explanatory variables. She finds that both capital ratios and nonperforming loan ratios are significant in explaining loan sales but their contribution to predictions of loan sales declines is modest and swamped by that of economic activity.

Turning to nonbank credit sources, the Cantor/Rodrigues study offers evidence that supply-side forces were at work here as well. The authors' econometric estimates for nonbank business credit using GDP and its components as explanatory variables yield large prediction errors that suggest a significant role for supply-side factors. The results also indicate that the timing of the credit slowdown for nonbank sources was parallel to that for bank sources, with no evidence of a shift from bank to nonbank sources of funds.

Cantor and Rodrigues also provide considerable descriptive evidence on the role of supply-side factors in the slowdown of credit from nonbank sources such as finance companies, life insurance companies, and the commercial paper market. Business credit extended by finance companies advanced at a significantly slower pace starting in late 1989, when many finance companies were downgraded by the credit rating agencies because of major losses in commercial lending and, more generally, weak balance sheet positions. With more credit downgrades during the recession and large amounts put up for loan loss provisions and net charge-offs, total finance company business credit became roughly flat over 1990-92. Cantor and Rodrigues note that credit downgrades probably had a significant effect on lending because finance companies raise most of their funds in short-term public credit markets. The authors also suggest that credit stringency at banks may have had adverse feedback effects on finance company credit availability as many finance companies, faced with problems in raising funds in the commercial paper market, increased their borrowings from bank backup credit lines, presumably at higher costs.

Most of the problems of the life insurance industry, Cantor and Rodrigues argue, stemmed from commercial real estate lending, junk bond portfolios, and high rates on guaranteed investment contracts. Against the background of weak economic activity, these difficulties led to numerous credit downgrades, sharp declines in stock prices, and some outright failures in the life insurance industry. Life insurers became generally preoccupied with preserving liquidity and avoiding a collapse. In this environment, the National Association of Insurance Commissioners in mid-1990 adopted new rules establishing more stringent reserve and capital requirements for below-investment-grade bonds and private placements. These developments, Cantor and Rodrigues believe, have reduced the willingness of insurance companies to invest in below-investment-grade bonds and, more generally, have induced a shift toward low-risk assets.

Nonfinancial business borrowers did not increase the rate of commercial paper issuance during the latest credit

[5] More formally, Rodrigues (1993) shows that weak economic activity cannot explain all of the recent run-up in securities holdings and that the sustained steepness in the term structure of interest rates and risk-based capital standards may have contributed to that run-up

[6] For various perspectives on the role of regulators/examiners and capital standards, see Greenspan (1992), Syron and Randall (1992), Peek and Rosengren (1992), LaWare (1992), and Wojnilower (1992b, 1993)

crunch, as they had done in earlier credit crunches. Because of numerous credit rating downgrades and fifteen defaults since 1989 (compared with only two defaults in the entire earlier history of the market), perceived credit risk in the commercial paper market increased greatly, leading investors, especially mutual fund investors, to lose confidence. Meanwhile, to protect small investors and sustain confidence in the money market mutual fund industry, the Securities and Exchange Commission in July 1990 imposed strict limits on the amount of "second-tier" (low-quality) commercial paper that mutual funds could hold. As a result of these developments, both the amount of second-tier commercial paper issued and the mutual fund holdings of that paper dropped precipitously over 1990-92. Cantor and Rodrigues believe that the credit quality concerns are not fully reflected in the rate spread between the top-tier and second-tier paper because the second-tier issuers are often "rationed" out of the market before they drive up rates.

Cantor and Rodrigues also discuss the public bond market. The market for below-investment-grade public bonds ("junk bonds") showed virtually no activity during 1990 and 1991 but recovered significantly in 1992. By contrast, the market for publicly placed investment-grade bonds remained quite strong, cushioning weakness in other credit markets to some extent.[7]

Survey evidence on supply-side factors

Hamdani, Rodrigues, and Varvatsoulis examine survey data from bank lenders and nonfinancial borrowers on credit tightening in recent years. Using both the narrative approach and econometric estimates, they find evidence of significant credit tightening by lenders because of supply-side factors. By purging the NFIB (National Federation of Independent Business) Survey data of aggregate demand influences, they uncover particularly strong and consistent evidence of a credit crunch for small business borrowers that depend primarily on banks for their financing (about 90 percent of small business debt consists of bank loans).[8] The results indicate that for small borrowers, the recent credit crunch was more severe than earlier crunches. A significant part of this credit crunch appears to have taken the form of nonprice credit rationing or tightening of nonrate loan terms.

Hamdani, Rodrigues, and Varvatsoulis also find considerable evidence of credit supply constriction for large borrowers. They conclude that overall, the extent of bank credit tightening for large businesses appears to have been greater than what can be explained by the general economic slowdown. Using the SLO (Senior Loan Officer) survey data from banks, again purged of aggregate demand influences, the authors argue that the degree of credit stringency during 1990-91 seems to have been similar to that in the 1974-75 episode.

Finally, Hamdani, Rodrigues, and Varvatsoulis estimate loan growth models using standard demand variables and survey variables on loan availability for both the SLO and NFIB surveys. The results suggest that restrictive loan supply conditions as proxied by the survey supply variables have had a significant impact on commercial and industrial bank loan growth over 1989-92.

Correction for the debt overhang of the 1980s

As noted earlier, disentangling the supply and demand factors underlying the recent credit slowdown is particularly difficult because the economic downturn was superimposed on a process of balance-sheet corrections for debt excesses of the mid-1980s. This process of correction for earlier debt excesses is widely believed to have contributed significantly to the credit slowdown over 1989-92.

During the last decade, a broad range of forces—including financial deregulation and innovation, developments in information and data processing technology, commercial real estate development, and mergers, acquisitions, and leveraged buyouts—combined to increase greatly both the supply of and the demand for credit, resulting in enormous increases in the amount of debt.[9] The upward march of debt was supported, in part, by speculative asset price increases, especially for real estate.

Over time, the process of rapid debt increases led, perhaps inevitably, to problems for both borrowers and lenders. By 1989 and 1990, households and businesses faced historically unprecedented and unsustainable debt and debt service burdens (Chart 5). With weakening economic activity and declining real estate and other asset values, high debt burdens resulted in balance sheet difficulties for borrowers and loan quality problems for lenders. Not surprisingly, therefore, bank and nonbank lenders alike experienced a weakening of capital positions and increasingly higher loan loss reserves, charge-offs, and delinquency rates. All these factors together, so the argument runs, explain the sharp credit slowdown in recent years.

This account of the correction process is consistent with the view that the credit slowdown contained important supply-side elements although it was perhaps driven by demand forces. In particular, in the down-phase, balance sheet changes induced by declining real estate and other asset values led to weaker capital positions for banks and,

[7] The severity of credit supply reductions, as noted earlier, has also been moderated somewhat by rapid increases in off-balance-sheet lending (securitization and loan sales) in recent years.

[8] In fact, the authors' credit supply proxies, purged of aggregate demand influences, may understate the extent of credit supply shifts because they exclude supply shifts associated with movements of lending spreads and at least some of the effect of changes in borrowers' quality on the willingness to lend

[9] For a review of developments leading up to the credit crunch period, see Cantor and Wenninger (1993). For a broad perspective on the debt overhang of the 1980s, see Frydl (1991).

consequently, lower capacity and willingness to lend over 1989-92, just as on the up-side, balance sheet changes had increased capacity and willingness to lend in the earlier period. The lenders' reduced willingness to lend, in this case, reflected not only changes in their own balance sheets but also a shift in their attitude associated with the deterioration, actual or perceived, in the quality of borrowers' balance sheets and creditworthiness.

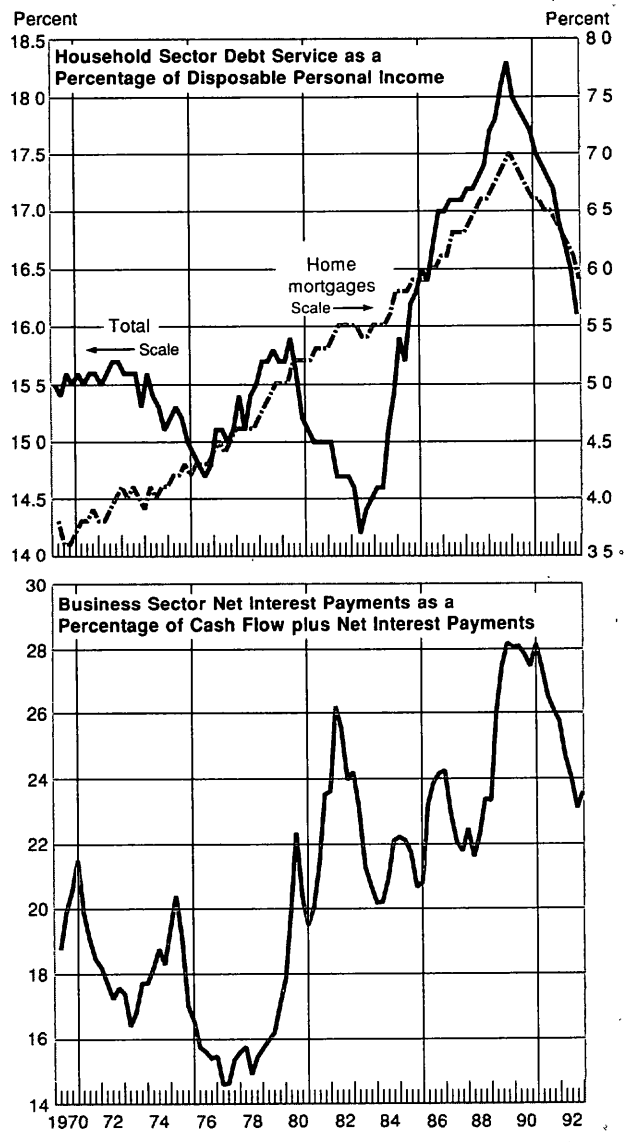
Perhaps even more important, according to this story, the correction process seems to have been dominated by market forces (both demand and supply) as opposed to policy factors. In fact, monetary policy had been easing since early 1989, and as a result, unlike earlier credit crunches, interest rates had declined significantly before serious credit supply problems emerged. To be sure, tighter capital requirements and regulatory pressures,stemming from both legislative changes and more intensive supervisory oversight, contributed to the credit slowdown, in part by reinforcing and highlighting prudential concerns. Such policy factors, however, appear not to have been the primary cause of the credit slowdown. In any event, any contribution of policy factors to the credit slowdown is likely to have been much smaller than the role played by market forces; these forces, particularly evident in a reduced desire to borrow and hold or extend debt, caused a decline in both credit demand and credit supply.[10]

Research work in this volume does not provide any estimates of the extent to which the credit slowdown is attributable to the correction process for the debt overhang of the 1980s While several studies discuss developments leading up to the credit slowdown, quantitative assessments are generally aimed at sorting out demand from supply (or cyclical from noncyclical) factors using historical trends. The study by Johnson and Lee does address the related question of the linkage between the earlier credit excesses by banks and the recent bank credit slowdown. It finds that banks that indulged in "high-risk" activities during the 1985-88 period were obliged to curtail their lending more sharply than other banks during the three years to end-1992. But the study does not estimate the extent of "excess debt" resulting from those earlier high-risk activities

Nevertheless, it may be useful to get a rough sense of the impact of the correction for the debt overhang on the credit slowdown since 1989. Specifically, I address the following question: Was the actual cumulative expansion in private nonfinancial debt from end-1989 to end-1992 higher or lower than what is consistent with "normal" or long-run trend credit growth adjusted for cyclical developments and for the debt overhang of the 1980s? Using the simple relationship that the amount of credit expansion in any given time period is made up of the credit expansion consistent with the normal or long-run trend rate adjusted for cyclical

Chart 5

Debt Service Burdens



Source U S Department of Commerce

Notes: In the upper panel, debt service is an estimate of scheduled payments of principal and interest on home mortgage and consumer debt In the lower panel, cash flow is defined as depreciation (book value) plus retained earnings (book value).

[10] Incidentally, note that shifts in attitudes toward debt would normally be treated as "exogenous" in most macroeconomic models, the use of exogenous/endogenous in the current context, however, would appear to be inappropriate since such terms must be expressed relative to a specific model

and other shifts away from that trend, I attempt to measure the gap between the actual credit expansion over the three-year period to the fourth quarter of 1992 and the amount of credit expansion implied by the adjusted long-run path under various assumptions for the relevant variables. If the actual credit expansion over 1989-92 falls short of the estimated credit expansion for that period, the recent credit slowdown has been greater than what could be reasonably attributed to the combination of cyclical effects and the correction for earlier debt excesses. In this case, the correction process itself might have produced overshooting or shifts unrelated to the earlier credit excesses, and cyclical developments might have further depressed credit flows. Of course, a significant positive gap between the actual and the estimated credit expansion has the opposite implications.

There is no obvious and definitive way to measure the "normal" or long-run credit expansion rate. The usual procedure is to use some measure of the historical trend rate. But with credit expansion rates much higher in the 1980s than in the preceding two decades, history does not offer a clear choice for the trend rate or the benchmark period. Perhaps more important, since long-run credit growth must be viewed in real terms, we need relevant prices. At an empirical level, however, the choice of the appropriate price measures needed to deflate various debt components is ambiguous. Similarly, the use of the debt-to-GDP ratio at the component level in figuring out the long-run or normal rate is quite problematical—the ratio of a particular debt component to GDP (or to broad sectoral income measures) need not be stable over time. Adjustment of the long-run trend to account for cyclical and noncyclical developments raises equally difficult questions: How should we measure cyclical effects? How much time should we allow for the correction of the debt overhang to be completed—as much time as it took to build up the problem, more time, or less?

Using various alternatives for the long-run or normal trend credit expansion rate and adjustment factors, I calculated the cumulative amount of excess debt over 1982-89 and several measures of the gap between the level of actual credit expansion over 1989-92 and the amount of trend credit expansion, adjusted for the debt overhang and cyclical developments, during that period. One such exercise is reported in Table 8. The long-run trend rates in this exercise are based on business and household data for mortgage and nonmortgage debt over the 1960-82 period, converted into constant 1987 dollars using the GDP deflator.[11] The cyclical effects are measured on the basis of differences between the 1960-82 trend rates and the combined average growth rates for the periods surrounding the 1970, 1975, and 1982 recessions.

This exercise suggests that the decline in business credit over 1989-92 has gone far beyond what was necessary to correct the earlier debt excesses; only about 55 percent of the decline in business credit over 1989-92 relative to the long-run trend can be attributed to the need to correct the debt overhang. Combining the correction for the debt overhang with cyclical effects still accounts for only a part of the business credit slowdown. Even assuming complete adjustment over three years (1989-92) for the credit excesses that took place over seven years (1982-89), the actual business credit increase over 1989-92 fell short of the long-run trend expansion, adjusted for the debt overhang and cyclical effects, by about $246 billion in 1987 prices; the shortfall represents nearly 7 percent of total business credit at end-1992. Under partial adjustment, with three-sevenths of the excess debt eliminated over 1989-92, the debt shortfall from the trend expansion level increases to $461 billion, or about 12.5 percent of total business credit at end-1992. While both commercial mortgages and nonmortgage business debt declined more than implied by the estimated adjusted trend expansion levels under the two adjustment scenarios, the bulk of the shortfall reflects commercial mortgages.

For the household sector, the correction for the earlier debt excesses and cyclical effects together more than fully account for the credit slowdown. In fact, actual household credit expansion over 1989-92 exceeded the amount of credit expansion consistent with the adjusted long-run trend, assuming complete adjustment over three years, by $665 billion in 1987 dollars; the excess is nearly 17 percent of total household debt at end-1992. About 90 percent of the excess debt is attributable to home mortgages. Under partial adjustment, the amount of household excess debt drops to less than half that under complete adjustment, but it is more than fully accounted for by home mortgages, with nonmortgage household debt actually showing a moderate shortfall relative to the estimated level. In sum, there has been no correction for the debt overhang for home mortgages. On the contrary, home mortgage debt over 1989-92 continued to advance at a faster rate than the long-run trend rate, apparently unaffected by cyclical developments and by the need to correct earlier debt excesses.

Alternative measures of the long-run trend rate yield, in some cases, significantly larger or smaller estimates of the debt excess over 1982-89 and of the gap between actual and estimated debt changes over 1989-92. Two general messages of the results in Table 8 hold up, however. First, although the correction process for the debt overhang played a major role in the credit slowdown, it is difficult to explain *all* of the business credit slowdown by appealing to the need for correction. Second, home mortgage debt in recent years has remained immune to the

[11] The use of a national price index instead of sectoral price indexes seems to be preferable for at least two reasons: appropriate component price measures are not always readily available, and even when they are available, their use would legitimatize credit excesses of the 1980s by incorporating any speculative price increases for particular sectors such as real estate.

correction process for the earlier debt excesses One implication of the first point is that some credit supply shifts largely or completely unrelated to the market correction process for the debt overhang may have played an important role in the credit slowdown. Such supply shifts were presumably caused by tighter capital standards and regulatory pressures

The credit slowdown abroad

A number of foreign countries have also experienced credit slowdowns, to varying extents, during the last three years or so. The Hickok/Osler study in this volume examines the foreign experience, focusing on Japan, France, and the United Kingdom. Since a single study cannot be expected to deal with all aspects of the foreign experience, the authors consider only the broad contours of the recent credit experience abroad and the common forces that may have driven that experience.

Using both descriptive analysis and regression results, Hickok and Osler find that for all three countries, the waning of the credit surge of the 1980s contributed importantly to the credit slowdown during 1990-91. The broadly defined process of financial deregulation and innovation, working through expanded access to credit markets, asset valuations, and other changes, led to increases in both the demand for and the supply of credit during the mid- and late 1980s. Subsequently, as actual credit changes adjusted to "permanently" higher equilibrium levels, credit growth rates tended to return to more normal levels.

Hickok and Osler also find that for Japan and the United Kingdom, a reversal of the speculative factors played a considerable role in the credit slowdown Developments in economic activity helped reduce the pace of credit growth in all three countries, but their role appears to have been relatively modest in Japan and the United Kingdom Finally, bank capital movements seem to be significant in explaining credit movements in Japan and to a lesser extent in the United Kingdom, but they appear not to have made any contribution to credit developments in France

Credit supply problems and economic activity

To the extent that the credit slowdown reflects the slowdown in aggregate demand or economic activity, it is a symptom and not a direct cause of the weakness in the economy Accordingly, any investigation of the consequences of the credit slowdown for nonfinancial economic activity must focus on credit supply problems In this volume, three studies—Mosser, Steindel/Brauer, and Harris/Boldin/Flaherty—deal with this subject *Overall,* the three studies indicate that credit supply problems have not been the primary or dominant cause of the recent weakness in economic activity But collectively, the studies do suggest that credit constraints are likely to have made at least some contribution to the economic slowdown

Aggregate demand

Mosser examines the effects of credit supply problems on aggregate demand components while attempting to control for changes in credit demand She estimates reduced form equations for several demand components with and without variables representing credit supply restraints. Four different proxies, all based on other studies in this volume, are used for credit supply constraints. (1) regression residuals from various bank loan equations in Wenninger/Lown, representing part of the credit slowdown not attributable to

Table 8

Long-Run Trend and Actual Credit Expansion, 1989–92

Billions of 1987 Dollars, GDP Deflator Basis

	Business			Household			
	Total	Mortgage	Other	Total	Home Mortgage	Other	Total Private
Actual credit expansion	**–261.5**	**–159.0**	**–102.5**	**191.6**	**227.6**	**–36.0**	**–69.9**
Trend expansion	423 6	151 5	272 1	284 9	185 9	98 9	708 5
Cyclical adjustment	–62 9	–2 0	–60 9	–93 5	–67 8	–25 6	–156 4
Correction for excess expansion over 1982–89	–376 0	–75 1	–301 0	–665 1	–479 9	–185 2	–1041 1
Adjusted trend credit expansion	**–15.3**	**74.4**	**–89.8**	**–473.7**	**–361 8**	**–111.9**	**–489.0**
Excess/shortfall	**–246.1**	**–233.4**	**–12.8**	**665.3**	**589.4**	**75.9**	**419.1**
Partial adjustment	–461 0	–276 3	–184 7	285 2	315 2	–29 9	–175 8

Notes Table reports changes in billions of 1987 dollars from 1989-IV to 1992-IV Long-run trends are based on the 1960–82 growth rates of business and household components Cyclical adjustments are based on the differences between the 1960–82 trend rates and the combined average growth rates for the periods surrounding the 1970, 1975, and 1982 recessions Figures in the last row are estimated on the basis of partial correction (3/7) for the 1982–89 excess expansion over 1989–92 In current dollars, actual cumulative private credit expansion over 1989–92 was about $680 billion (11 0 percent of 1992 GDP) Sums may not add up precisely because of rounding

demand factors; (2) regression residuals from various sectoral loan equations in Mosser/Steindel, measuring the gap between actual credit flows and the estimates based on historical relationships between credit and aggregate demand variables; (3) residuals from regressions in Hamdani/Rodrigues/Varvatsoulis, capturing credit availability restraints for small business, purged of cyclical influences; and (4) interest rate spreads between market rates and loan rates on business and consumer lending.

Using data for the 1980-92 period, Mosser performs some Granger-Causality tests to determine whether credit aggregates or credit supply proxies are statistically more significant predictors of future economic activity. Her results tend to favor credit supply proxies. For the more recent period, Mosser finds significant effects of credit supply problems on commercial real estate activity and producers' durable equipment. In particular, the credit supply proxy for small business seems to account for a considerable part of the 1989-92 weakness in nonresidential construction and producers' durable equipment. Even so, Mosser argues that the weakness in these demand components relative to predictions based on normal historical relationships cannot be fully explained by credit supply problems. Doubtless, the widespread sluggishness of economic activity during 1989-92 reflected a broader set of factors than just credit supply problems.

Construction activity

Harris, Boldin, and Flaherty investigate the effects of credit supply problems on the real estate industry. Focusing on the three construction industry sectors—single family homes, multifamily housing, and nonresidential structures—they provide a comprehensive review of credit and noncredit factors underlying the recent decline in construction activity. Overall, their study finds that credit supply problems are likely to have played only a modest role in the real estate contraction.

For single family housing, the authors begin by examining predictions of housing activity from several standard models that use mortgage rates, income, and other fundamentals as explanatory variables. Since these models are not able to predict the recent weakness in housing, the authors search for an explanation by focusing on "special" factors or other variables that have been left out of the models. They argue that of the missing variables, demand-side factors such as a generalized effort to reduce debt and an adverse shift in investor psychology rather than narrowly defined credit supply problems explain the bulk of unusual weakness in housing. This view is consistent with the fact that because of the mortgage-backed securities market and other financial innovations, credit supply for home mortgages has not experienced any significant problems. The supply of loans to homebuilders has been constrained significantly, but this appears not to have caused a pervasive housing shortage. Even so, credit supply problems may explain part of the recent weakness in housing activity since without credit constraints, the housing supply would have been larger and prices lower. More generally, given the weakness of both credit demand and credit supply, the identification problems make it difficult to rule out a significant role for credit supply difficulties.

Multifamily and nonresidential construction have declined greatly since 1989 and have remained the two weakest sectors of the economy. According to the Harris/Boldin/Flaherty study, overbuilding in the 1980s (together with the resulting excess capacity) dominates the credit crunch as an explanation for the collapse of activity in both sectors. The study recognizes, however, that these sectors have experienced credit supply problems and that the simultaneous weakness in (and interaction between) credit demand and credit supply makes it difficult to isolate the effect of credit supply constraints. It is likely that in the absence of credit supply constraints, the decline in the nonresidential and multifamily sectors would have been more moderate. Put differently, the credit crunch does not appear to be the *dominant* cause of the collapse in construction activity, but it may well have played some role in the timing and process of decline.

Business activity excluding construction

The Steindel/Brauer study explores the consequences of credit supply problems for business activity excluding construction. Overall, this study provides only limited support for the view that credit supply problems impeded business activity over 1989-92.

Steindel and Brauer consider five different types of evidence. First, they review recent movements in corporate, noncorporate, and manufacturing activity, together with relevant credit flows. The review suggests that the sharp slowdown in credit flows may have been a significant contributing factor to weakness in small business activity and that such firms may have borne a disproportionate share of the shortfall in both output and debt.

Second, the authors look at survey evidence on lending to smaller firms and the connection between credit supply proxies from other studies in this volume and noncorporate business output. This survey evidence does point to a significant credit tightening which may have contributed to weakness in small business activity.

Third, using detailed industry- and firm-level data, the study compares activity for small and large businesses and attempts to *infer* the role of credit in the recent weakness of small business activity. The focus is on manufacturing businesses, but the analysis does include some nonmanufacturing establishments as well. In most cases, small business activity appears not to have shown any unusual weakness relative to large business activity, and so, by inference, Steindel and Brauer do not find any more support

for the effect of credit supply problems on small businesses than on large businesses. But with data on the relevant credit flows unavailable, this type of evidence is entirely indirect and does not necessarily contradict the view that credit supply problems may have contributed to the slowdown in business activity over 1989-92.

A fourth type of evidence considered by Steindel and Brauer focuses on indicators of financial strength. Again using industry- and firm-level data, the authors explore the role of financial factors in the recent weakness of business activity by examining various measures of real economic activity for financially "weak" and "strong" businesses. This evidence is also indirect and yields mixed results.

Finally, using firm-level data, Steindel and Brauer perform formal regression tests to look for the effect of size and debt- to-asset ratios on employment, inventories, capital spending, and spending on research and development for various periods. Once again, the results are mixed.

Implications for Monetary Policy

In reviewing the implications of the credit crunch or credit supply problems for monetary policy, this section focuses on two related issues: implications of the credit crunch for the impact of monetary policy actions on economic activity, and consequences of credit supply problems for monetary policy guides, M2, and other financial variables. The section begins with some background information on the main features of the recent credit crunch and on the channels of monetary policy influence on the economy.

Overview of credit supply problems

The evidence in this volume is consistent with the view that credit supply problems contributed importantly to the credit slowdown over 1989-92, although demand influences may have dominated overall credit movements. The nature and causes of the 1989-92 credit supply problems were significantly dissimilar to those of most earlier credit crunches. The distinctive features of the most recent episode are summarized below.

First, credit supply problems in the 1989-92 period were widely spread across both bank and nonbank sources of credit. As a result, unlike earlier credit crunches, nonfinancial borrowers were not able to substitute nonbank credit freely for bank credit. In fact, finance companies, life insurance companies, and commercial paper issuance seem to have experienced credit supply problems that were essentially similar to those of banks. Together with a broadly based retrenchment in credit demand, credit supply problems led to a sharp slowdown in all major components of private debt flows.

Second, credit restraints during 1989-92 took the form both of more stringent price terms—higher lending rates relative to funding costs and tighter nonrate loan terms—and of nonprice credit rationing. Although this phenomenon is probably fairly typical of earlier credit crunches, the pervasiveness of nonprice rationing and tighter loan terms over an extended period of time in the recent credit crunch is unusual. Earlier credit crunches were generally short-lived; the 1989-92 crunch period was characterized by persistently high spreads between lending rates and funding costs, especially at depository institutions, increasingly tighter credit standards for applications through much of the credit crunch period, and continued stringent nonrate terms on loans. These persistent credit restraints were reflected, among other things, in large increases in holdings of government securities relative to loans at banks.

Third, significant evidence points to a capital crunch as one of the major causes of credit supply problems over 1989-92. None of the earlier credit crunches were characterized by a widespread weakening of the capital positions of banks and nonbank financial institutions. Broadly, the actual or perceived capital crunch seems to have reflected three underlying forces (in addition to the normal cyclical effects): (1) the need to correct balance sheet problems resulting from the lax lending standards that had prevailed through much of the 1980s and had left balance sheets badly exposed to asset prices and other shocks; (2) increased capital requirements induced by legislative and regulatory measures and by more intensive supervisory oversight; and (3) the weakening of capital positions reflecting declining real estate and other asset values starting about late 1988.

Fourth, market forces seem to have played a critical role in generating the latest credit crunch. To be sure, as noted above, regulatory measures and pressures contributed to the actual or perceived capital crunch but, unlike earlier credit crunches, the current episode emerged in an environment of accommodative monetary policy and declining interest rates.

More fundamental to the process of credit slowdown appears to have been the need to correct the debt excesses of the mid-1980s, which had become unsustainable over time. Faced with major balance sheet and other difficulties, borrowers and lenders alike responded to market forces, borrowers by lowering their credit demands and lenders by reducing credit availability. In particular, the so-called credit crumble phenomenon—the chain running from asset price declines to capital position weakness to lower capacity and willingness to lend—contributed importantly to the process of credit slowdown.[12] The role of market forces was reinforced and perhaps intensified by the regulatory pressures that highlighted prudential concerns about loan quality and capital positions and argued for the need to strengthen lenders' balance sheets. The capital crunch itself was at least partly a by-product of the correction process as weakening capital positions and mounting loan losses called

[12] See Johnson (1991) for a detailed description of this phenomenon

increasingly greater attention to the need for correction of earlier debt excesses and for additional capital.

The accumulating loan losses, continuing balance sheet problems, and full realization of the debt overhang also led to more conservative lending attitudes—well beyond what could be attributed to the measurable weakness in capital positions—and to a complete reversal of the earlier lax lending standards. To a considerable extent, the pervasiveness of credit supply problems reflected the widespread nature of the correction process, with both bank and nonbank creditors experiencing the need to improve loan quality and repair their balance sheets.

Finally, the debt overhang correction process and its conjunction with a prolonged cyclical weakness in the economy made the already difficult task of distinguishing credit supply malfunctions from credit demand factors even more difficult. Both borrowers and lenders were deleveraging and restructuring their balance sheets in response to earlier debt excesses and cyclical weakness. In the process, credit demand and credit supply narrowed simultaneously, but the drop in demand is likely to have overwhelmed the fall in supply. As a consequence, it is very difficult, if not impossible, to detect empirically the contribution of supply-side factors net of demand influences.

Channels of monetary policy influence

Monetary policy influences the economy through at least four important channels: the money–interest rate channel (or the "money" channel, as it is commonly known); the credit channel; the asset valuations or balance sheet channel; and the exchange rate channel.[13] The discussion here deals with only the first three, ignoring the exchange rate channel. In the money–interest rate channel, as enshrined in the standard IS-LM model, monetary policy affects aggregate spending by raising or lowering the cost of funds through changes in the supply of money relative to the demand for money. Specifically, monetary policy actions—open market operations and so forth—induce changes in bank reserves, money, short-term interest rates and, through substitution and expectational effects, long-term interest rates. Higher (lower) interest rates, in turn, raise (lower) the cost of funds, other things equal.

The credit channel, which may operate alongside the money–interest rate channel, affects aggregate demand through direct changes in the availability and terms of bank loans. A tightening of monetary policy may reduce the supply of bank loans through higher funding costs for banks or through increases in the perceived riskiness of bank loans. Since the credit channel views bank loans as imperfect substitutes for other assets in bank portfolios (government securities, corporate bonds, commercial paper and the like), monetary policy actions that reduce bank reserves and, therefore, deposits will be matched by decreases in both securities and bank loans. As a consequence, borrowers with no access to other sources of credit will be obliged to reduce their spending, while others with nonbank sources of credit, though less affected, will not be immune to monetary policy influence as long as the alternative sources of credit are more expensive or less convenient.

The asset valuations channel of monetary policy influence on the economy works through changes in balance sheet positions. Monetary policy actions that lower interest rates, for example, tend to increase asset values and improve liquidity for firms by lowering interest–to–cash flow ratios. These balance sheet improvements, in turn, may increase business spending by raising the availability of internal funds and improving the access to and the terms on external funds. Lower interest rates may also work to improve household balance sheet positions through debt restructuring and higher asset values, thereby increasing the availability of funds for debt retirement and additional spending. Note that the argument of this channel is that interest rate changes may affect spending by weakening (strengthening) balance sheets or wealth holdings, quite apart from their effects on the cost of funds in the money–interest rate channel.

Effectiveness of monetary policy

Factors relating to the credit crunch seem to have created significant blockages for the workings of all three channels of monetary policy. Overall, the blockages are likely to have muted the impact of monetary policy actions on economic activity. The empirical size and significance of the blockages are far from clear, however. Whether any of these blockages will turn out to have permanent consequences for the conduct of monetary policy is also not clear at this time.

The credit channel of monetary policy was seriously disrupted over 1989-92. With the decline in the willingness and capacity of banks to lend, monetary policy actions increasing bank reserves were not translated into additional bank lending. Specifically, easing of monetary policy apparently had very little impact on the supply of bank loans over 1989-92. This view is clearly supported by increasingly tighter credit standards, higher (or at least continued high) lending rates relative to funding costs, and restrictive nonrate loan terms. With nonbank credit sources also experiencing supply disruptions, frustrated bank borrowers were not satisfied elsewhere. Much academic discussion of the credit channel assumes that nonbank credit alternatives are easily available to many (perhaps most) borrowers. This view clearly runs counter to the recent

[13] A large number of theoretical and empirical studies on the transmission of monetary policy influence to the economy have appeared since the mid-1980s. For some recent discussions of various channels of monetary policy, see Akhtar and Harris (1987), Bennett (1990), Bernanke (1993), Bernanke and Blinder (1988, 1992), Bosworth (1989), Friedman (1989), Gertler (1988), Gertler and Gilchrist (1992), Gertler and Hubbard (1988), Mauskopf (1992), Mosser (1992), and Romer and Romer (1993).

credit crunch experience. In fact, widespread nonbank credit supply disruptions appear to have added substantially to the severity of the blockage in the credit channel.

The money–interest rate channel of monetary policy also seems to have experienced some blockage during 1989-92. Policy-induced increases in bank reserves did translate into lower short-term open market rates and faster growth of narrow money, M1. But the response of long-term interest rates and broader monetary aggregates to policy actions was very sluggish and weak throughout 1989-92. The decline in credit supply, as shown in the Hilton/Lown study, contributed importantly to slowing the growth of M2. And presumably the shift in credit supply also played some role in maintaining high long-term interest rates by putting upward pressures on rates, other things equal. As a result, monetary policy actions were less effective in lowering the cost of capital, hampering the workings of the money–interest rate channel.

The process of correction for earlier debt excesses may also have weakened the asset valuations or balance sheet channel of monetary policy influence on the economy. Given the actual or perceived need to correct the large debt overhang, lower interest rates may not have induced much additional spending by businesses and households because the improvements in balance sheets and the underlying asset values materialized only slowly. Put differently, easier monetary policy as reflected in lower interest rates may have encouraged households and businesses to repair the perceived weakness in their balance sheets by deleveraging and debt restructuring, without increasing spending significantly.

While credit supply problems during 1989-92 may have been important in reducing the effectiveness of monetary policy, it is difficult to isolate their effects from those of a broad range of other fundamental developments that are likely to have disrupted, weakened, or changed the linkages between monetary policy and economic activity. Mosser discusses a number of these other fundamental developments. Of the factors not directly related to the credit crunch, the following appear to be particularly important:

- the response of long-term interest rates to short-term open market rates may have been weakened by inflation fears or by a high level of investor uncertainty stemming from large federal budget deficits;
- effects of lower interest rates may have been weakened by very high levels of real after-tax interest costs;
- looking from a longer term perspective, financial innovation and deregulation over the last two decades are widely believed to have caused significant changes in both the size and the speed of monetary policy effects on various sectors of the economy.

Economic growth in recent years has also been restrained by factors unrelated to both the credit crunch and monetary policy transmission—relatively tight fiscal policy, a military build-down, excess capacity in the construction industry, and low levels of consumer and business confidence. It is difficult to control for these nonmonetary influences in assessing the effectiveness of monetary policy.

Against this background, the quantitative significance of the 1989-92 credit supply problems for the transmission channels of monetary policy is far from clear. As reported by Mosser, econometric forecasting equations, both reduced-form and structural estimates from large models, significantly overpredict real spending from 1989 to 1992. This finding is consistent with the notion that monetary policy actions have been less effective in recent years than in the past. Presumably the overprediction reflects both the credit crunch and other factors, however. Indeed, Mosser is unable to account for all of the overpredictions by making use of credit supply proxies. Moreover, the overpredictions are not limited to sectors that are directly sensitive to monetary policy. Instead, they are widely spread across all sectors, suggesting a general malaise in aggregate demand not captured by economic fundamentals.

Notwithstanding these measurement difficulties, credit supply problems during 1989-92 are likely to have contributed to reducing the effectiveness of monetary policy. Clearly, the credit crunch weakened the credit channel and caused disruptions in credit flows, producing at least some adverse consequences for economic activity. The credit supply shifts are also likely to have hampered the workings of the standard money–interest rate channel and possibly to have weakened the balance sheet–related contribution of lower interest rates to aggregate spending.

The long-term implications of the credit crunch for the effectiveness of monetary policy are less clear. Recent credit supply problems may well cause durable changes in the workings of monetary policy transmission channels by altering, for example, the relationship between changes in monetary policy and bank loans, between bank loans and deposit flows, and/or between debt and income.[14] But such an outcome is by no means certain. Moreover, with numerous other potential influences on the linkages between monetary policy and economic activity, it may not be possible to isolate any permanent traces of the recent credit crunch on those linkages.

Monetary policy guides

Disruptions in the linkages between monetary policy and the economy imply adverse consequences for the usefulness of financial variables as monetary policy guides, whether viewed as intermediate targets or simply as infor-

[14] If, for example, the recent experience makes banks permanently more risk averse in their lending, monetary policy effects on bank lending would be smaller than before.

mation variables. The usefulness of any monetary policy guide depends primarily on two considerations: the strength and predictability of the relationship between the guiding variable(s) and the ultimate objectives of price stability and economic growth, and the ability of the Federal Reserve to define, interpret, and control the guiding variable(s).[15] The recent credit crunch seems to have added to problems on both counts.

Credit supply problems since 1989 have almost certainly contributed to reducing the usefulness of M2 and M3 as policy guides. Hilton and Lown argue that the reduced willingness of depositories to lend was an important factor behind the weakness in deposits, although their work does not fully isolate the effect of credit supply problems from that of noncyclical credit demand factors. Specifically, the authors point out that relatively high lending rates and the pervasiveness of stringent nonrate loan terms and nonprice credit rationing reduced the supply of credit and, together with lower yields on deposits relative to alternative assets, led to weak depository flows. Controlling for cyclical effects, Hilton and Lown estimate that by the middle of 1992, the credit slowdown had lowered M2 growth by about 10 percent. Their regression results indicate that the breakdown of M2 demand equations is at least partially attributable to the exceptional weakness in credit formation; the predictive performance of M2 demand equations improves significantly when direct measures of credit or other factors capturing cutbacks in lending are included as explanatory variables.

Credit supply malfunctions have also affected the relationship between credit aggregates and the economy. None of the studies in this volume is able to account for developments in various credit measures—household, business, bank and nonbank, and so forth—over 1989-92 by using standard historical relations for macroeconomic variables. Of course, the underlying relationships of credit and monetary aggregates to prices and economic activity have not been particularly reliable during the last decade, even before the emergence of recent credit supply problems.

The usefulness of interest rates as information variables for monetary policy has also been adversely affected by the credit crunch. With the pervasiveness of nonprice credit rationing and stringent nonrate loan terms, changes in open market rates have had a smaller impact on credit conditions and economic activity than would otherwise have been the case. Put differently, disruptions in the credit market mechanisms have made past experience less pertinent as a reference point for understanding the effects of recent interest rate changes on credit conditions and the economy. Similarly, to the extent that credit supply problems influenced the yield curve and various interest rate spreads—such as that between lending rates and funding costs or that between the (riskless) Treasury bill rate and the (risky) commercial paper rate—all these variables became less useful indicators, at least over 1989-92.

By reducing the information content of a broad range of financial variables, the credit crunch has compounded the problems of finding appropriate guides for steering monetary policy. More specifically, credit supply problems in recent years have made it more difficult to use M2 or the federal funds rate (or any other financial variable for that matter) for determining appropriate money and credit conditions relative to the needs of the economy. Even before the latest credit crunch, however, there was no significant agreement on the use of any one or two variables as monetary policy guides. Thus, the recent experience with financial sector developments seems to have moved us further away from a narrow focus on one or two intermediate targets toward the use of a broad set of financial indicators as information variables to steer monetary policy.

Some concluding observations

Collectively, studies in this volume offer evidence of a substantial, prolonged, and broad-based contraction in credit supply over 1989-92. This finding strongly contradicts the view that the recent credit slowdown originated solely on the demand side.[16] Research work reported here conclusively demonstrates that demand influences are unable to explain a significant part of the recent credit slowdown or decline in nonfinancial borrowings from bank and nonbank sources. Moreover, the existence of credit weakness across a wide range of nonfinancial borrowings also challenges the notion that the recent credit slowdown was nothing more than the bursting of a speculative bubble in commercial real estate.[17]

The studies in this volume also indicate that the nature and causes of the recent credit supply problems were markedly different from those of earlier credit crunches. In particular, unlike earlier crunches, the credit supply problems during 1989-92 were broadly spread across both bank and nonbank sources of credit, with stringent loan terms and nonprice credit rationing persisting over a relatively long period. Also, unlike earlier episodes, the recent credit crunch was marked by a capital shortage and was driven to an important degree by market forces. Set in motion by the widespread balance sheet difficulties of both borrowers and lenders, these market forces led to the correction process for the debt overhang of the 1980s.

The sharp, prolonged, and widespread decline in credit supply over 1989-92 would be expected to have had significant adverse consequences for the economy. It is therefore not surprising that the credit crunch has sometimes

[15] See Friedman (1993c) for a recent perspective on the role of financial variables in guiding monetary policy

[16] See Meltzer (1991) and Klieson and Tatom (1992) for particularly strong expressions of this view.

[17] See, for example, Jordan (1992)

been blamed for much of the weakness in economic activity since 1989. Yet the studies in the volume do not support this conclusion. On the contrary, they clearly indicate that credit supply problems were not the primary or dominant cause of the weakness in economic activity over 1989-92. Nevertheless, the studies do suggest, at least collectively, that credit constraints almost surely made some contribution to that weakness, and probably played a significant role in slowing the economy before the recession and in impeding the recovery process.[18]

The apparent inconsistency between sharply reduced credit availability and its modest effects on economic activity is not hard to reconcile. The credit crunch has by no means been the only factor depressing the economy. Other factors that contributed significantly to the 1990-91 recession and the subsequent weak recovery include the Gulf War, the defense build-down, relatively tight fiscal policy throughout the period, generally high real long-term interest rates, low levels of consumer confidence, corporate restructuring, and the commercial real estate depression that followed the great buildup of excess capacity during the 1980s. With so many powerful forces slowing economic activity in recent years, one can hardly expect the credit supply problems to dominate the picture. Moreover, the confluence of wide-ranging adverse influences on economic activity and the market-driven elements in the credit crunch make it difficult to isolate empirically the effects of credit constraints on the economy.

Finally, this collection of studies suggests that credit supply problems over 1989-92 contributed to weakening the influence of monetary policy actions on the economy and to reducing the usefulness of M2 and other financial variables as policy guides. Whether recent shifts in credit supply factors will have any long-term consequences for the conduct of monetary policy is far from clear, however. In the absence of further changes in the regulatory environment, the long-term effect will depend to a considerable extent on the durability of recent changes in attitudes toward debt on the part of lenders and borrowers—specifically, whether lenders will continue to follow the recent risk-averse approach to lending and whether the decline in the desired ratio of debt to income will turn out to be permanent. The new conservative attitude toward debt may persist, but such an outcome is by no means certain.

[18] Perry and Schultz (1993) and Friedman (1993b) reach a roughly similar conclusion.

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