



BOARD OF GOVERNORS  
OF THE  
**FEDERAL RESERVE SYSTEM**  
WASHINGTON, D. C. 20551

OFFICE OF STAFF DIRECTOR FOR  
MONETARY AND FINANCIAL POLICY

STRICTLY CONFIDENTIAL (FR)  
CLASS II - FOMC

July 2, 1986

TO: Federal Open Market Committee

FROM: Donald L. Kohn *DLK*

Attached are two memoranda discussing issues raised at FOMC meetings earlier this year. One analyzes the growth of excess reserves in recent years. The other covers a variety of issues related to debt growth, including the effects of "double counting" arising primarily from financial intermediation activities by the federal and state and local governments and of corporate debt issuance to finance share retirements. This memo also discusses some of the more general issues involved with the rapid growth of debt relative to income in recent years, and compares the growth and variability of various debt-to-income ratios to similar ratios using several measures of money and liquid assets.

Attachments

Strictly Confidential (FR)  
Class II - FOMC

July 1, 1986

CARDER

AN ANALYSIS OF EXCESS RESERVES\*

1. SUMMARY

Excess reserves have increased substantially over the 1980's, from about \$200 million in the first quarter of 1980 to around \$850 million in the current quarter, reaching recent peaks in 1985:Q4 and 1986:Q1.<sup>1</sup> This memorandum attributes the trend increase to a number of factors and points out that there have been two distinct periods of growth in excess reserves. Between 1980 and 1983, increases in the number of reserve accounts (owing to the implementation of the Monetary Control Act) appeared most important in explaining the growth in excess reserves. Over the last two years other factors have become important, including a rise in the volume of transactions through reserve accounts and, to a lesser extent, the decline in the opportunity cost of holding reserve balances. An observed bulge around year-end in excess reserves appears to be seasonal in nature and likely is attributable in December and January to the seasonal increases in reserve account activity and, in February, to the lag in application of vault cash under contemporaneous reserve requirements.

2. EXCESS RESERVES IN PERSPECTIVE

The increase in excess reserves during the first half of the 1980s reversed a long downtrend in excess reserves from an average of \$700 million

\* Prepared by David Small and Brian Madigan (Division of Research and Statistics) under the general direction of Stephen H. Axilrod. Helpful comments were provided by Thomas Brady, Donald Kohn, and David Lindsey. Research assistance was provided by Chinhui Juhn.

1. All data for the second quarter of 1986 are preliminary based on data through June 4, 1986.

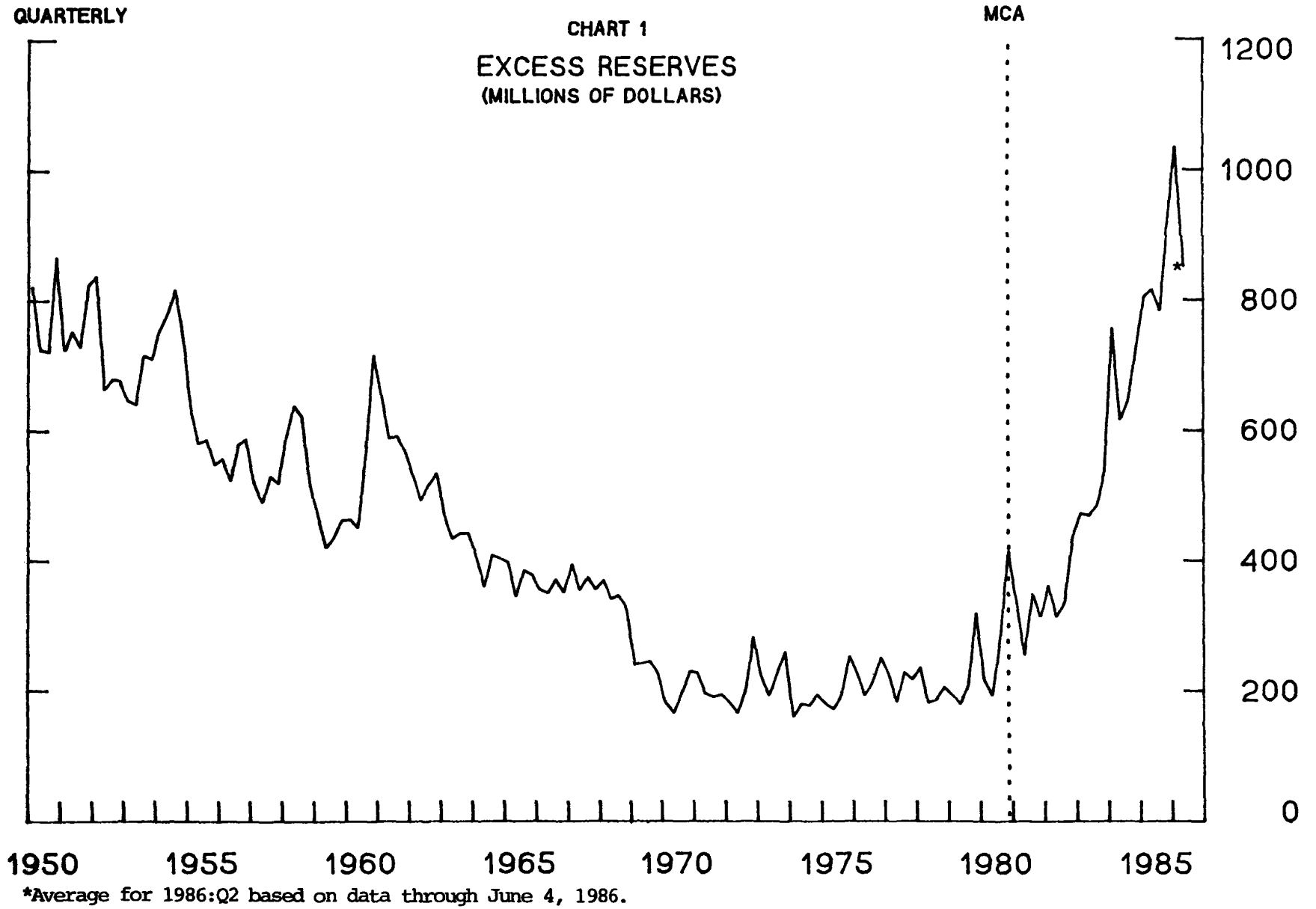
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in the early 1950s to around \$200 million in 1970 (see chart 1).<sup>1</sup> The drop in excess reserves over that period was associated with a number of factors: an increase in the opportunity cost of holding excess reserves; the progressive development and integration of national money markets--especially the revitalization of the federal funds market--which lowered costs of making reserve adjustments; and the September 1969 transition from contemporaneous reserve requirements to the lagged system that remained in force until February 1984 and the simultaneous authorization of the surplus reserve carryover provision which allowed the application of the preceding period's reserve surpluses to the current maintenance period.<sup>2</sup> During the 1970s, excess reserves showed no trend, averaging just over \$200 million.

However, during the 1980s excess reserves have climbed steadily. The increase in excess reserves appears to have received its initial impetus from the implementation of the Monetary Control Act (MCA) in 1980 (see chart 1). The MCA subjected all depository institutions to reserve requirements (other than small institutions that were initially deferred and then exempted under the Garn-St Germain Act of 1982) and led to a sharp increase in the number of

1. Excess reserves for an individual institution are the difference between actual reserve balances held (including as-of adjustments) and the required balance. The required balance is the required reserve balance (total required reserves not met by vault cash and not passed through a correspondent) plus the required clearing balance, plus any required balance accepted by the institution on behalf of its pass-through respondents. A required clearing balance is an amount that an institution may be required to maintain with a Reserve Bank to defray Reserve Bank service charges. This measure of excess reserves does not include any balance surpluses or deficiencies carried in from the previous maintenance period, nor does it include any vault cash held in excess of reserve requirements.

2. The decline in excess reserves during the 1950s and the 1960s was interrupted by changes in Regulation D in 1959 and 1960 permitting the application of vault cash to reserve requirements, which appeared to temporarily reduce required reserve balances below levels needed for clearing.



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accounts maintained at Federal Reserve Banks. Since reserve accounts tend to average positive levels of excess reserves, these new accounts contributed to the increase in excess reserves. The phase-down in reserve requirements of member banks mandated by the MCA, which occurred between 1980 and 1984, also may have tended to boost demands for excess reserves by some member banks by reducing balances needed to meet reserve requirements below levels necessary for clearing purposes. The Garn-St Germain Act may have had a similar effect on excess reserves immediately after December 1982 by exempting at each institution the first \$2 million of reservable liabilities from reserve requirements.

Another significant change in the reserve management environment was the implementation of contemporaneous reserve requirements (CRR) in February 1984. Excess reserves did increase sharply at that time. However, most of that increase evidently was temporary; growth in excess reserves over most of the 1984-85 period does not appear out of line with earlier trend growth. Moreover, excess reserves continued to grow strongly well after the last of the CRR-related changes was implemented in February of 1985.<sup>1</sup>

As shown in table 1, the increases in excess reserves since CRR have been fairly broad-based, with nonmember banks, thrifts, and foreign-related institutions all experiencing strong trend increases. Excess reserves of member banks, while not increasing on balance, do show a

<sup>1</sup> For the first six months of CRR, the carryover provision for required reserves--2 percent under LRR--was expanded to either \$25 thousand or to 3 percent of the sum of required reserves plus required clearing balances, all less the clearing balance band, whichever is larger. For the second six months of CRR the carryover percentage was 2-1/2 percent, before returning to 2 percent in February of 1985.

Table 1

Excess Reserves  
(\$ millions)

Quarter	Total (1)	Consistent Weekly-Reporting Depositories <sup>1</sup> (2)	Other <sup>2</sup> (3)	Memo: Consistent Weekly-Reporting Depositories			
				Member Banks (4)	Nonmember Banks (5)	Thriffs (6)	Foreign Related (7)
1984:Q2	615	458	157	269	65	71	55
1984:Q3	643	482	161	304	67	57	54
1984:Q4	722	563	159	316	74	110	63
1985:Q1	805	632	173	334	92	141	64
1985:Q2	816	627	189	296	89	163	80
1985:Q3	783	588	195	245	102	152	89
1985:Q4	913	716	197	324	116	189	87
1986:Q1	1,035	829	206	366	137	214	113
1986:Q2 <sup>pe</sup>	851	617	234	239	121	162	94

1. Consistent weekly-reporting depositories include all depository institutions that were weekly deposit reporters from 1984:Q2 to the present. This sample of institutions is consistent across the panel shifts that occur in September of each year. However, due to mergers and banks going out of business, the number of institutions falls by about 150 over the sample period.

2. Includes all institutions that were not weekly deposit reporters consistently from 1984:Q2 to the present, that is, institutions that at least some of the time were quarterly or annual deposit reporters, nonreporters, or institutions that are not otherwise classified, such as industrial banks. Also included are Federal Home Loan Banks, Corporate Central Credit Unions, as well as any statistical discrepancy.

pe--preliminary estimate based on data through the maintenance period ending June 4, 1986.

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a pronounced seasonal pattern, with high levels during the fourth and first quarters of the year.

While aggregate excess reserves in 1986:Q2 are little changed on balance from 1985:Q2--see columns (1) and (2) of Table 1--trend growth has continued at the medium and small sized institutions, as presented in Table 2. By contrast, the top fifteen and other large institutions, which tend to have highly variable levels of excess reserves over time, made a smaller contribution to excess reserves during 1986:Q2 than they did a year earlier, partly masking the underlying trend growth at smaller institutions.

### 3. AN ANALYSIS OF EXCESS RESERVES IN THE 1980s

This section discusses seven principal factors that have affected the reserve management environment in recent years. Growth in the number of new reserve accounts is discussed first, and then the memorandum reviews the factors that would induce changes in excess reserves at already-existing accounts.

As background it may be useful to distinguish between two motivations for holding reserve balances on the margin: the need to avoid account overdrafts and the need to meet reserve requirements not met by vault cash. In general, institutions hold reserves on a daily basis to avoid overdrafts and on a maintenance period basis to meet reserve requirements. Thus, throughout a maintenance period institutions may find their marginal reserve balances being dictated by one and then the other of these concerns. For some institutions, required reserve balances are so high relative to clearing needs that reserves are held at the margin only to meet reserve requirements--account overdrafts are not a consideration. But in other cases, required

Table 2

Excess Reserves by Size and Type of Institution  
(\$ million)

	<u>1984:Q2</u>	<u>1984:Q3</u>	<u>1984:Q4</u>	<u>1985:Q1</u>	<u>1985:Q2</u>	<u>1985:Q3</u>	<u>1985:Q4</u>	<u>1986:Q1</u>	<u>1986:Q2<sup>pe</sup></u>
Top 15 <sup>1</sup>	21	44	19	19	-4	14	11	57	-13
Large <sup>2</sup>	52	51	97	154	182	94	185	206	112
Member Banks	16	33	45	56	67	9	57	54	31
Nonmember Banks	5	1	5	10	11	7	20	25	14
Thrifts	29	13	41	77	87	69	95	107	59
Foreign Related	3	4	6	10	17	10	13	20	9
Medium <sup>3</sup>	84	93	120	115	110	129	156	193	155
Member Banks	40	43	56	53	51	41	57	60	46
Nonmember Banks	11	11	15	12	8	18	24	29	27
Thrifts	24	24	37	36	42	46	54	61	55
Foreign Related	15	15	12	14	9	24	20	44	27
Small <sup>4</sup>	302	294	327	341	339	352	364	374	361
Member Banks	198	184	197	204	182	181	199	196	174
Nonmember Banks	49	55	54	69	71	77	72	84	80
Thrifts	18	19	31	27	34	37	40	47	48
Foreign Related	36	34	45	41	53	55	52	49	58

pe—preliminary estimate based on data through the maintenance period ending June 4, 1986.

1. The top fifteen member banks are the fifteen largest member banks based on total deposits.

2. A large institution is one not in the top fifteen banks but one which has total deposits greater than \$750 million. The number of large institutions grew from 462 to 586 over the sample period.

3. A medium institution has total deposits greater than \$200 million but less than or equal to \$750 million. The number of medium institutions grew from 1,233 to 1,437 over the sample period.

4. A small institution has total deposits less than or equal to \$200 million. The number of small institutions fell from 9,336 to 8,879 over the sample period.



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reserve balances can be so low (including zero) relative to clearing needs that reserves are held on the margin only for clearing purposes. Some of these institutions may choose to hold required clearing balances, which earn credits that can be used to defray charges for Federal Reserve Bank services. Balances above the sum of required reserve balances, if any, and required clearing balances, if any, generate positive amounts of excess reserves, while balances below it cause negative values of excess reserves.

### 3.1 Growth in the Number of Active Accounts

Over the last five years, the importance of growth in the number of active reserve accounts as an influence boosting overall excess reserves has lessened considerably.<sup>1</sup> Within two and one half years after the implementation of the MCA in late 1980, 2,600 new reserve accounts were opened by nonmember institutions. These newly active accounts accounted for most of the \$200 million increase in excess reserves between the implementation of MCA and third quarter of 1983.<sup>2</sup> However, the role of newly active accounts in the growth of excess reserves over the last two years is considerably smaller than immediately following the MCA. Only 630 and 380 new active accounts were opened in 1984 and 1985, respectively.

As evidence that over the last two years factors other than continued response to the MCA have played a major role, the upper panel of Table 3 examines excess reserves at weekly reporting institutions that

1. Active accounts are defined in this memorandum as those accounts with positive balances or with a zero balance and negative excess reserves. These accounts are considered active in that they affected the aggregate level of excess reserves.

2. These estimates were taken from "Excess Reserves Under MCA", Board staff memorandum from David Jones to Mr. Axilrod, November 10, 1983.

Table 3

Excess Reserves at Depository Institutions  
with Continuously Active Accounts  
(\$ millions)

Quarter	Consistent Weekly-Reporting Depositories (1)	Memo: Consistent Weekly Reporting Depositories			
		Member Banks (2)	Nonmember Banks (3)	Thrifts (4)	Foreign-Related (5)
1984:Q2	438	263	61	69	45
1984:Q3	451	298	60	50	43
1984:Q4	512	310	66	81	53
1985:Q1	569	325	79	118	47
1985:Q2	556	288	74	131	63
1985:Q3	509	240	82	115	71
1985:Q4	623	320	92	142	68
1986:Q1	717	359	104	160	94
1986:Q2 <sup>pe</sup>	518	232	84	125	77
Number of Institutions	6,010	3,662	1,300	714	335

Excess Reserves During 1986:Q1 and 1986:Q2 at Depository Institutions  
That Had Inactive Accounts Throughout 1984:Q2

	1986:Q2 <sup>pe</sup>		1986:Q1	
	Excess Reserves (\$ millions) (1)	Average Number of Active Accounts (2)	Excess Reserves (\$ millions) (3)	Average Number of Active Accounts (4)
Total	62	912	75	847
By Type of Institution				
Member	3	32	2	28
Nonmember	28	502	25	455
Thrift	27	344	42	330
Foreign-Related	4	33	7	34
By Type of Account				
With a Required Reserve Balance	5	233	13	202
With No Required Reserve Balance	57	678	63	645

pe--preliminary estimate based on data through the maintenance period ending  
June 4, 1986.

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continuously had active accounts from 1984:Q2 to 1986:Q2.<sup>1</sup> These institutions increased their excess reserves over this period by \$80 million--encompassing about 50 percent of the increase in excess reserves since CRR at all consistent weekly reporters. While these continuously active accounts made up a significant portion of the \$236 million increase in aggregate excess reserves from 1984:Q2 to 1986:Q2, they accounted for a larger portion of the increase in excess reserves through 1986:Q1, suggesting that they were more affected by this seasonal effect. Over the period through 1986:Q1, they accounted for \$279 million of the \$425 million increase in aggregate excess reserves.

The influence of accounts opened since 1984 is examined in the lower panel of Table 3. This panel contains data for weekly reporting institutions that did not have active accounts (and thus had no excess reserves) anytime in 1984:Q2, but that did open new accounts sometime before or during 1986:Q2. These institutions held \$62 million of excess reserves on average during 1986:Q2, thus accounting for only about 40 percent of the \$159 million increase in excess reserves at the consistent weekly reporters over the last two years (see Table 1, column 2). (It should be noted that some of \$77 million increase in excess reserves at the "Other" institutions shown in Table 1, column 3 also may be at institutions opening new accounts.)<sup>2</sup>

1. Much of the data presented in this memorandum begins in 1984:Q2. This is not meant to implicitly attribute any particular significance to the implementation of CRR in 1984:Q1, but is a consequence of changes in data availability with the implementation of CRR.

2. In addition to the \$62 million of excess reserves at accounts inactive in 1984:Q2 and the \$80 million increase in excess reserves at continuously active accounts, there was a \$17 million increase from 1984:Q2 to 1986:Q2 at consistent weekly deposit reporters that were active sometime in 1984:Q2 but not consistently active from 1984:Q2 to 1986:Q2. These three groups account for all of the \$159 million increase over that period at consistent weekly reporters.

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Presumably, these institutions, which already had ample time under MCA to open new accounts, were responding to many of the same forces (discussed in sections 3.2 to 3.7 below) that were inducing higher levels of excess reserves in accounts already active in 1984.

### 3.2 The Implementation of Contemporaneous Reserve Requirements

The February, 1984 introduction of CRR involved several regulatory changes. Most importantly, the lag between the ends of the computation and maintenance periods was shortened from 14 to 2 days for required reserves against transactions accounts.<sup>1</sup> This made reserve requirements uncertain during much of the maintenance period, and therefore could have increased demands for excess reserves. Other changes under CRR included lengthening the maintenance and computation periods from 7 to 14 days and expanding the carryover provisions during the first year of CRR. Because the carryover percentage (after the transition period) remained at 2 percent and the length of the maintenance period was doubled, a permanent effect of the switch to CRR was to double the size of account deficiencies or surpluses incurred on the last day of the maintenance period that could be applied to the next maintenance period. This additional flexibility in reserve management would have tended to reduce demands for excess reserves. Thus, on balance, CRR would not necessarily have increased excess reserve demands.

1. The computation period is the fourteen-day period over which averages of the various reservable liabilities are taken to determine required reserves. The maintenance period is the fourteen-day period over which the required reserves must be held. The lag between the end of the computation period and the end of the maintenance period is two days for required reserves against transactions deposits and thirty days for required reserves against nontransactions deposits.

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Two pieces of evidence suggest that the switch to CRR did not significantly increase excess reserves after an initial adjustment phase. First, staff interviews in mid-1985 with reserve managers of large money center banks and a few small institutions revealed that they felt the switch to CRR did not, in fact, cause any particular increase in the difficulty of reserve management.<sup>1</sup> These reserve managers noted that the two-day lag between the ends of the computation and maintenance periods is normally sufficient to obtain firm information on the required balance by the last day of the period, when final adjustments to actual balances still can be made. It was emphasized by many banks that the new uncertainties about required reserves were dwarfed by uncertainties about actual levels of reserve balances, unrelated to CRR.

Second, evidence on the effects of CRR can be obtained by comparing changes in excess reserves at accounts of institutions bound by reserve requirements with changes at nonbound accounts, with the latter accounts being used solely for clearing purposes and paying for services.<sup>2</sup> While the switch to CRR significantly changed the rules of reserve management for bound institutions, the only change for pure clearing accounts was the lengthening of the maintenance period over which account balances are averaged to meet the required balance. This adjustment made reserve management for such accounts easier and, if anything, would have contributed to a decline in excess

1. See "Results of the Survey on Reserve Management Practices Under CRR", Board and New York Federal Reserve Bank staff memorandum to Mr. Kohn from Glassman, Hamdami, Meulendyke, and Small, October 7, 1985.

2. An institution is bound by reserve requirements if its vault cash is insufficient to meet reserve requirements and thus if it has a positive required reserve balance. A nonbound institution meets all its reserve requirements with vault cash, although it may have a reserve account used for clearing purposes.

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reserves. In a previous staff study, growth in excess reserves at these two types of accounts was compared. After excluding excess reserves during the very volatile quarter-end maintenance periods and also excluding the top 15 banks, excess reserves at bound and nonbound institutions behaved similarly after CRR.<sup>1</sup> For example, over the three quarters before CRR excess reserves within a sample of 1,188 bound institutions averaged \$103 million and increased to an average level of \$107 million during the first four quarters of CRR. Within a sample of 849 nonbound institutions, the average level of excess reserves over these two periods increased from \$42 million to \$46 million.<sup>2</sup> This suggests that the underlying trend growth in excess reserves was not significantly different across these two types of accounts.

Thus, it appears unlikely that CRR led to a permanent increase in demands for excess reserves. Even if CRR had some effect on excess reserves, with the final CRR-related change over a year in the past, CRR itself could not have accounted for the strong increases during 1985:Q4 and 1986:Q1, and will not be tending to alter excess reserves holdings in the future.

### 3.3 Increased Reserve Account Activity

The increase in excess reserves apparently has in part been a result of an increase in reserve account activity; as transactions through reserve

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1. The top 15 banks were excluded since both before and after the introduction of CRR they wasted very little excess reserves after carryover provisions are taken into consideration.

2. These data are taken from "Excess Reserves Under Lagged and Contemporaneous Reserve Requirements", Board staff memorandum to Mr. Kohn from David Small and Peter Lloyd-Davies, September 12, 1985. In this study excess reserves were calculated so as to include balances carried into the period, but were not adjusted for balances successfully carried out of the period and into the next period. The subsamples of bound and nonbound institutions were limited to institutions that had the relevant characteristic for the entire sample period.

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accounts have grown, more and more institutions seem to have been influenced by clearing motives to raise their total reserve balance. That is, as reserve account activity increases, so does the opportunity for an unexpectedly large clearing against the account. As a result, reserve managers may have felt that required balances were insufficient to protect against overdrafts and in response raised their account balances. Unfortunately, direct measures of debits to reserve accounts are not available. In establishing increased reserve account volume and uncertainty as factors behind the increases in excess reserves, proxy measures of reserve account activity must be used. One proxy for debits to reserve accounts is debits to depository institution liability accounts.<sup>1</sup> While not all debits to liability accounts cause debits to reserve accounts (such as "on-us" checks), it might be assumed that the ratio of reserve account debits to liability account debits is roughly constant.

These debits data, represented in table 4 and chart 2, show that between 1970 and 1985 total debits generally increased between 15 and 25 percent per year. At the same time, reserve balances (middle panel of chart 2) showed much more pronounced swings, increasing on balance between 1970 and 1980, then falling between 1980 and 1984, only to rise again during 1985. Dividing debits by reserve balances to obtain a proxy for the turnover rate of reserve balances yields an interesting picture, shown in the lower panel of chart 2. Turnover increased at a 17 percent annual rate between 1970 and

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1. These data are obtained from the series used to construct MT (the experimental transactions-weighted money stock), which are derived in part from the Board's debits survey. Included in these data are debits to demand deposits, OCDs, MMDAs and Telephone Transfer Accounts. All debits to such accounts are included--debits for financial transactions as well as for purchases of real goods and services.

Table 4

Total Debits  
(billions of dollars, not seasonally adjusted)

	<u>Total Debits</u>	<u>Growth in Debits</u> <sup>1</sup>
1970:Q4	11,000	
1975:Q4	23,534	16.4
1980:Q4	58,942	20.2
1981:Q4	73,745	25.1
1982:Q4	82,990	12.5
1983:Q4	104,090	25.4
1984:Q4	117,610	13.0
1985:Q4	150,089	27.6
1984:Q1	103,951	0.5
Q2	109,764	24.3
Q3	109,360	-1.5
Q4	117,610	33.8
1985:Q1	120,312	9.5
Q2	130,538	38.6
Q3	134,417	12.4
Q4	150,089	55.5
1986:Q1	152,530	6.7

Ranking of Periods from 1984:Q2 to 1986:Q1  
by Change in Total Debits  
(billions of dollars, not seasonally adjusted)

	<u>Change in Total Debits</u>	<u>Change in Reserve Balances</u> <sup>2</sup>
1985:Q4	15,672	2.5
1985:Q2	10,226	1.7
1984:Q4	8,250	1.1
1984:Q2	5,813	0.5
1985:Q3	3,879	1.1
1985:Q1	2,702	0.6
1986:Q1	2,441	-0.3
1984:Q3	-404	-0.4

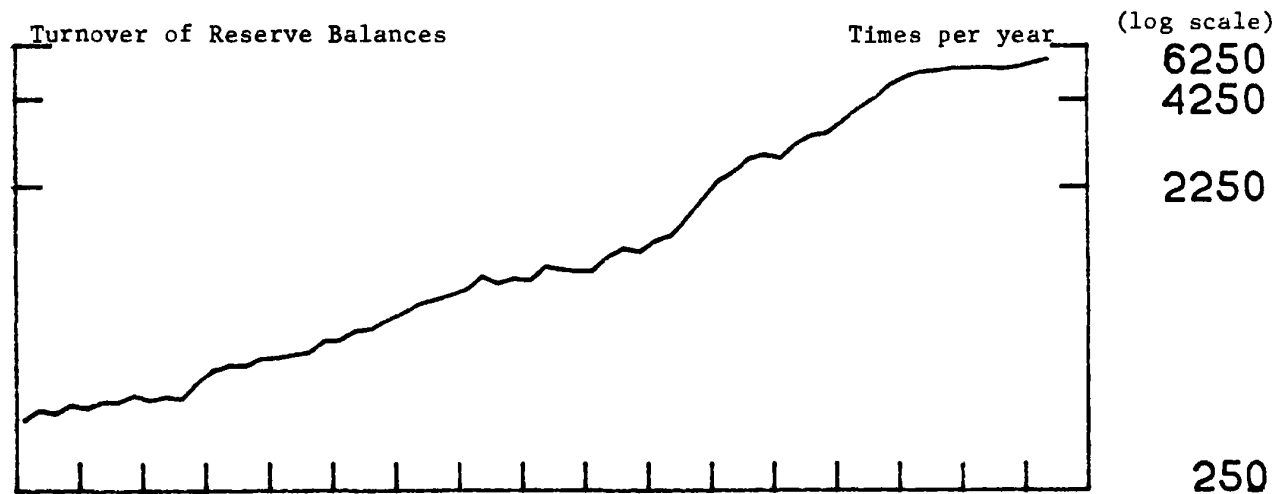
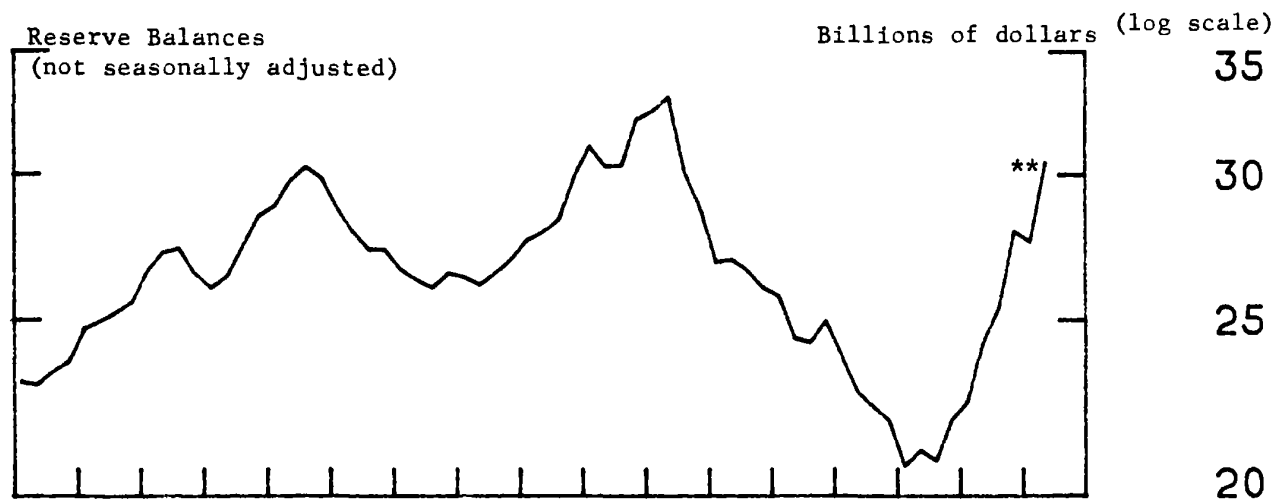
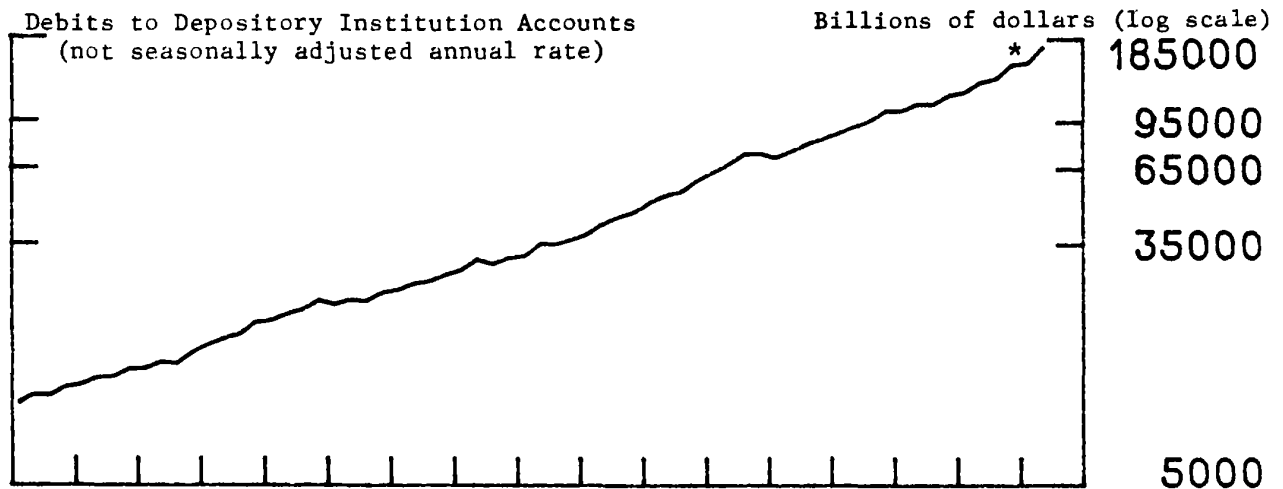
1. From previous listed period except for 1984:Q1 which is from 1983:Q4.  
All figures at a compound annual percentage rate.

2. Change from previous quarter.



Chart 2

Debits, Reserve Balances, and Turnover  
(quarter)



1970                      1974                      1978                      1982                      1986

\* Based on preliminary data through April.

\*\* Based on preliminary reserve balance data through early June.

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1980. Between 1980 and 1983, as reserve balances fell because of the phase-down of reserve requirements at member banks, turnover surged to a 33 percent annual rate. This suggests that, for the banking system as a whole, required reserve balances were more than adequate to accommodate clearing needs through 1983, and that as reserve balances fell with required reserves, the clearing needs could be met by more active use of the remaining reserve balances.

But over 1984 and 1985, turnover of reserve balances has essentially leveled off: increases in debits have been roughly matched with proportional increases in reserve balances, perhaps indicating that relying on further increases in turnover to accommodate the continuing increases in debits would have entailed unacceptable increases in the risk of overdrafts or account deficiencies.

Furthermore, on a quarter-average basis over the last two years increases in debits and reserve balances have been closely linked. The lower panel of table 4 ranks the eight quarters since 1984:Q2 for which debits data are available by the change in total debits. As the second column of the panel indicates, the change in reserve balances correlates very closely with the change in total debits in terms of rank ordering. Only in one case (1984:Q2) is the order disturbed: based on its ranking with respect to the change in total debits, a larger change in reserve balances would have been expected. However, the introduction of CRR led to a temporary increase in excess reserves and reserve balances in 1984:Q1, holding down the change in reserve balances in 1984:Q2.

While table 4 shows a tendency for debits to grow especially rapidly in the fourth quarter, a more detailed examination of debits on a monthly

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basis indicated that increases are concentrated in December and January.<sup>1</sup> A model of excess reserves used by the Board staff, which does not include a proxy for reserve account activity, tends to underpredict during these months--as would be expected if the heightened account activity caused institutions to hold more excess reserves.<sup>2</sup>

### 3.4 Declining Interest Rates

Short-term interest rates have declined substantially on balance since 1981, reducing the incentive for reserve managers to economize on excess balances. There is no consensus among empirical investigators concerning the interest sensitivity of excess reserves. Most econometric studies have found little or no long-run interest sensitivity; a model constructed by Board staff implies an elasticity of only about one-eighth. Even if the interest elasticity of excess reserves were substantially larger--say one-third--the increase in excess reserves over the 1980s explained by interest rates would be only \$100 million, compared with the total \$700 million increase.<sup>3</sup>

Moreover, interest rates are unlikely to explain much of the bulge in excess reserves around the end of 1985 and early 1986. Prior to the recent declines in the funds rate since early March, the funds rate had been

1. A preliminary investigation of end-of-day reserve balances at individual institutions indicates the variability of these balances around their maintenance period average also has tended to increase in December and January over the last two years.

2. The model producing these results is on a maintenance period basis, and includes a time trend, carryover, the change in required balances and quarter-end dummy variables.

3. Available econometric models of excess reserves demand are misspecified in that a variable measuring reserve balance uncertainty is not included. Moreover, such models are estimated over periods of time when the relative importance of overdraft and reserve requirement constraints may have changed. These considerations cast doubt on the reliability of estimated elasticities.

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little changed on balance for nearly nine months. Only implausibly long lags in adjustment by depository institutions could account for excess reserves continuing to increase during 1985:Q4 and 1986:Q1 in response to earlier rate declines.

### 3.5 Tighter System Policy on As-Of Adjustments

Effective October 11, 1984, the Federal Reserve tightened its procedure for issuing as-of adjustments and made the policy on as-ofs more uniform across Reserve Banks.<sup>1</sup> These limitations reduced a potential source of flexibility in reserve management, and--other things equal--perhaps led to a one-time increase in excess reserves demand. Staff interviews in early 1985 with reserve managers at money center banks revealed that some managers felt the new policy complicated the reserve management environment, contributing to increases in excess reserves a year or so ago. However, it seems unlikely that these new guidelines played a significant role in the continuing increases in excess reserves since 1984:Q4.

### 3.6 System Policy on Daylight Overdrafts

The System's policy on daylight overdrafts, requiring depository institutions to set caps on their overdrafts or to avoid overdrafts altogether, formally took effect on March 27, 1986. For the largest institutions affected, holding additional excess reserves would not have been an economical response

<sup>1</sup> As-ofs are balance sheet memorandum items used by Reserve Banks to adjust the reserve positions of their depository institutions. The tighter procedure specifies that as-ofs used to correct the cumulative effects of errors attributable to depositories generally must be applied to the maintenance period in which the error occurred; previously, some Reserve Banks apparently allowed depositories some leeway in choosing the period to which these as-ofs would be applied. Certain other as-of practices, which in effect allowed depositories to manage their reserve position after the fact, were either disallowed or tightened considerably. In certain cases in which it is appropriate to offer a depository a choice of maintenance periods in which to apply as-ofs to correct for Reserve Bank errors, the depository must now promptly commit itself to a choice.

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to the policy. The volume of their reserve flows and the potential size of overdrafts are so large relative to their required reserve balances that balances would have to be increased manyfold to avoid daylight overdrafts without other changes. Based on Federal Reserve Bank discussions with commercial banks, it seems more likely that liability managers are conforming to the policy by purchasing a larger proportion of term and continuing contract funds and adopting other practices to reduce the volume of funds that are sent early in the day in anticipation of replenishment later. Most of the excess overdrafts that existed several months ago (measured using the current, initial caps) has been eliminated.

Smaller institutions concerned about the potential for daylight overdrafts may hold larger end-of-day balances--contributing to excess reserves--so that as overnight funds are sent out in the morning these balances will limit the amount of daylight overdrafts. Although the System's policy became formally effective in March, the thrust of the System's intentions to reduce daylight overdrafts had been well known to depository institutions for some months and could have contributed before then to a minor increase in desired end-of-day reserve balances by these smaller institutions. However, very few smaller institutions have been constrained by current caps and some of these may have adopted other methods to reduce their overdrafts.

### 3.7 The Role of Applied Vault Cash

Growth in vault cash used to meet reserve requirements will lead to increased levels of excess reserves if the resulting reductions in required balances are not met by equal declines in reserve balances. This may be the case if lower reserve balances would entail unacceptable risk of balance overdrafts or account deficiencies.

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Higher levels of vault cash used to satisfy reserve requirements may have been a factor behind the increased demand for excess reserves in recent years, since applied vault cash has increased strongly since 1980. This influence on required reserve balances was augmented by the fall in required reserves over these years due to the phase-down of member bank reserve requirements and the implementation of the Garn-St Germain exemption. Between 1980:Q4 and 1986:Q1, these factors resulted in a decline (from \$28.4 billion to \$26.5 billion) in balances required to be held at Federal Reserve Banks.

In addition to its relationship to the trend increase in excess reserves, vault cash appears to be amplifying a seasonal pattern in excess reserves around year end. As shown in table 5, required reserves plus required clearing balances reached a peak around year-end 1985 and fell \$1-1/2 billion by February. But applied vault cash, owing to its two reserve period (four week) lag, reached its apex during February (column 2). The falloff in required reserves during February and the increased applied vault cash resulted in a nearly \$3 billion drop between December and February in required balances and very possibly reduced required balances below levels with which some depository institutions could operate comfortably and thereby increased demands for excess reserves. However, by March applied vault cash had moved down about \$1-1/2 billion while required reserves plus required clearing balances had increased nearly \$1 billion, boosting the required balance by \$2-1/2 billion or so and tending to reduce the need to carry excess reserves. The upper panel of the table shows a similar pattern around year-end 1984 and in early 1985, supporting the view that high excess reserves in February may be an emerging seasonal phenomenon related to timing changes under CRR.

Table 5

Recent Movements in Applied Vault Cash  
and Excess Reserves  
(millions of dollars; not seasonally adjusted)

	(1) Required Reserves Plus Required Clearing Balance	(2) Applied Vault Cash	(3) (1)-(2) Required Balance	(4) Total Balance	(5) (4)-(3) Excess Reserves
1984: October	39031	18413	20617	21238	620
November	39712	18392	21320	22013	693
December	40994	18958	22036	22889	853
1985: January	41530	19547	21982	22727	745
February	40561	19857	20703	21607	903
March	40970	18429	22541	23307	766
April	42246	18435	22541	24549	738
May	41570	18666	22904	23708	804
June	42828	18985	23843	24748	905
1985: October	46175	20038	26137	26890	753
November	46933	19997	26936	27864	928
December	48577	20522	28055	29113	1058
1986: January	48466	21687	26780	27891	1111
February	47060	21953	25106	26198	1092
March	47910	20160	27750	28646	896
April	49633	19990	29643	30444	801
May	49178	20138	29040	29873	833
June <sup>p</sup>	50607	20356	30251	31144	893

p—partly projected.

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This particular seasonal effect becomes even more apparent when attention is restricted to bound institutions, since changes in vault cash do not affect reserve management at nonbound institutions. In particular, this seasonal effect is evident within a sample of 110 consistently bound member banks that had no required clearing balances and had deposits over \$1 billion dollars. (These institutions were chosen to obtain a sample of institutions that are likely to be aggressive reserves managers.) The pattern of excess reserves at these institutions over the last two years is a general one of alternately positive and negative levels of excess reserves--indicating an efficient use of carryover and little waste of reserve balances. However, an exception to this occurs late in the fourth quarter and in the first quarter when positive levels of excess reserves are generally maintained.<sup>1</sup> For these banks, the fall-off in required reserves in January and the rise in applied vault cash lasting into early February is especially apparent--leading to low required balances and sustained positive levels of excess reserves even for these relatively sophisticated reserve managers.

#### 4. OUTLOOK FOR EXCESS RESERVES

The principal factor increasing demands for reserve balances and excess reserves over the last two years appears to be the volume of transactions activity. The rising transactions volume, when taken together with swings in deposits and vault cash around year-end, has also contributed to a pronounced seasonal increase in excess reserves in the first quarter. The drop in short-term interest rates, tighter System policies on as-of

<sup>1</sup> During January and February of 1985 there were five consecutive maintenance periods with positive levels of excess reserves at this sample of bound large institutions; from November 1985 to February 1986 there were ten such periods. Excluding these periods, since April of 1984 these banks as a group never had more than two consecutive periods of positive levels of excess reserves.



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adjustments and daylight overdrafts, and trend movements in applied vault cash relative to required reserves also may have tended to boost excess reserves, but probably to a lesser extent.

It seems likely that demands for excess reserves will remain about level over the third quarter, in the absence of significant changes in securities market activity and transactions volume. Subsequently, seasonal movements in the level of applied vault cash and transactions volume probably will tend to boost excess reserves around year-end. Over time, assuming transactions volume--perhaps after some respite--continues to increase at its trend rate of about 20 percent per year, demands for reserve balances are likely to continue to increase.

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July 2, 1986

DEBT AGGREGATE ISSUES\*

CARDED

I. Introduction and Conclusion

Debt growth in recent years has far outpaced expansion of GNP after moving in rather close alignment for about a quarter of a century. Chart 1 illustrates that the ratio of debt outstanding of domestic nonfinancial sectors relative to GNP began climbing around 1982 and subsequently soared well above the range that had prevailed since the early 1950s. The chart also shows that the unusual rise in recent years has been evident in both the federal and nonfederal components of this debt aggregate.

Rapid expansion in debt relative to domestic output in recent years has not been unique to the United States. Estimates of similar debt aggregates in relation to current-dollar output are shown in chart 2 through 1984 for three other countries in addition to the United States. They, too, show sizable increases in the early 1980s, although in the case of Germany and Japan the debt ratio had been trending upward for a longer period.

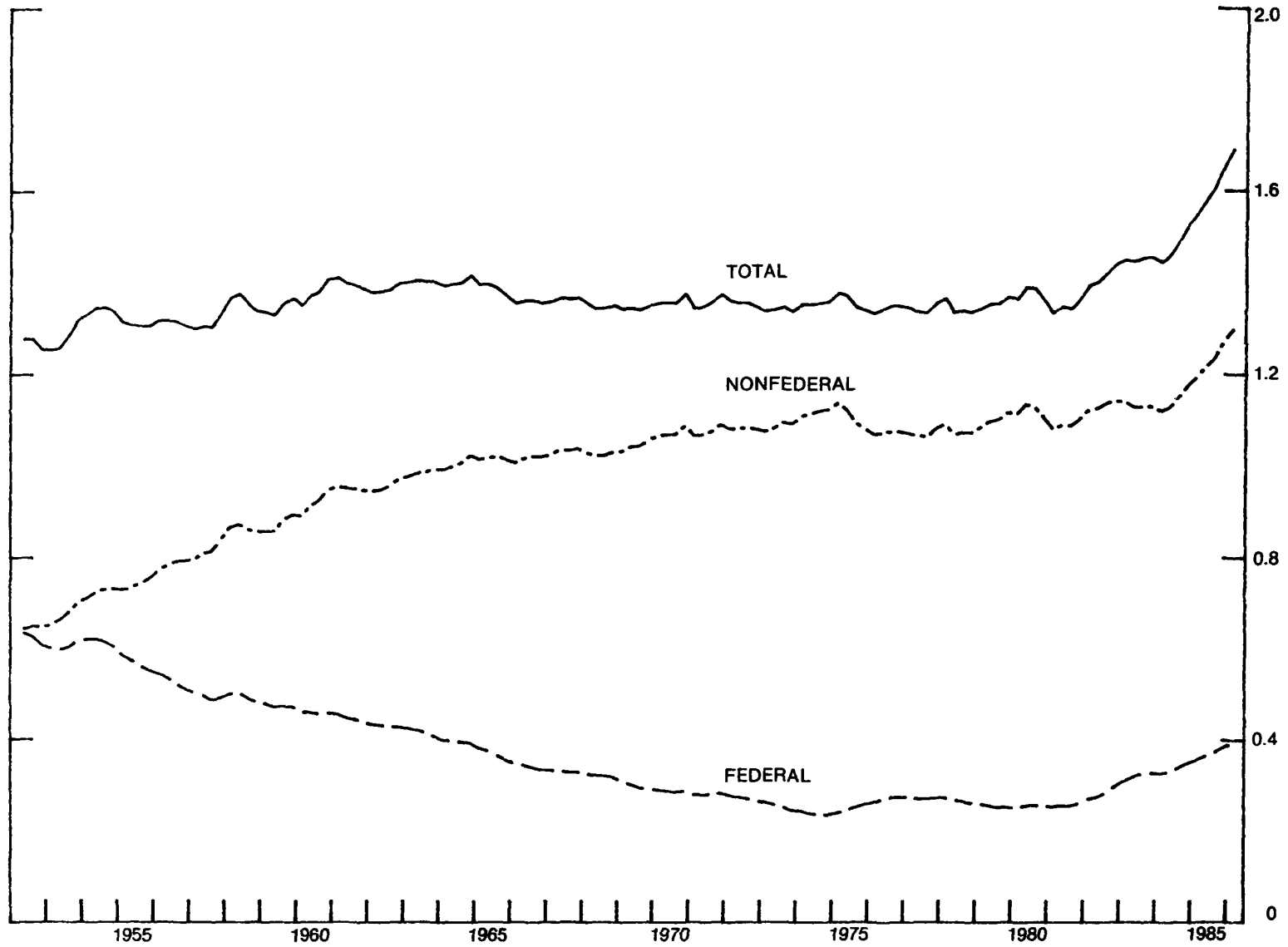
In assessing recent U.S. debt growth, it is important to keep in mind that there is little theoretical support for expecting debt and GNP or spending to move in lock-step over time. Indeed, chart 3 illustrates that the stability in the ratio of debt to GNP that characterized the period from the 1950s to the early 1980s was not evident in earlier years.

Several influences appear to be behind the heavy borrowing by nonfinancial sectors in recent years. Some relate to underlying economic forces. The wave of corporate share retirements financed by debt and large

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\* Prepared by Thomas D. Simpson and Deborah J. Danker, with the assistance of Rachel Valcour, all in the Division of Research and Statistics. Mr. Axilrod provided general direction for this study.

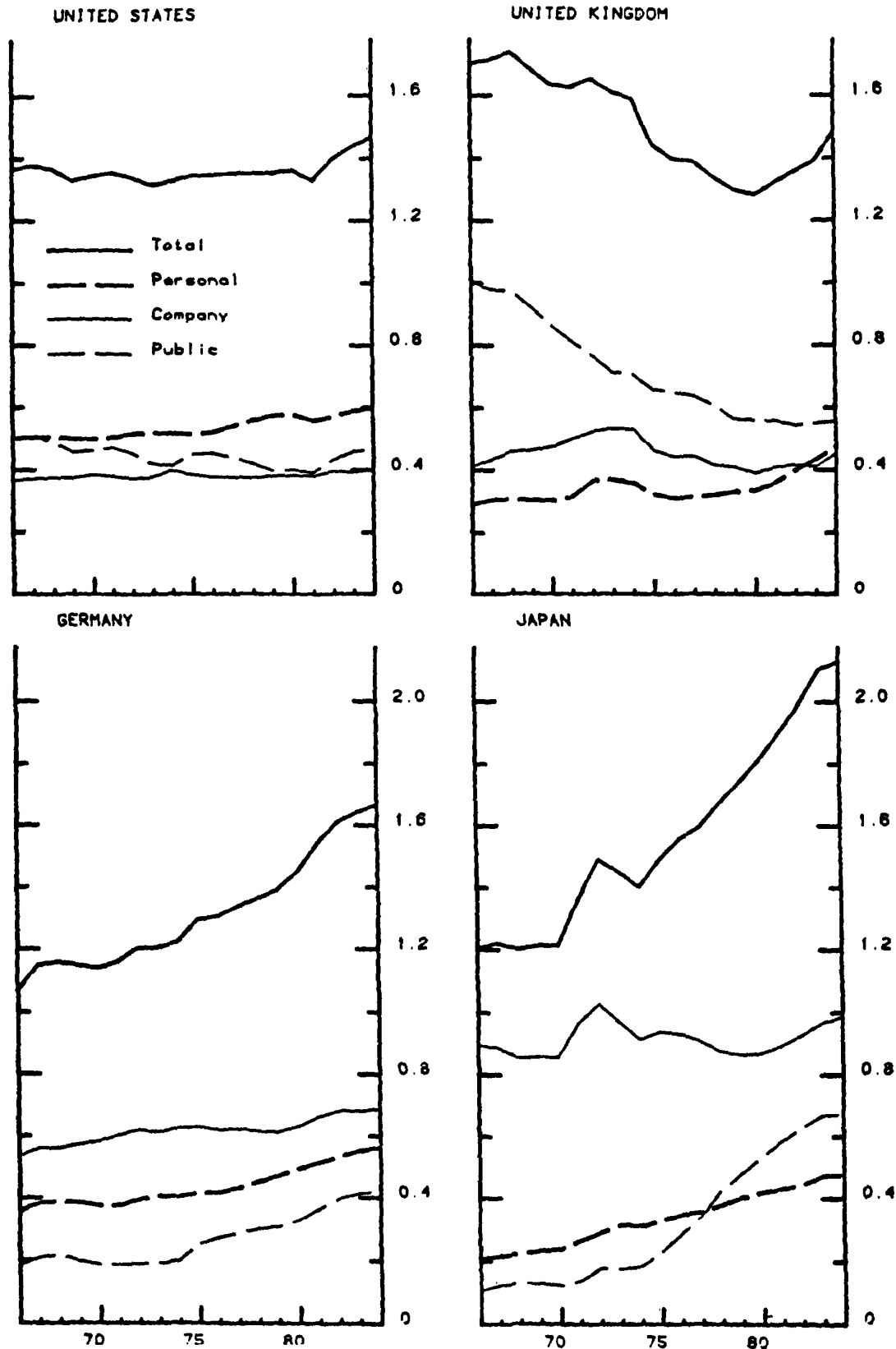
Chart 1  
**Debt of Domestic Nonfinancial Sectors Relative to Nominal GNP**  
Quarterly



Note: Based on quarterly averages of debt constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1.

Chart 2

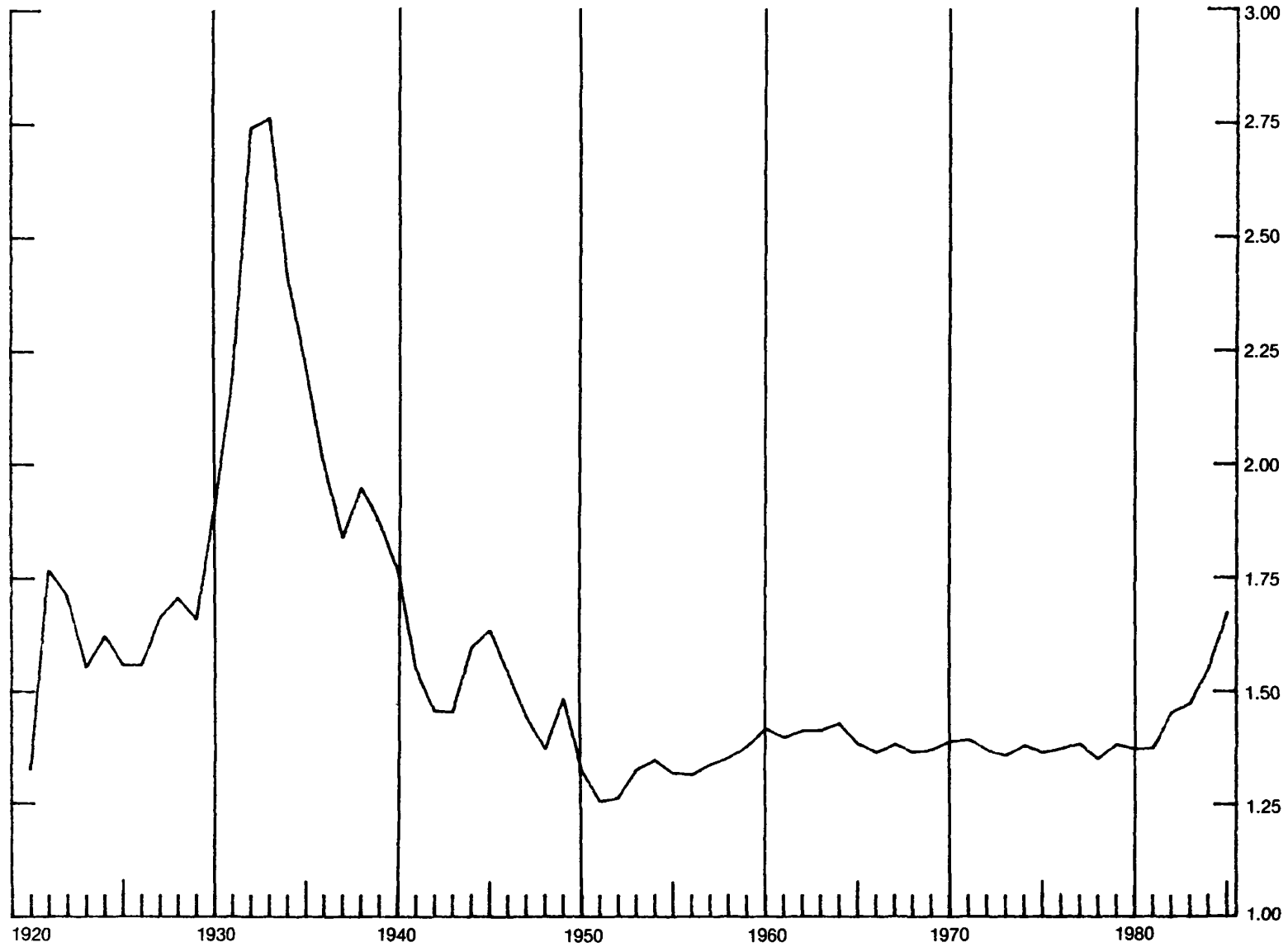
Debt/GNP ratios by country



Note: Last observation plotted is 1984.

Source: Bank for International Settlements, Recent Innovations in International Banking, 1986, p. 218.

Chart 3  
**Debt of Domestic Nonfinancial Sectors Relative to Nominal GNP**  
1920—1985



Note: Debt figures charted are end-of-year levels.

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structural federal deficits have been among the most visible of these. More pervasive, but also more difficult to assess, have been sweeping changes to the financial system. Intensifying competition, deregulation, and innovation in the financial sector have led to new sources of financing, a proliferation of new financial instruments, and more integration of financial markets which have brought borrowing costs and asset returns closer together. Accompanying these developments has been a flurry of financial activity and a huge increase in the volume of financial transactions. By way of illustration, the estimated volume of debits for financial transactions--against the accounts and currency holdings of businesses, households, and state and local governments--relative to GNP is depicted in chart 4; the trend in this ratio increased around the early 1980s and generally has strengthened even further over the past year or so.

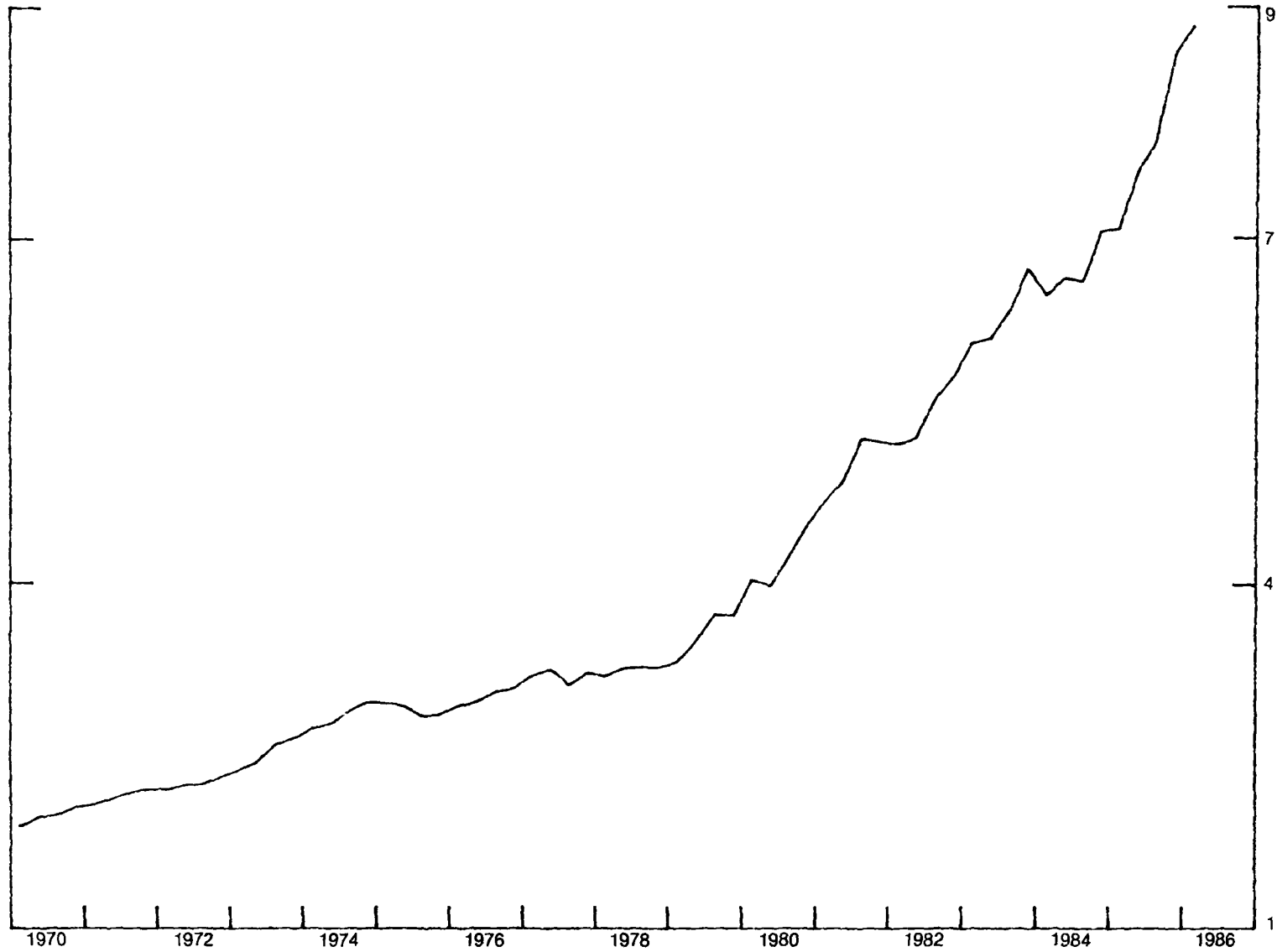
In addition, some of the recent debt growth in this country also can be traced to specific institutional developments, such as the anticipation of tax reform that fueled a surge in tax-exempt bond issuance at year-end 1985. Finally, the domestic nonfinancial debt measure has been overstated in some sense by "double counting" involving one nonfinancial sector raising funds in the credit markets and using the proceeds to acquire financial claims on another sector; such double counting appears to have increased recently.<sup>1</sup>

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1. There are also, within sectors, instances in which one unit borrows funds and acquires, with the proceeds, a claim on another unit in that same sector. For example, should a firm raise funds in the bond market and temporarily place some or all of the proceeds in the commercial paper market, it would be acting like a financial intermediary and the borrowing would show up twice in the debt aggregate.

Chart 4

**Financial Debts Relative to Nominal GNP**  
Quarterly



Note. Estimated debits for financial transactions against the accounts and currency holdings of businesses, households, and state and local governments  
Last observation plotted is 1986:Q1.

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In the area of double counting, there exists a sizable amount of readily identifiable and measurable double counting, mostly in the federal and state and local sectors, which rose about \$80 billion in 1985 to a total of \$400 billion. With debt aggregating to nearly \$7 trillion by the end of last year, however, removing such double counting does not significantly affect the debt measure's behavior over time in relation to output or spending. Another adjustment that can be made to the debt aggregate is to augment it by adding a measure of corporate equity; in this way, shifts in corporate financial structure, such as the recent massive substitution of debt for equity, do not distort the aggregate. The evidence indicates that such an augmented aggregate has grown somewhat more in line with GNP and domestic spending in the past two years, but over a longer period the relation between this measure and output and spending has not been much closer than for the debt aggregate itself.

Thus, the evidence does not strongly point to any particular adjustment to the debt aggregate. Moreover, the broad measure of financial assets, L, like debt and money stock measures, has not been immune from an unusually large advance relative to nominal output and spending. It is thus clear that something highly unusual has been occurring in the 1980s.

The rest of this paper looks at these issues in more detail, giving attention to institutional influences and double counting issues. The next section examines recent changes in the behavior of borrowing and lending by each of the major nonfederal sectors--households, nonfinancial corporations, and state and local governments--along with the federal sector. The following section addresses the matter of double counting in the accounts and other potential adjustments. Statistical evidence on the behavior of alternative



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measures of debt and debt-augmented aggregates is presented in the final section. Growth rates of the various financial aggregates, and nominal GNP, are presented in the appendix table.

## II. Borrowing by Sector

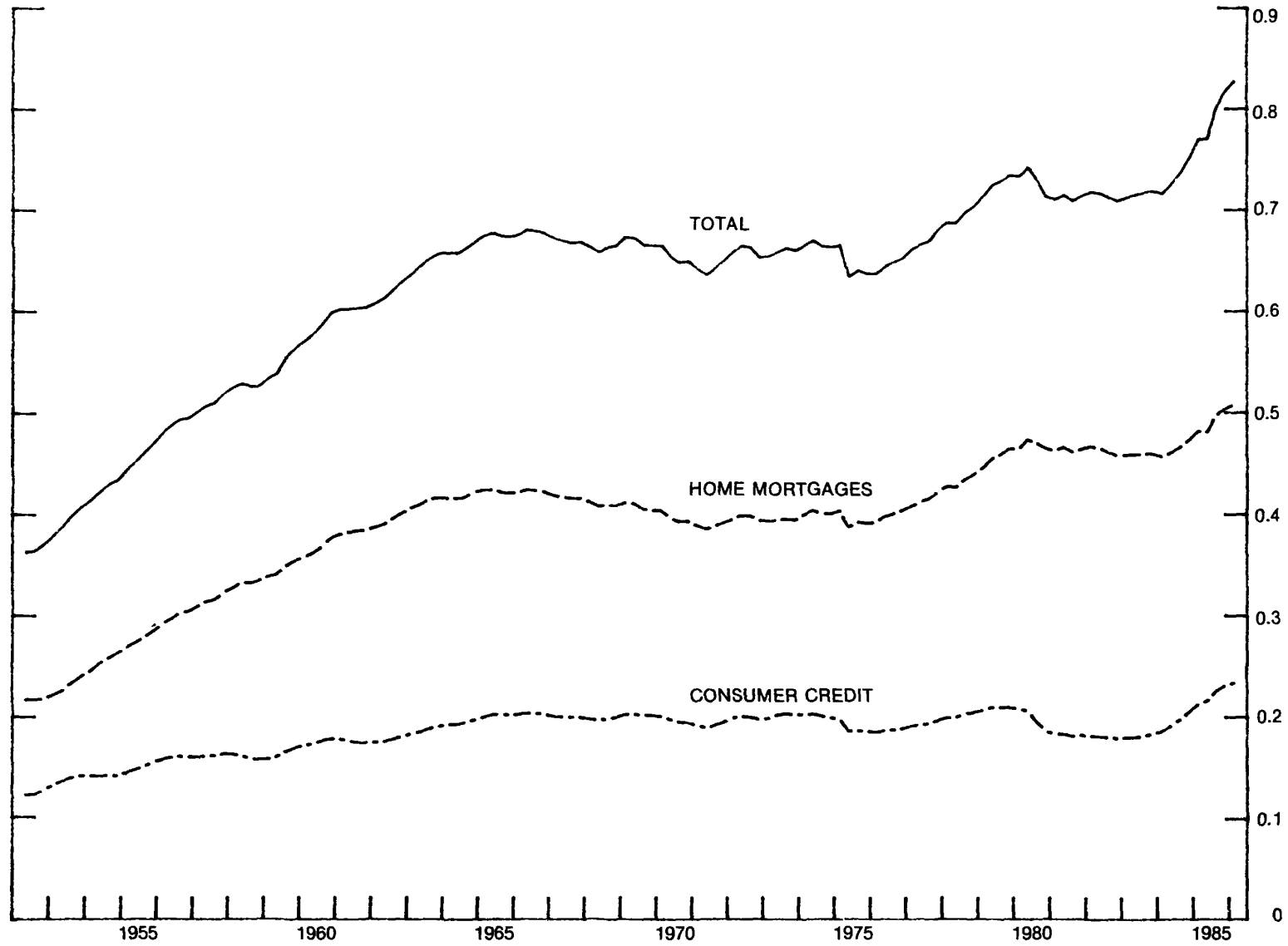
The debt aggregate consists of the credit market debt of domestic nonfinancial sectors--households, nonfinancial businesses, state and local governments, and the federal government.<sup>1</sup> Several special factors appear to have significantly boosted measured indebtedness of each of the sectors relative to output in recent years.

Household sector. Chart 5 shows household debt and its two primary components, mortgages and consumer credit, all relative to disposable income. Household indebtedness relative to income tended to climb--at an uneven pace--over the 1960s and 1970s, but the jump in 1984 and 1985 was unusually sharp. The increase has been evident in both mortgage and other debt, with the rise in the latter being most dramatic. This advance in household debt has been accompanied by a spectacular buildup of household financial assets, shown in the upper panel of chart 6, and a low NIA personal saving rate, shown in the lower panel. The rise in household debt relative to income can be viewed as the outcome of not only the strong growth in spending relative to income, but also the highly unusual pace of financial asset accumulation. In other words, the household sector has been "grossing up" its balance sheet by heavy financial asset accumulation and borrowing, and has become more highly leveraged as debt has risen relative to net worth. The net worth measure used in chart 7 includes the effect of changes in stock market prices;

<sup>1</sup> Trade credit, primarily extended by businesses to other businesses and to households, is excluded from this measure.

Chart 5

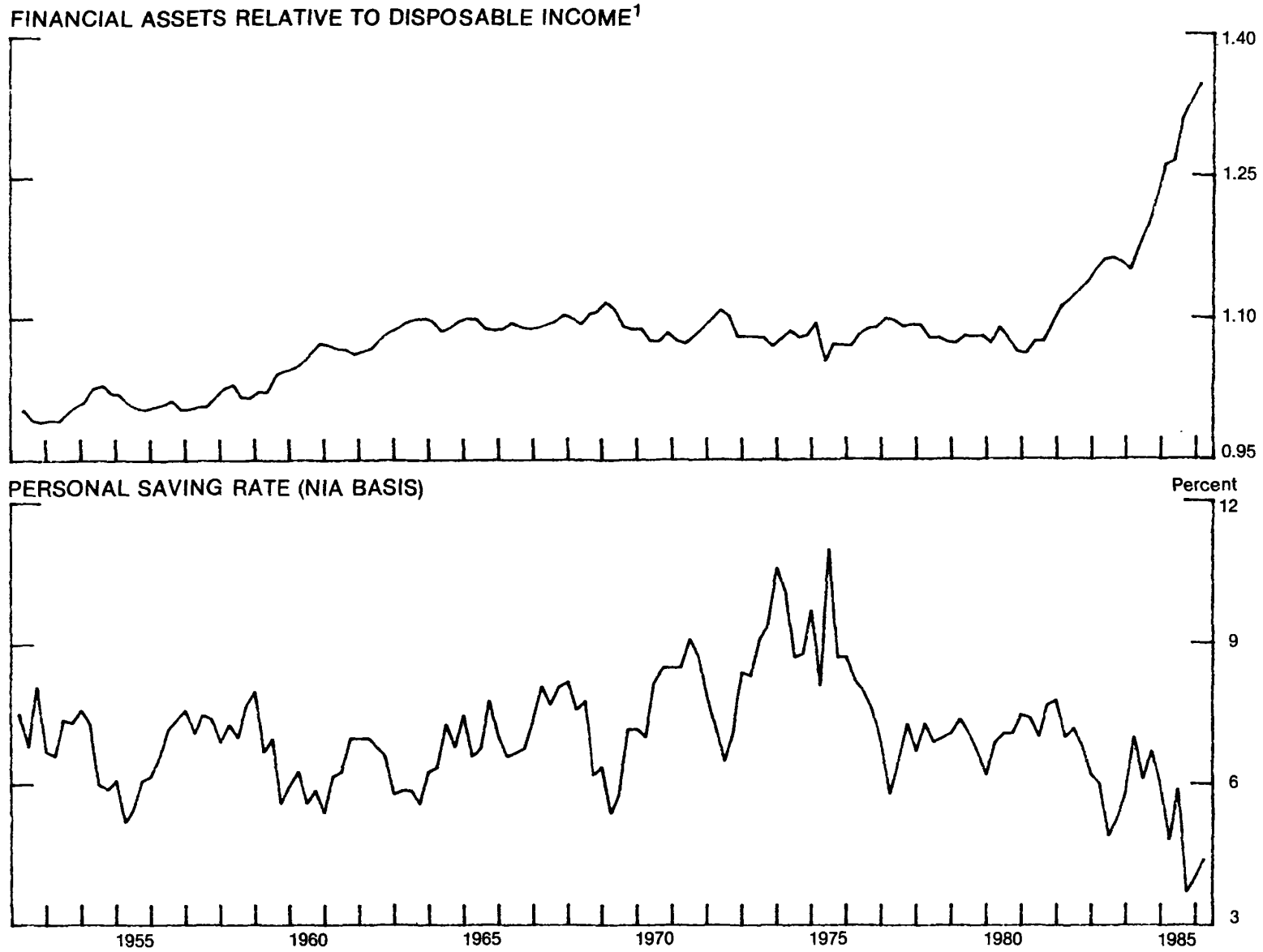
### Household Debt and Major Components Relative to Disposable Income Quarterly



Note: Based on quarterly averages of debt constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1.

Chart 6

### Household Sector Financial Assets and Personal Saving Rate Quarterly

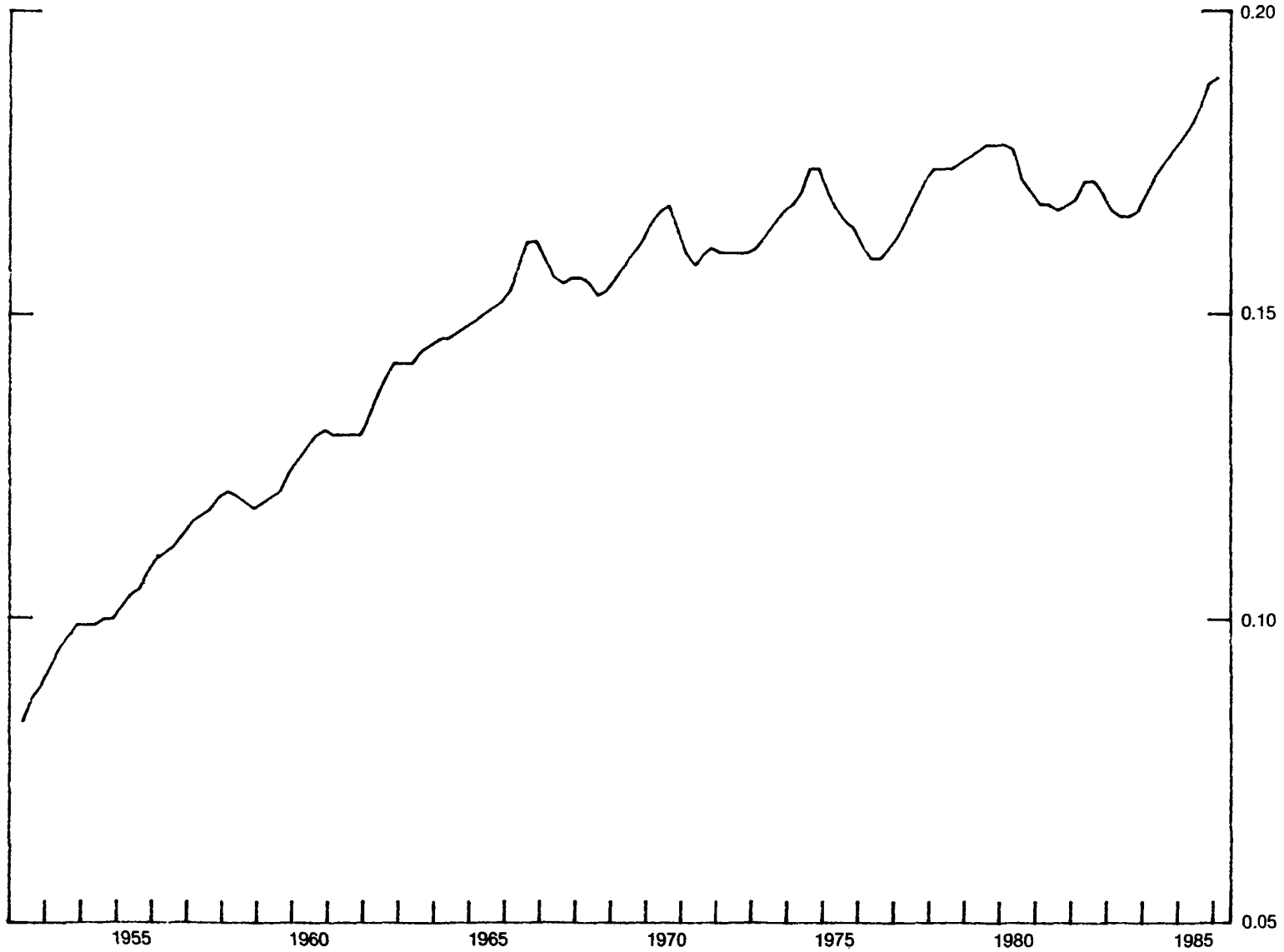


Note: Last observation plotted is 1986:Q1.

1. Financial assets include deposits and credit market instruments that the household sector holds directly or indirectly through mutual funds (excludes all corporate equities).

Chart 7

**Total Household Debt Relative to Net Worth**  
**Quarterly**



Note: Household debt and net worth are quarterly averages constructed as averages of adjacent end-of-quarter levels. Ownership of stock and real estate are valued at market prices. Last observation plotted is 1986:Q1.

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nevertheless, as the chart shows, the increase in household debt has outstripped net worth, even after taking into account the huge rise in the market value of equities in recent years.

The degree to which the same household units are both borrowing heavily and building up financial assets is difficult to determine, given available evidence. Reliable survey information that spans this period is not yet available.<sup>1</sup> To some, probably minor, degree, the expanded availability of IRA and 401k plans since 1982 may have encouraged some households to hold more financial assets, given their attractiveness as tax shelters, and hence to finance more of their outlays with borrowing; moreover, given the rather illiquid nature of balances in these plans, households in need of funds will be discouraged from tapping such sources and will be more inclined to borrow. The growing use of credit card borrowing for convenience purposes also may have as its counterpart some buildup of financial assets for those convenience users.

As a general matter, the deregulation process and competition for household assets have expanded access to market-related yields on deposits and other financial assets, while growing competition among lenders for market share and the trend toward securitization have added to sources of credit and put downward pressure on household borrowing costs. Any such narrowing of the spread between borrowing and deposit rates would add to the willingness of households to borrow rather than draw down liquid assets when spending rises relative to income. A narrowing of the spread between borrowing

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1. The re-surveying of households polled in the 1983 Survey of Consumer Finances, to be completed in several months, will enable an assessment of the behavior of assets and indebtedness of individual households over this important three-year span. A comparison of the 1977 and 1983 surveys indicated that debt growth tended to be higher in households that also had added more financial assets.

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costs and asset returns also encourages households to borrow when favorable opportunities develop, even though the proceeds are not needed for a while.

Demographic factors suggest that many households borrowed mainly to acquire tangible rather than financial assets over this period, implying that other households were building up financial assets.<sup>1</sup> The baby boom generation has been moving further into the age bracket in which spending on housing and durables and borrowing tend to be high. This development seems to have boosted mortgage borrowing and, to a minor extent, installment borrowing.<sup>2,3</sup> Aggregate household debt probably also has been lifted somewhat by the spread of certain new financing practices. In particular, adjustable-rate mortgages (ARMs) and longer-maturity consumer installment loans have permitted lower monthly payments and slower repayment. In the case of ARMs, home buyers were able to qualify for larger mortgages at a time when the yield curve was steeply upward sloped.

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1. The household sector in the Flow of Funds accounts includes nonprofit organizations and personal trusts. These entities borrow very little and have accumulated financial assets at a rapid pace in recent years. This implies that regular household asset accumulation has been smaller in relation to debt. But to the extent that individuals implicitly treat assets held in personal trusts as their own and to the extent that they are unable readily to liquidate those assets for spending, a larger accumulation of financial assets by personal trusts might encourage more borrowing by individuals.

2. See Charles A. Lockett and James D. August, "The Growth of Consumer Debt," Federal Reserve Bulletin, Vol. 71 (June 1985), p. 399.

3. Another factor that may have boosted measured debt of households in recent years is the inclusion of precomputed interest on certain types of installment loans. Some lenders--most notably certain finance companies--report unearned interest in the outstanding consumer loan balance, leading to an overstatement of consumer loans; hence, the growing market share of captive auto finance companies in the market for automobile credit--owing to special incentive programs--and a general lengthening of loan maturities likely have led to some overstatement of consumer credit growth for the past two or three years. The net effect of precomputed interest on trend growth of consumer credit is estimated to be rather small, although in certain months the impact can be more noticeable.

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Nonfinancial businesses. Borrowing by nonfinancial businesses also has risen in the past few years, as shown in chart 8, despite generally small external financing needs. Unlike the household case, though, financial asset accumulation by nonfinancial corporations, also shown in chart 8, has increased only modestly and is in fact low by historical standards. The pickup in business borrowing in 1984 and 1985 is more closely related to the massive volume of share retirements stemming from mergers, acquisitions, leveraged buyouts, and share repurchases. Analysts have attributed this surge in restructurings to various factors, for example, tax advantages, changes in the antitrust climate, and lower interest rates.

Shown in table 1 are share retirements and staff estimates of the amount of corresponding borrowing by nonfinancial corporations. Such borrowing accounted for nearly half of total corporate borrowing over the last two years. Because businesses were substituting debt for equity on their balance sheets, the sum of debt and external equity has not displayed a similar tendency to rise relative to business output, as shown in chart 9.<sup>1</sup> The recent borrowing behavior of firms has been dominated by the demand for changes in corporations' financial structures, rather than by "grossing up" considerations.

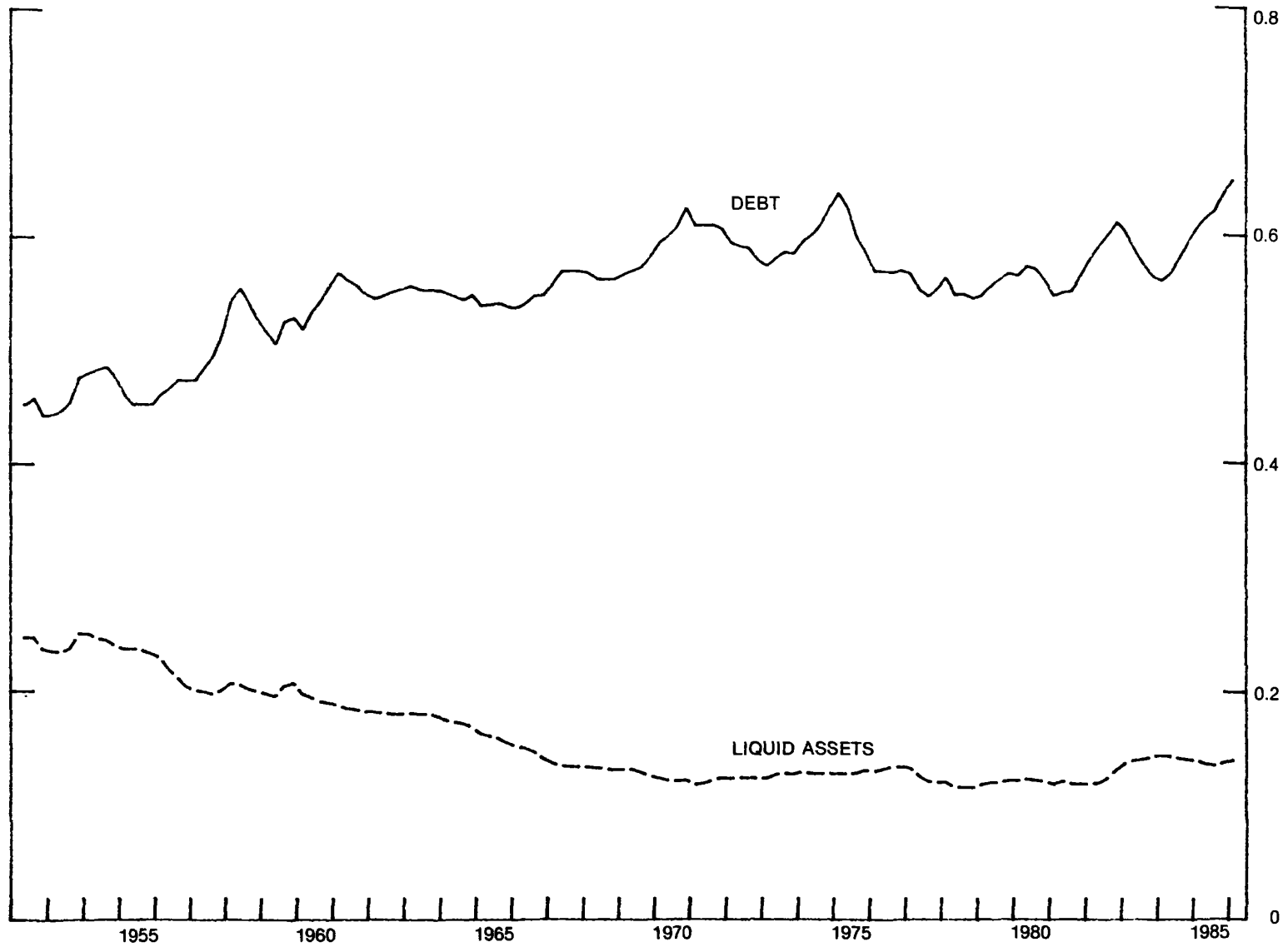
There may be a limited amount of double counting in business borrowing to the extent that businesses borrow to extend consumer credit to the household sector. When businesses raise funds in the credit markets to make such loans, business sector borrowing is boosted by the same amount as household sector consumer credit borrowing. In the past few years, loans

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1. Equity is accumulated net equity issuance and does not include retained earnings.

Chart 8

**Debt and Liquid Assets of Nonfinancial Business Relative to Gross Domestic Business Product  
Quarterly**



Note: Debt and liquid assets are quarterly averages constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1.

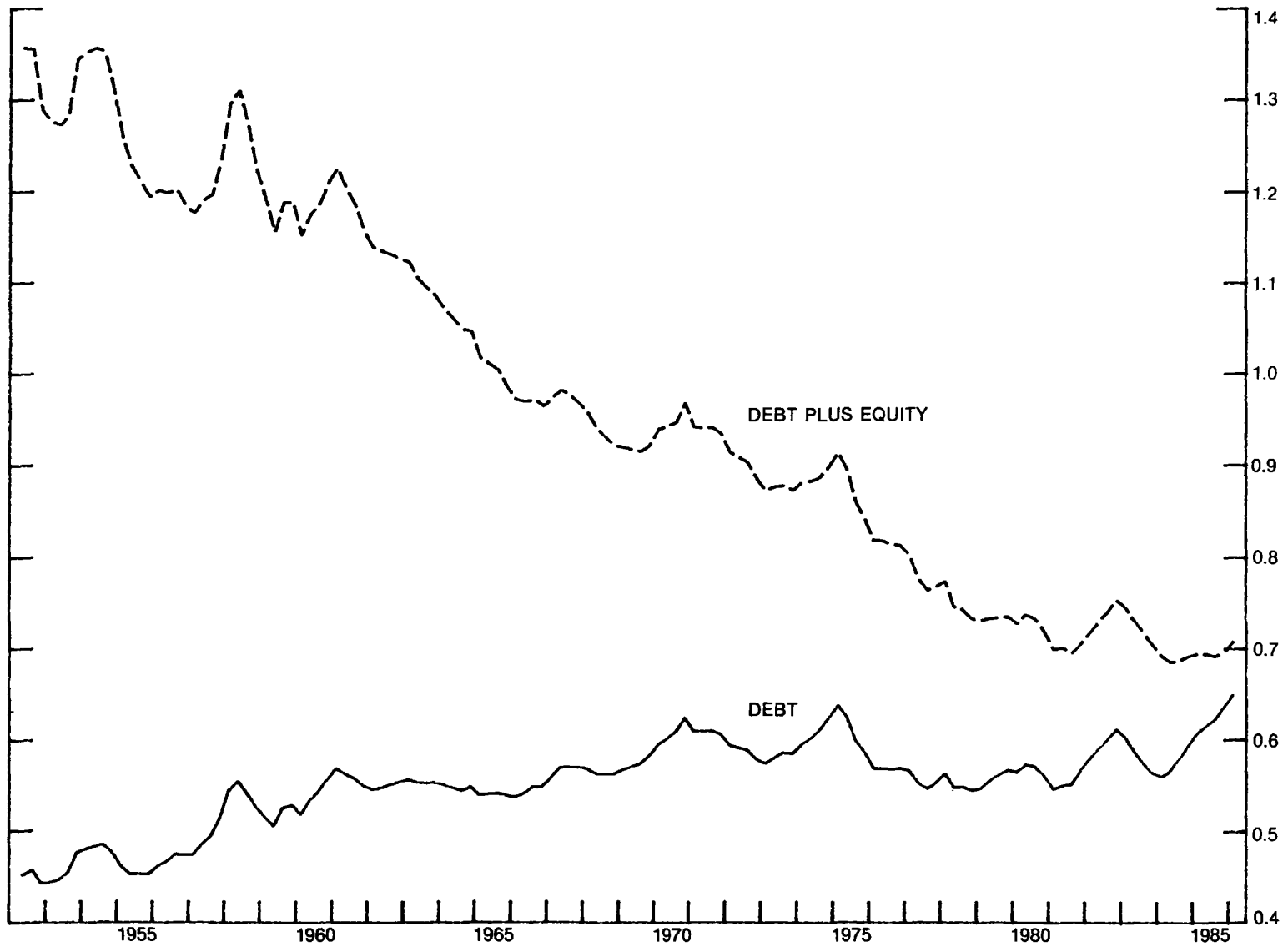


Table 1  
 Nonfinancial Corporations  
 (billions of dollars)

	<u>Gross Share Retirements</u>	<u>Estimated Borrowing for Share Retirements</u>	<u>Total Borrowing</u>	<u>Memo: Net Issuance of Equities</u>
1980	8.2	6.6	80.1	12.9
1981	33.0	26.4	103.6	-11.5
1982	17.5	14.0	72.1	11.4
1983	11.7	9.4	56.4	28.3
1984	92.5	74.0	192.3	-74.5
1985	106.5	85.2	166.0	-81.6

Chart 9

### Nonfinancial Corporate Debt and Debt Plus Equity Relative to Gross Domestic Business Product Quarterly



Note: Equity is accumulated net equity issuance. Debt and equity are constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1.

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by nonfinancial businesses to consumers have been rising by about \$10 billion or more per year, somewhat more than they had increased in earlier periods.<sup>1</sup>

The unevenness of the current economic expansion within manufacturing and other nonfinancial sectors appears to have boosted overall corporate indebtedness. The current recovery generally has been characterized by very strong aggregate corporate cash flows, but some sectors--especially those dependent on export markets and those competing with imports--have experienced protracted weakness. As a consequence, working capital and investment needs have been less closely matched with cash flows among firms than is typical, contributing to more rechanneling of funds through the credit markets and more corporate borrowing.<sup>2,3</sup>

State and local governments. Indebtedness of the state and local government sector in relation to its spending--illustrated in chart 10--fell steadily through the 1960s and 1970s but then began to rise in the early 1980s. In 1985, state and local government borrowing soared, particularly

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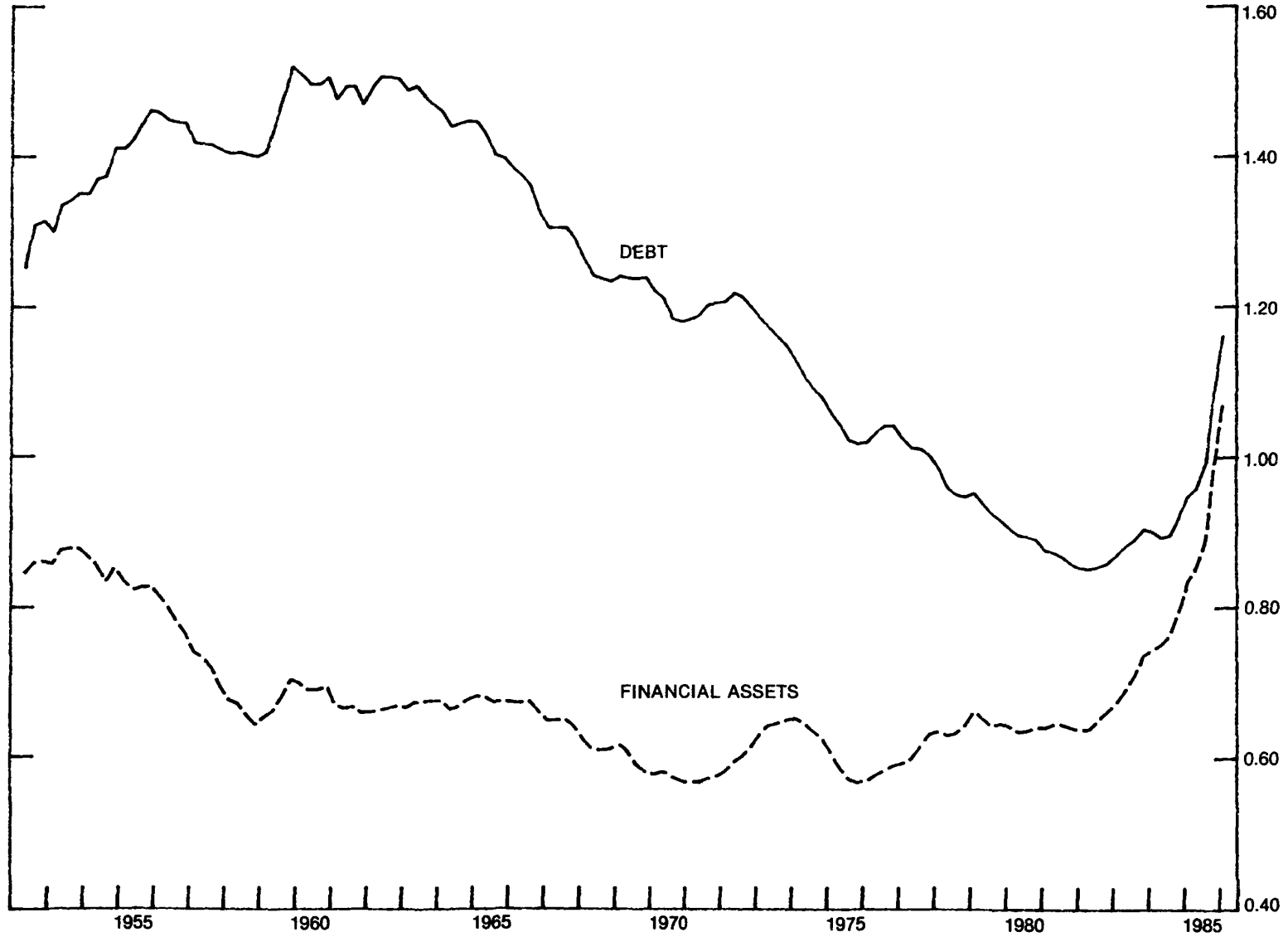
1. The practice of defeasance could also boost measured indebtedness of corporations. Under this practice, firms remove certain types of debt--usually bonds not subject to call in the near term--by transferring this debt and a volume of high-grade assets sufficient to service and repay it to a trust. The bonds do not show up as being retired in the debt aggregate and, to the degree that the corporation borrows funds to acquire assets transferred to the trust, corporate indebtedness is boosted. The amount of defeasance, though, has been quite small.

2. Reduced dependence on leasing also likely boosted business borrowing in the 1980s. When firms lease equipment or space from financial firms, which is often the case, the accompanying borrowing is not included in the debt aggregate since it is the obligation of a financial firm. The share of leasing in the sum of ordinary debt and the debt-equivalent of leased property declined over the first half of the 1980s.

3. The growing availability of financial futures and options markets also may have altered the borrowing of nonfinancial corporations. But it is not clear that such instruments have acted to boost aggregate borrowing. On the one hand, the availability of these instruments permits firms to exploit arbitrage opportunities which can lead to more assets and more debt of corporations. On the other hand, the availability of these markets can act to reduce corporate grossing up by permitting firms to lock in favorable rates, when they emerge, in the futures market and to avoid going to the debt market (and temporarily acquiring liquid assets) until the funds are needed.

Chart 10

**Debt and Financial Assets of State and Local Governments Relative to Their Expenditures  
Quarterly**



Note: Debt and financial assets are constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1.

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near the end of the year, as these units rushed to market both to beat tax restrictions proposed to become effective at the start of 1986 and to take advantage of lower market rates, primarily to refund bonds callable in the years ahead. Chart 10 also illustrates financial asset holdings of state and local governments, which began climbing in 1982 and jumped sharply in 1985; gross saving of state and local governments--the excess of receipts over expenditures and contributions to retirement funds--also rose appreciably after 1982, enabling them to accumulate more assets in relation to their borrowing.

In effect, state and local governments have been behaving, to a degree, like financial intermediaries. Most of the proceeds of state and local advance refunding bonds are placed in specially issued nonmarketable Treasury securities (SLGS) which then also appear in the debt aggregate as a liability of the federal sector.<sup>1</sup> The second column of table 2 presents the net change in SLGS in recent years. In addition, state and local indebtedness in the debt aggregate contains tax-exempt debt issued to acquire mortgages, which also appear in mortgage indebtedness of the household and nonfinancial business sectors; such mortgage acquisitions have been larger in the 1980s than in the 1970s. Table 2 presents data on state and local borrowing with both types of financial intermediation removed.<sup>2</sup> Removing these items lowers borrowing by the state and local sector appreciably

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1. Federal arbitrage restrictions effectively confine placements of the proceeds of advance refunding offerings to specially designed Treasury issues carrying yields linked to the rate on the refunding issue.

2. Tax-exempt units also issue securities that are used to raise funds by business--industrial development bonds (IDBs)--and by various not-for-profit health organizations, such as hospitals and nursing homes. In the Flow of Funds accounts, these offerings are considered to be liabilities of the business sector (in the case of IDBs) or the household sector (nonprofit hospitals and similar health organizations). Thus, there is not the same double counting problem associated with the issuance of such debt.

Table 2

State and Local Sector Borrowing and Net  
Acquisition of Selected Assets  
(billions of dollars)

<u>Year</u>	<u>Total State and Local Borrowing</u>	<u>Net Acquisition of SLGS</u>	<u>Net Acquisition of Mortgages</u>	<u>Net State and Local Borrowing</u>	<u>Memo: Acquisition of Other Treasury Securities</u>
1975	12.3	0.6	1.6	10.1	-2.3
1976	13.2	3.2	1.3	8.7	-1.0
1977	12.0	9.4	0.6	2.0	0.1
1978	16.5	10.4	2.5	9.6	-4.7
1979	17.6	0.3	6.5	10.8	8.4
1980	17.2	-0.7	9.8	8.1	7.2
1981	6.8	-0.9	7.7	0	-0.1
1982	25.9	2.7	5.2	18.0	11.1
1983	37.6	11.0	6.0	20.6	20.1
1984	45.0	7.7	6.0	31.3	28.5
1985	140.9	43.1	6.6	91.2	72.9

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in recent years, although the rising trend of borrowing remains quite evident. As shown in the final column of table 2, the acquisition of Treasury securities other than SLGS in 1985 is estimated to have been very large, too.

Federal government. Growth in federal debt strengthened in the early 1980s and soared in 1982 in association with the widening of the budget deficit. After 1982, growth of federal debt slowed a bit in percentage terms while continuing to increase in dollar amounts.

Rising federal budget deficits have been associated with a widening of the current account deficit and a growing gap between domestic purchases and output as net exports have contracted sharply. To a degree, the growing federal deficit can be viewed as being financed by an inflow of funds from abroad, which has enabled the federal government to increase its borrowing without curbing private spending and borrowing to the extent that would be necessary in the absence of those external funds. As a consequence, total nonfinancial sector borrowing tends to be higher in relation to output and more closely related to domestic spending; in recent years, growth in debt has, to a limited degree, been more in line with that of domestic spending.

In addition, the federal government and its agencies extend credit to other domestic sectors. These transactions appear in the debt aggregate twice, when the Treasury borrows to fund the loans and when the other sectors then borrow from the government. Included are claims such as mortgages acquired by the Federal Financing Bank from the Farmers Home Administration and loans to small businesses. Credit of this type has continued to expand in recent years, but at a slower pace than in the late 1970s and early 1980s.

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### III. Adjustments to the Debt Aggregate

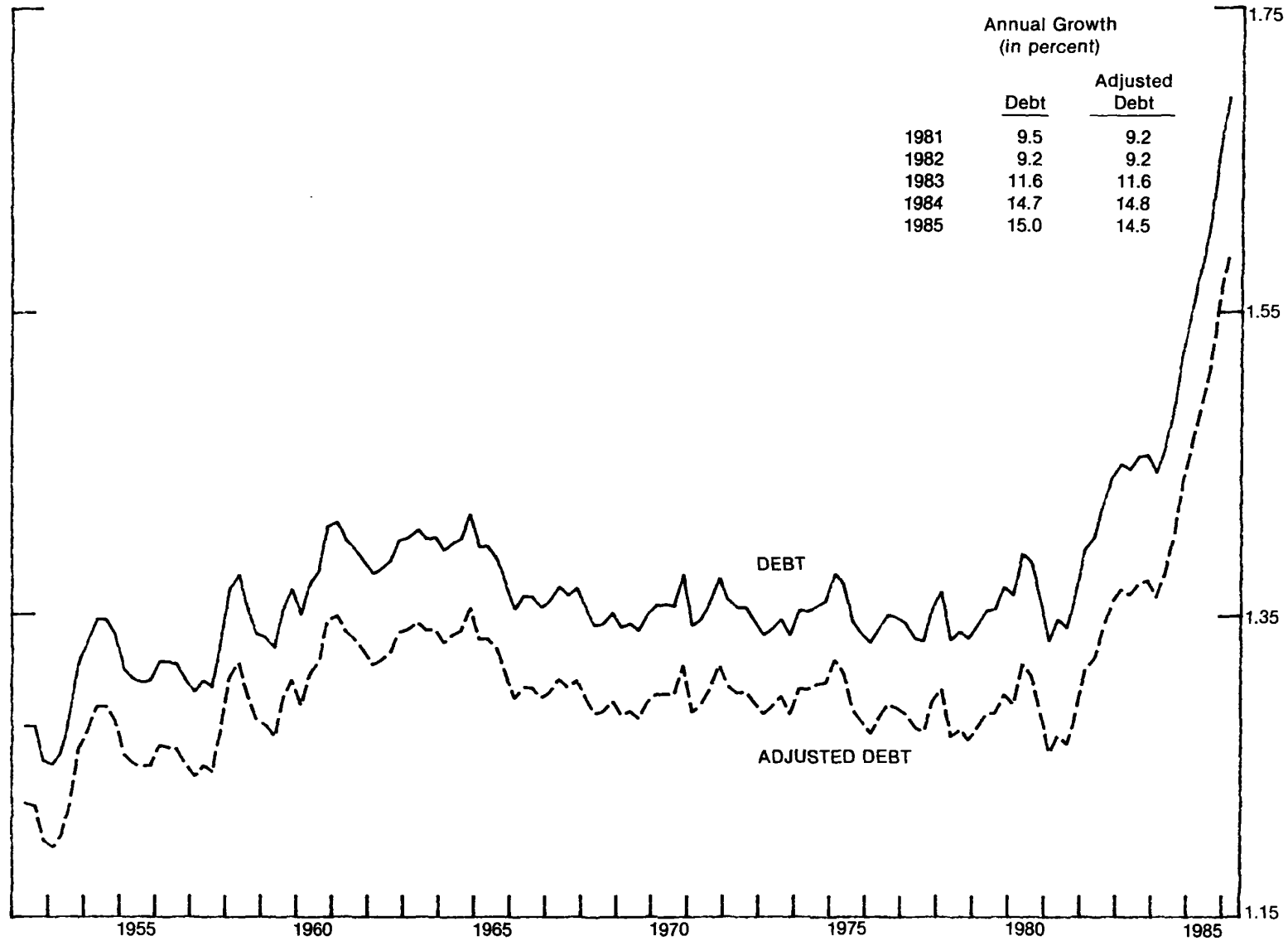
The above discussion suggests possible adjustments to the debt aggregate that might better capture the relationship between economic activity and credit market activity. One would be to remove financial intermediation-type activity by nonfinancial sectors, and another would be to add a measure of equity to debt. With respect to double counting in the state and local sector, mortgage assets and holdings of special Treasury security issues, SLGS, could be removed. In addition, as noted above, the federal government and its agencies acquire claims on nonfinancial sectors with funds obtained from Treasury borrowing, either directly or through the Federal Financing Bank. Also, loans to the household sector by nonfinancial businesses could be excluded. Some adjustments of this type already are made in the current debt measure. For example, security credit extended to nonfinancial sectors is excluded, in part because such transactions are pure financial intermediation--that is, they represent the acquisition of financial market instruments with the proceeds from borrowing.

A debt aggregate, adjusted along the lines suggested above, is presented together with the standard debt aggregate in chart 11. Annual growth rates for the standard and adjusted aggregates are shown in the inset, and historical growth rates for these and selected other financial aggregates are displayed in the appendix table. Adjusted debt, which is noticeably smaller in relation to GNP, has behaved quite similarly to the standard debt measure, rising sharply relative to GNP in recent years. Growth in the adjusted measure in 1985 was a half a percentage point lower than that of the standard measure on an end-of-period basis (and about a quarter of a percentage



Chart 11

**Debt and Adjusted Debt Relative to Nominal GNP  
Quarterly**



Note: Debt and adjusted debt charted are quarterly averages constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1. Growth rates shown are annual flows as a percent of preceding year-end levels.

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point less on a fourth-quarter basis). This difference between growth in debt and adjusted debt largely reflects the heavy acquisition of SLGS by state and local governments with the proceeds of advance refunding issues.

Another possible adjustment to the debt measure suggested by the previous discussion is the inclusion of corporate equity, since in the past few years corporations have engaged in massive substitutions of debt for equity. There are, however, different measures of equity that could be included. Among them are the market value of equity shares, accumulated net equity share issuance, and accumulated net equity funds, including accumulated retained earnings.<sup>1</sup> The market value of equity is, obviously, the most volatile of these measures as it is a forward-looking measure, moving with variations in yields on long-term debt and with shifts in attitudes regarding future earnings prospects. The relationship between changes in this measure and funds raised or retired from the equity market--of more relevance for an analysis of debt behavior--is very loose. On a flow basis, net equity offerings--with or without retained earnings--is a more relevant measure since it is a cash concept that better reflects sources of funds available for debt-for-equity substitutions.

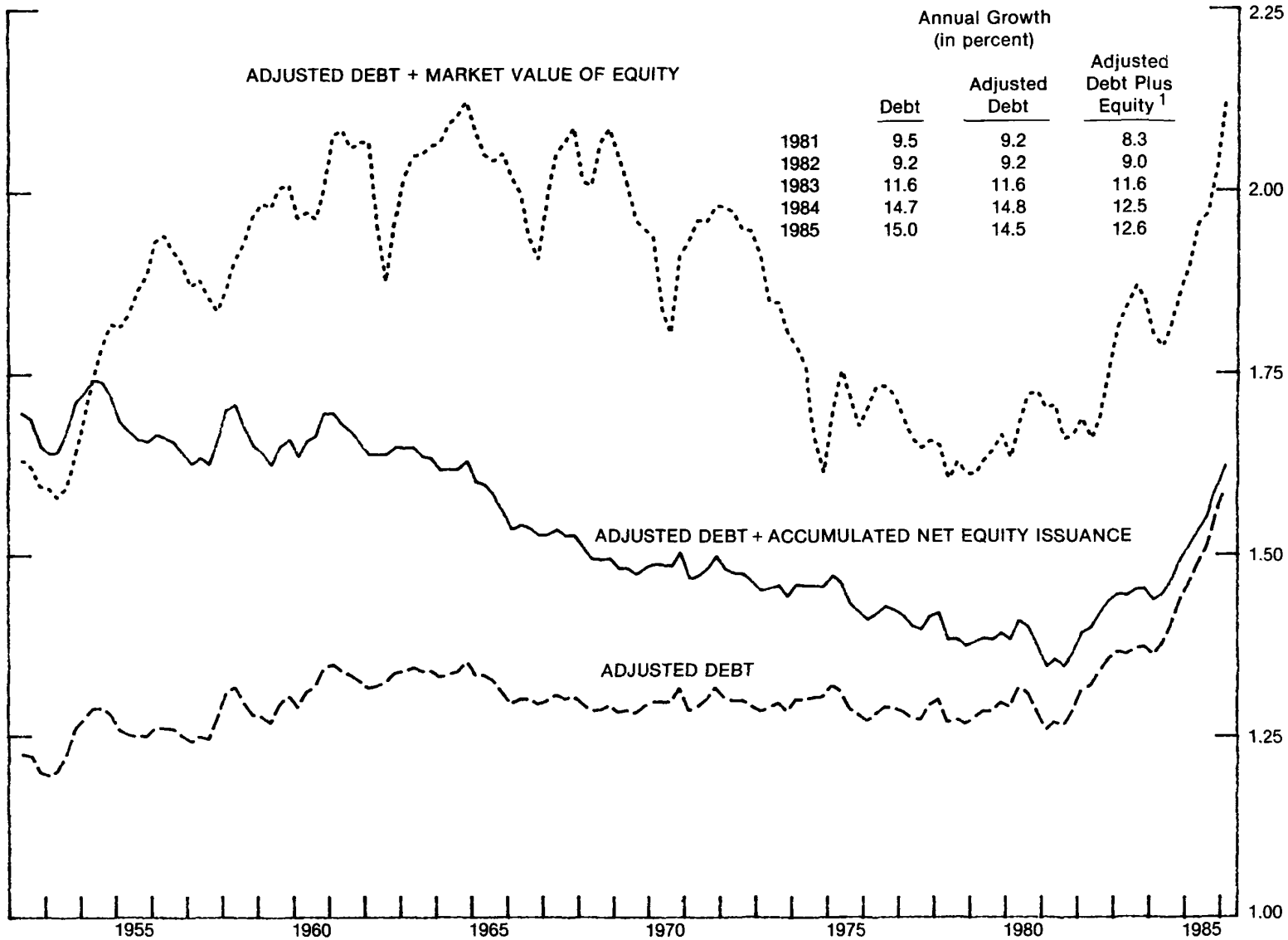
Chart 12 displays two measures of debt plus equity in relation to GNP. The first is adjusted domestic nonfinancial debt plus the market value of equity, and the second is adjusted debt plus accumulated net equity issuance. The chart shows that a market value concept results in

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1. Another measure is book net worth with an adjustment for replacement cost of physical assets. Difficulties of getting reliable information on the replacement cost of corporate assets on a timely basis argue against its consideration, however.

Chart 12

**Adjusted Debt Measures Relative to Nominal GNP**  
Quarterly



Note: Adjusted debt measures charted are quarterly averages constructed as averages of adjacent end-of-quarter levels. Last observation plotted is 1986:Q1. Growth rates shown are annual flows as a percent of preceding year-end levels  
1. Equity is accumulated net equity issuance.

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much more noise in the series and an even larger surge recently than in debt alone. The addition of net equity issuance to debt yields a smoother series, but this series also has risen sharply in recent years, indicating that borrowing to retire equity was not the major factor boosting total debt growth. Unlike debt itself, however, which relative to GNP rose well beyond levels experienced in the past three decades, this equity-augmented measure has remained within its historical range, having risen to levels last experienced in the early 1960s, after a relatively steady decline.

Further adjustments to the debt aggregate to obtain a closer link with output or spending could be contemplated. For example, debt could be adjusted for the apparently "abnormal" buildup of assets in the household and state and local government sectors.

Adjustments of this type, though, would pose particular difficulties. For one thing, there are large discrepancies in several of the sectors' balance sheets; the household sector balance sheet contains a large and volatile discrepancy which has accumulated over time into a very large excess of assets over debt. Data on assets by sector are much less complete and less timely than are similar borrowing data. For example, while aggregate outstanding amounts of assets such as Treasury securities and commercial paper are available on a timely basis, sectoral ownership information is fairly meager and the fragmentary information that is available typically is not very current. As a consequence, accuracy would be sacrificed and a considerable amount of estimation would be required. Judgment would also be required in determining a "normal" level of asset accumulation by each sector in

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order to determine the amount of excess (or possibly deficient) accumulation to be removed (or added). The analytics of such adjustments are fuzzy at best and the need for arbitrary judgments on an ongoing basis likely would be viewed critically by users and observers.

#### IV. Statistical Evidence

Table 3 presents statistical evidence on the growth and variability of various financial aggregates in relation to GNP and to domestic purchases (domestic output plus imports less exports). Domestic purchases are included on the theory that the financial aggregates may be more closely related to spending than to output or income; that is, borrowing may be more closely related to domestic purchases than domestic production. Shown for each are average four-quarter percent changes (indicating trend growth in the financial aggregate in relation to GNP or domestic spending) and measures of variability (the mean absolute change and the standard deviation of four-quarter changes) for the period 1960 to 1985. Also shown for comparison purposes are statistics for the monetary aggregates and L which are displayed, in relation to GNP, in chart 13.

Mean change statistics indicate that all of the financial aggregates, with the principal exception of M1, have risen relative to GNP and domestic purchases over this period. Adjustments made to the debt aggregate to remove various sorts of double counting do not materially affect trend growth. Augmenting debt with equity, measured as accumulated net stock issuance, brings growth over this time interval into closer alignment with growth in GNP and domestic purchases.

Table 3

Growth and Variability of Ratios of Financial  
 Aggregates to GNP and Domestic Purchases<sup>1</sup>  
 (measured as four-quarter changes, 1960-1985)

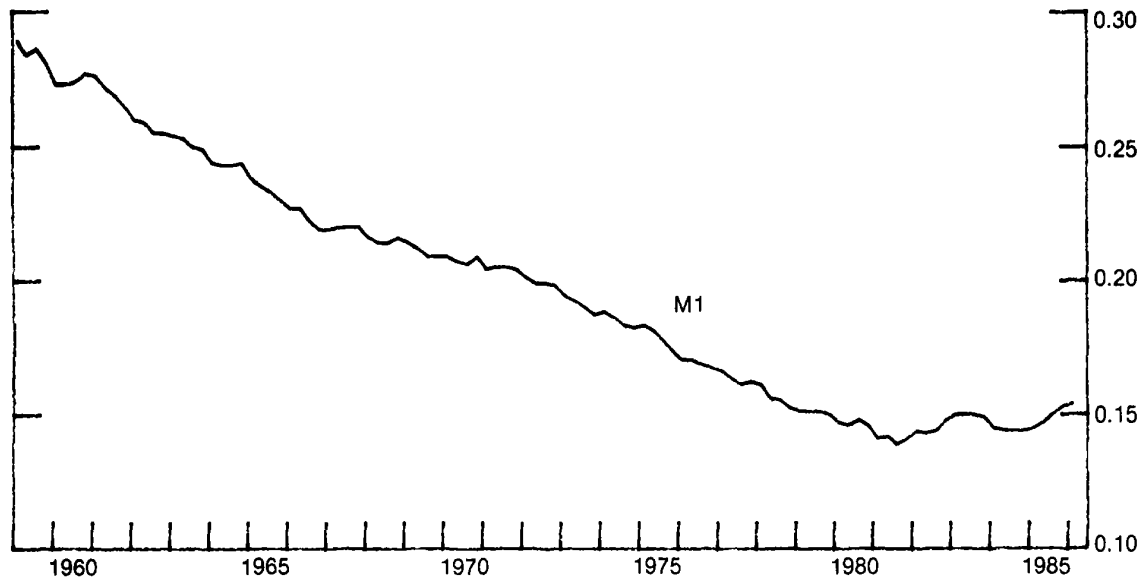
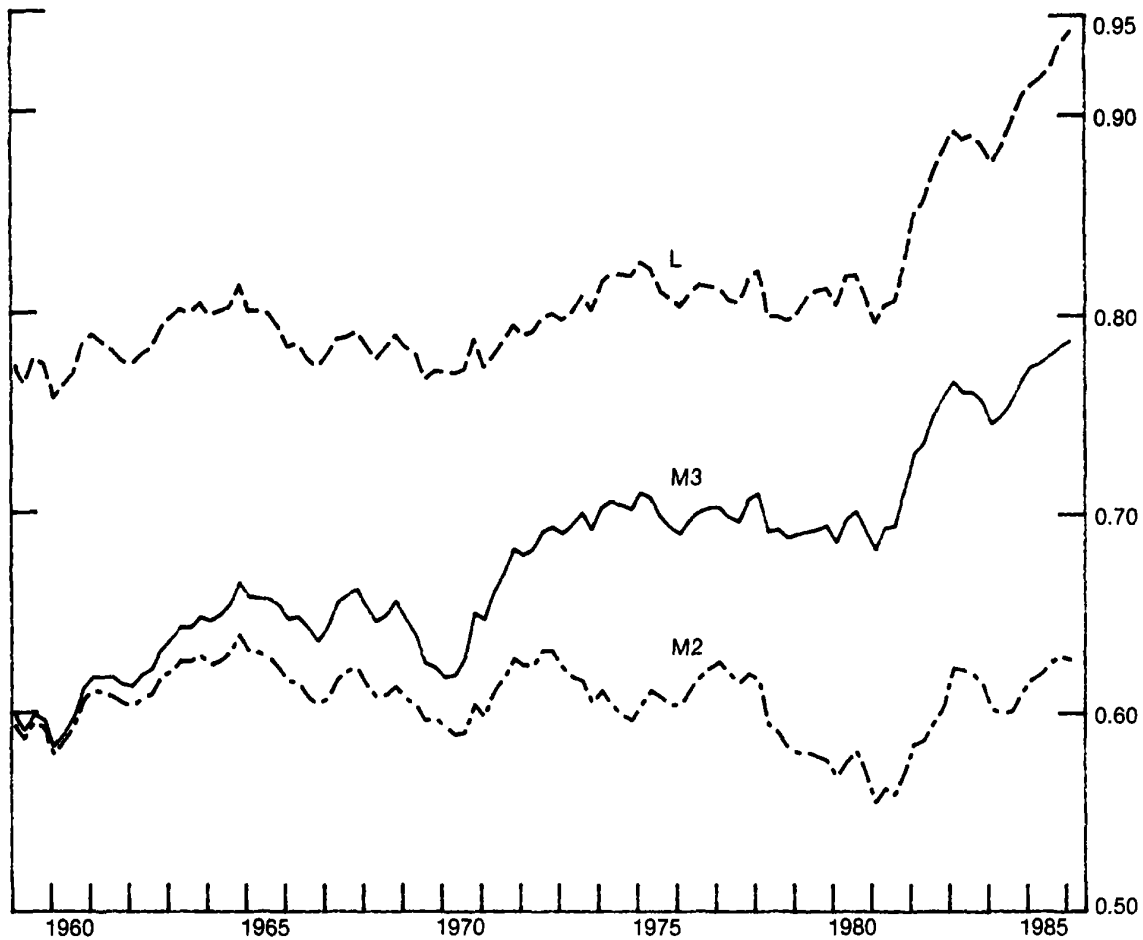
Financial Aggregate	Financial Aggregate/GNP			Financial Aggregate/ Domestic Purchases		
	Mean Change	Mean Absolute Change	Standard Deviation	Mean Change	Mean Absolute Change	Standard Deviation
1. Debt measure	0.8	1.8	2.5	0.7	1.9	2.5
2. Adjusted debt	0.7	1.8	2.5	0.6	1.8	2.5
3. Debt plus equity <sup>2</sup>	0.0	1.8	2.4	-0.1	1.8	2.4
4. Adjusted debt plus equity <sup>2</sup>	-0.1	1.8	2.4	-0.2	1.8	2.4
5. Adjusted debt plus market value of equities	0.2	3.9	4.9	0.1	3.9	4.8
6. M1	-2.4	3.2	2.7	-2.5	3.2	2.6
7. M2	0.2	2.3	2.8	0.1	2.2	2.7
8. M3	1.1	2.2	2.6	1.0	2.2	2.7
9. L	0.7	1.7	2.1	0.6	1.8	2.2

1. Domestic purchases are GNP less net exports.

2. Equity derived from 1951 historical-cost nonfinancial corporate net worth plus accumulated net stock issuance.

Chart 13

### Money Stock Measures and L Relative to Nominal GNP Quarterly



Note: Last observation plotted is 1986:Q1

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Variability measures show that adjustments to debt to remove certain types of double counting do nothing to reduce variability in relation to GNP or domestic purchases. Similarly, adjusting for net stock issuance does very little to reduce variability.<sup>1</sup> Augmenting debt with the market value of equity, in contrast, adds considerably to variability.

Trend growth in L over this period in relation to GNP and domestic purchases has been quite similar to that of debt, although L has been a little less variable. The money stock measures, by comparison, have been more variable in relation to GNP and domestic purchases than the debt and L measures, with considerable differences among them in trend growth.

The evidence suggests that the various debt measures, the money stock measures, and L are, on balance, not much more closely linked to domestic purchases than they are to GNP. However, there have been periods, such as in 1985, when growth was closer to that of domestic purchases than to GNP.<sup>2</sup>

In sum, adjustments to the debt aggregate to remove identifiable double counting do not lead to an overall improvement in the GNP or domestic purchases relationship. Augmenting debt with equity, defined as accumulated net share issuance, leads only to relatively minor improvements in the relationship with GNP or gross domestic purchases. Unusual behavior of the debt measure in recent years appears to be related instead to changes in underlying behavior, including pervasive financial change, rather than to measurement inadequacies.

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1. Variability of debt augmented by accumulated net equity issuance and retained earnings is slightly smaller than the augmented measure shown on table 3. For monitoring purposes, augmenting debt with retained earnings would pose more complications, in part because data on retained earnings are available with more of a lag.

2. Econometric evidence allowing for lagged effects and more complicated relationships among financial and nonfinancial variables is consistent with the conclusions presented in this section.



APPENDIX TABLE

Annual Growth Rates of Financial Aggregates<sup>1</sup>

	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
Debt	5.0	6.0	6.9	6.9	7.3	7.3	6.5	7.3	8.3	6.9	7.0	9.5	10.0	10.7	9.0
Adjusted debt	5.2	6.1	6.8	6.9	7.3	7.3	6.5	7.3	8.3	6.9	7.0	9.7	10.3	10.7	8.8
Debt plus equity <sup>2</sup>	4.1	5.1	5.6	5.6	6.1	6.1	5.6	6.4	7.1	6.3	6.5	9.1	9.5	9.9	8.3
Adjusted debt plus equity <sup>2</sup>	4.2	5.1	5.5	5.6	6.1	6.0	5.6	6.4	7.1	6.3	6.5	9.2	9.7	9.9	8.0
Adjusted debt plus market value of equity	3.5	4.2	4.3	4.6	4.8	4.6	4.2	5.1	5.2	4.5	5.0	7.1	7.3	7.4	6.5
M1	0.5	2.9	1.8	4.0	4.4	4.4	2.8	6.4	7.3	3.9	5.0	6.7	8.4	5.8	4.8
M2	4.6	7.2	8.0	8.6	7.9	8.0	4.8	9.1	7.8	4.4	6.1	13.5	12.8	7.2	5.9
M3	4.9	8.0	8.7	9.5	8.9	8.9	5.1	10.1	8.6	1.9	9.3	14.7	14.0	11.7	8.8
L	3.6	6.3	7.9	8.4	7.3	8.0	5.4	8.3	9.3	4.8	6.9	10.4	12.8	12.1	9.6
Memo:															
Nominal GNP	2.1	7.5	5.7	6.7	6.2	10.8	8.0	5.8	9.6	7.2	4.8	9.4	12.1	11.9	7.3

1. Debt growth rates are annual flows as a percent of preceding year-end levels. The growth rates for the monetary aggregates, L, and GNP are calculated on a fourth-quarter over fourth-quarter basis.

2. Equity is defined as historical-cost net worth of nonfinancial corporations in 1951 plus accumulated net stock issuance.

## APPENDIX TABLE (CONTINUED)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>
Debt	9.2	10.7	12.8	13.1	12.1	9.5	9.5	9.2	11.6	14.7	15.0
Adjusted debt	8.8	10.6	12.6	12.6	11.9	9.2	9.2	9.2	11.6	14.8	14.5
Debt plus equity	8.7	10.1	11.7	12.0	11.0	9.2	8.6	9.0	11.6	12.5	13.2
Adjusted debt plus equity	8.4	10.0	11.5	11.5	10.7	8.9	8.3	9.0	11.6	12.5	12.6
Adjusted debt plus market value of equity	7.5	8.4	9.5	9.8	9.2	7.5	6.6	7.3	9.3	9.9	10.1
M1	5.0	6.2	8.1	8.2	7.5	7.3	5.1	8.7	10.4	5.4	11.9
M2	12.1	13.3	11.2	8.0	8.1	9.0	9.3	9.1	12.2	8.0	8.6
M3	9.3	11.4	12.5	11.8	10.3	9.6	12.3	10.0	9.9	10.5	7.7
L	9.1	10.7	12.4	11.8	11.7	9.2	11.8	10.1	10.4	11.9	8.5
Memo:											
Nominal GNP	10.6	9.9	11.9	14.8	9.5	9.9	9.3	3.1	10.0	9.0	5.4