A Note on Credit Aggregates as Targets or Indicators of Monetary Policy *

I. During the 1970s, monetary policy in many industrialized countries was oriented toward controlling the growth rate of the money stock. At the same time, innovations and regulatory changes greatly increased competition within the financial industry and reduced the role of credit availability (non-price credit rationing) in the transmission mechanism of monetary policy.[1] Nevertheless, over the last few years it has been repeatedly suggested[2] that "credit", and not "money", plays an essential role in transmitting monetary policy effects to the economy. And this contention has been supported by empirical analyses of the relative stability of money and credit "velocities".[3] These findings have recently been confirmed by Goldsmith (1984) who studied the relative stability of several ratios of financial assets and liabilities to national income and concluded that in several countries, including the United States, the ratio of domestic non-financial debt to national income has over the past century (1875-1975) been more stable than the money/income ratio. For the period 1965-1975 the same result is obtained for at least 8 of the 18 countries examined. And the conclusion is therefore reached (Goldsmith 1984, pp. 304-305) that in these countries the ratio of domestic debt to national income would have provided "a reliable guide for monetary policy", superior in that role to the money/income ratio. Goldsmith's definition is appropriately vague: to say that a credit aggregate is a reliable guide for monetary policy leaves open the question whether that aggre-

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[1] In many countries, this change in the transmission mechanism of monetary policy was accompanied by a shift toward the use of market related instruments of monetary policy with the phasing out of direct controls.

[2] For an extensive survey of this theoretical approach see LAVOIE (1984). See also BLINDER (1983) and BLINDER-STIGLITZ (1983).

[3] See FRIEDMAN (1981).

gate should be considered as a *target* (i.e. a variable which is explicitly controlled) by the central bank, or more simply as an *indicator* (i.e. a variable which is monitored in order to assess policy effects). In fact, however, this choice is precisely the most controversial aspect of the recent debate on the relative merits of credit and monetary aggregates.

The purpose of this note is to provide a critical assessment of the role of broad credit aggregates as targets or indicators of monetary policy. A brief review of the empirical evidence supporting the stability of the debt-to-income relationship in the United States and a survey of the debate which followed Friedman's initial results are presented in section II. Section III considers the theoretical and policy problems that confront the policymakers when deciding whether the credit aggregates could (should) be considered as targets or indicators of monetary policy. The choice ultimately rests on two conditions: the first refers to the transmission mechanism while the second condition depends on the controllability of the relevant aggregate. The main conclusion is that in recent United States experience — as in previous Italian experience — credit (debt) aggregates have supplied relevant information not contained in monetary aggregates and they should therefore be monitored by the monetary authorities. But it is not confirmed that a credit aggregate should be the central bank's main policy target.

II. In a long series of econometric papers, Benjamin Friedman put forward the case of total credit (actually, "total domestic non-financial sector debt"[4]) as a superior (or at least a companion) target to traditional monetary aggregates. Several statistical tests were used to compare credit-to-income *versus* money-to-income relationships, and in each case the conclusion was reached that the credit aggregate had a closer relationship to economic activity than any of the alternative monetary aggregates. From these results, Friedman derived the proposal for the use of credit as an additional *target* for monetary policy, with the specific argument that "A *credit* aggregate, by drawing on the *liability* side of the economy's balance sheet, supplements the information about the economy's asset holding contained in the monetary aggregates, and thereby usefully diversifies the information base underlying the signals that presumptively matter for monetary policy".[5] Friedman's results and proposal started an extensive debate with a substantial divergence of opinion both on the empirical side of the matter and on the policy implications. In fact, from the empirical point of view, the close relationship between the trend in GNP and the contemporaneous growth in debt had long been evident (see Chart I) in the postwar United States, and it had already been noted much earlier by Robinson.[6] But only the Federal Reserve of Boston accepted the implication that the credit aggregate was a significant candidate as monetary policy target. Two very specific reasons for this choice were given:[7]

i) "broader aggregates are subject to much less statistical 'noise' than M1";

ii) "a wave of financial innovation is making it more and more difficult to measure the money stock".

While the case for the credit aggregate was originally based on past evidence of its close correlation with GNP, its superiority to the monetary aggregates had come to depend on the fact that in recent years most of the traditional differences between money and other liquid assets had been eroded by financial innovation and deregulation. It had become more and more difficult to measure (let alone control) the money supply.

The *pros* and *cons* of the new proposed target were further explored in numerous papers from which the following main criticisms emerged:

i) statistical time series analysis, as used by Friedman to support his policy recommendation, lacks theoretical foundations. Unlike the case for monetary aggregates, there is no established theory (no "structural" model) for aggregate debt (Porter-Offenbacher 1983);

ii) past correlations are the more suspicious if they refer to different "policy regimes": "finding a constant credit/income ratio

[4] Debt of domestic non-financial sectors consists of outstanding credit market debt of the U.S. government, state and local governments, and private non-financial sectors. Private debt consists of corporate bonds, mortgages, consumer credit, bank loans, commercial paper, bankers acceptances and other debt instruments. The source of data is the Federal Reserve Board's flow of funds accounts.

[5] See FRIEDMAN (1983a, p. 31). In synthesis the argument was: using two targets is better than using one.

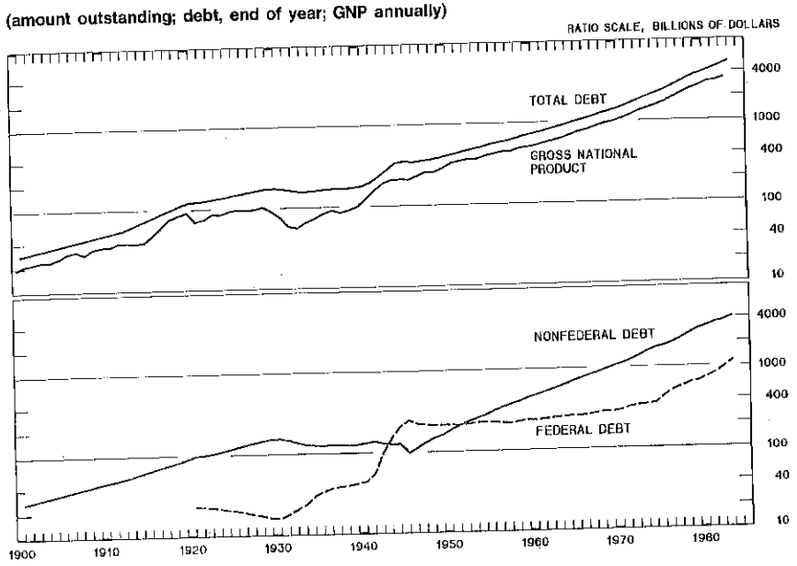
[6] See ROBINSON (1959, reprinted in 1961). In fact, Robinson, having noted the stability of the debt-income ratio over the 1916-57 period, defines a "warranted rate of debt growth" that should be achieved in the following period in order to guarantee steady real output growth.

[7] See MORRIS (1983, pp. 5, 7) and KOPKE (1983).

Chart I

Debt and GNP

(amount outstanding; debt, end of year; GNP annually)



Source: Board of Governors of the Federal Reserve System, 1984 Historical Chart Book, Washington 1984.

during a period in which the Federal Reserve is not controlling credit does not imply that the ratio will remain constant once credit is the aggregate being controlled" (Blinder 1984, p. 269);[8]

iii) even accepting that the stability of the credit/income ratio would remain as before,[9] it was noted that "the behavior of total credit

[8] This has been known in general as the "Goodhart Law" or the "Lucas critique". Of course, it had also been noted by TOBIN (1980, p. 323): "Looking for the best correlate of GNP and then trying to use it to control GNP is probably the way to make sure it is no longer the best correlate of GNP".

[9] A point which has been disputed, taking into account the possibility of portfolio shifts into debt at the expense of money or of real capital (MAYER 1982, p. 124) and the possibility of shifts between debt and equity in financing capital accumulation (KOPKE 1983, p. 15). On the other hand, Friedman's empirical results have also been challenged, notably by PORTER-OFFENBACHER (1983) who found that those results were quite sensitive to slight changes in the statistical techniques used; and by DAVIDSON-HAFER (1983) who found that only for M1 was there a strong unidirectional causation to real GNP while real GNP was causally prior to the debt measure.

is almost entirely reflective of income. It is at the end of a continuum of aggregates from the non-borrowed monetary base going out, where the further out you go, it seems as if income becomes a more and more dominant element in the demand for the aggregate and market interest rates less and less, and moreover, where it seems as if the central bank's ability to control also becomes less and less. Credit, like very broad monetary and liquidity aggregates, seems to be more effect than cause." (Axilrod 1982, pp. 11-12);

iv) and finally, the case was made that the Federal Reserve should not control debt because "broad credit measures are little more directly controllable by the main instruments of monetary policy than is GNP itself. Indeed they can be thought of as basically a somewhat imperfect proxy for nominal aggregate demand." Therefore, the Federal Reserve should not target broad credit aggregates as it should not set formal GNP targets. (Solomon 1984, pp. 3-5).

Given this state of the debate, it is not surprising to find that the Federal Reserve eventually adopted (in February 1983) a range for growth of the "total debt of domestic non-financial sectors", along with specific objectives for growth in the monetary aggregates. But it did so with extreme caution, as it can be inferred by the following statement by Chairman Volcker: "While the credit range during this experimental period does not have the status of a 'target', the FOMC does intend to monitor developments with respect to credit closely for what assistance it can provide in judging appropriate response to developments in the other aggregates" (Volcker 1983, p. 174). These points are further developed in the Federal Reserve Annual Report for 1983, where it is stated (p. 42) that "Debt expansion, while not targeted directly, will be evaluated in assessing the behavior of the money aggregates and the impact of monetary policy". However, in an appendix to the same Report (p. 45) the relevance of this credit aggregate is established more forcefully when it is stated that various statistical tests were used to compare the stability and predictability of relationships to GNP and other economic variables of potential credit aggregates and that "the domestic non-financial debt total generally performed as well as or better than the other series considered". The attached Table 1 was included in that appendix, to show how stable had been the ratio of debt to GNP over the 1960-1982 period.

TABLE 1

BEHAVIOR OF DOMESTIC NONFINANCIAL SECTOR DEBT

(Changes in percent, fourth quarter to fourth quarter)

Year	Change in debt	Change in ratio of debt to GNP
1960	5.2	3.1
1961	5.7	−1.6
1962	6.7	.9
1963	6.9	.3
1964	7.2	1.2
1965	7.2	−3.0
1966	6.9	−1.1
1967	6.8	.5
1968	8.4	− .9
1969	7.1	.3
1970	6.9	1.9
1971	9.3	− .3
1972	10.0	−1.4
1973	11.3	− .2
1974	9.3	2.1
1975	8.9	−1.0
1976	10.7	1.3
1977	12.3	.1
1978	12.9	−1.6
1979	12.3	2.4
1980	9.9	.4
1981	10.1	.4
1982	9.1	5.7
MEMO: average annual change	8.7	.4

Source: Board of Governors of the Federal Reserve System, *Annual Report 1983*, Washington 1984, p. 45.

The compromise so far reached — there is a "monitoring range" for debt along with "target ranges" for the monetary aggregates, and the first is used to assess the latter — indicates that at least some of Friedman's original argument had been accepted: credit aggregates supplement the information contained in the monetary aggregates. But exactly what this kind of additional information is no one has so far explained. In the following section, we discuss the theoretical underpinnings of a credit-income relationship and derive some conclusions on the recent United States experience. It will be shown that the very broad credit aggregate which has been selected as an *indicator* for monetary policy in the United States, since 1983, is similar to the aggregate ("total domestic credit") which has been adopted in Italy since 1974 and that it shares its limitations. In particular, no single transmission mechanism for its effects on economic activity can be defined. And its role seems to be more relevant in defining the underlying trends than the short-run developments of the economy.

III. In his original paper (1981), Friedman outlines three alternative explanations for the stability of the debt/income ratio and for the negative covariance among its two main (government and private) components. The first ("ultrarationality") hypothesis assumes that the private sector regards the debt of government as equivalent to its own debt. Ultrarational individuals "see through the shell" of both the government and corporations and, given a desired ratio of their aggregate liabilities to income, will increase their indebtedness if the government reduces its share (and vice versa; this hypothesis implies "*ex ante* crowding out" due to the close substitutability of private and public debt in private portfolios). While "ultrarationality" relies on the absence of effective credit market constraints (the private sector not only wants but is also able to substitute its own indebtedness for government debt), the alternative ("capital leveraging") hypothesis makes the opposite assumption. Due to the importance of credit market constraints, the private sector can substitute its own liabilities for the government's debt only to the extent that it is also accumulating tangible assets with which to back them. The relative decline in government debt would therefore be matched by an increase in the private sector's holding of tangible assets (hence fiscal policy can now affect income) along with a relative increase in private financial liabilities (given a desired ratio of net worth to income). Finally, the third ("asset demand") hypothesis assumes a stable, interest insensitive demand for total financial assets in relation to income. The supply of private liabilities will, therefore, adjust to clear the financial market in response to changes in the supply of government liabilities. Given these three alternative explanations, Friedman then reports that for the United States in the postwar period, while simple inspection of the data yields conclusions that are against all three hypotheses, the results of vector autoregression experiments support the capital leveraging hy-

pothesis which emphasizes credit market constraints. And in fact this interpretation is the only one that Friedman has consistently maintained. As in a later paper (1983b, p. 175) where he mentions the fact that "people's ability to spend was constrained by their ability to borrow." This reference to "ability to borrow" would seem to imply that the underlying theory is basically that of credit availability and of credit market constraints. In fact, the clearest distinction between money and credit can be established if we accept the view — recently reaffirmed by Blinder (1983) and Blinder-Stiglitz (1983) — that credit markets are not cleared by interest rates but are subject to extensive rationing. Credit rationing is not merely a temporary disequilibrium phenomenon (due to the stickiness of interest rates) but arises as an equilibrium phenomenon due to the segmentation of credit markets into "customer markets" (different borrowers being highly imperfect substitutes), which itself stems from information imperfections that lie at the heart of these markets. This leads to the conclusion that monetary policy affects spending not through the interest rate mechanism, but rather through the availability of credit. And in fact Blinder (1983, p. 31) notes that in his model[10] "money plays no essential role. Central bank policy affects the economy via its influence over the supply of credit ... the empirical correlation between money and nominal GNP is quite strong in this model; but it has no causal significance." And Blinder-Stiglitz (1983) make the point that their loanable funds theory — which emphasizes the role of credit availability — leads to the conclusion that the link between credit and economic activity is more reliable than the competing link between money and the economy. The importance of credit, and the connected claim that a monetary policy based on the supply of money is either useless or destabilizing, has been an essential part of "post Keynesian" economics on both sides of the Atlantic (as can be seen from the work of Nicholas Kaldor, Victoria Chick, Paul Davidson, Hyman Minsky).[11] In that monetary framework, it is assumed that the production process relies on bank credit while the money stock is a residue and as such it cannot have causal significance. Moreover, the central bank cannot control (i.e. make "exogenous") the stock of money because restrictive policies are only possible at the cost of disrupting financial markets, while attempted expansion of the money stock can

[10] It is noted, however, that this model mostly applies to small firms or to an economy without a developed capital market.

[11] For a recent survey of this literature, see LAVOIE (1984).

always be offset by economic agents paying back the loans that had been previously granted.[12] In this framework — as in Wicksell's "pure credit economy" — the monetary authorities can only influence the economy through the level of interest rates.

Let us assume that the framework just sketched is in fact relevant. Can we derive from it the conclusion that therefore credit aggregates are the right *targets* for monetary policy? The following four objections should be considered. First, if it is credit *availability* that matters, i.e., if the ability of economic units to spend is constrained by their ability to borrow, then by definition there must be a direct link between credit extended and spending. But actual statistics refer to credit outstanding and therefore cannot tell whether credit growth is the result rather than the cause of changes in economy activity. From a theoretical point of view, if credit availability is the relevant constraint, we should relate spending decisions to assured but still unused lines of credit. Unused overdraft facilities are part of credit availability and should be included in the credit aggregate which is supposed to influence economic activity.

Second, as Lavoie (1984, p. 794) mentions in a footnote, not all credit is being created for production purposes. In other words, it is not true that all credit extended (or available) is linked to spending decisions in the market for goods and services. There are also cases in which borrowing is financing the accumulation of financial assets, and in fact most economic units carry stocks of financial assets *and* borrow. A direct and stable link between credit availability and economic activity obtains only if economic units are strictly limited in their willingness (or capacity) to build up financial assets, something which is certainly not confirmed by recent experience.

The third point — which again has to do with recent experience — is mostly empirical: how important, in actual fact, are credit availability and non-price credit rationing? It will be noted that the FOMC in adopting a "monitoring range" for the credit aggregate never actually referred to the importance of credit rationing. Quite on the contrary, in recent years the Federal Reserve[13] has maintained that innovations and regulatory changes have reduced the importance of non-price credit rationing. Deregulation of deposit rate ceilings, the removal of usury

[12] These conclusions depend to some extent on two characteristics of recent banking developments: the expansion of overdraft lines of credit (facilities that then make actual credit flows more demand-determined); and banks' liability management through which the additional loans extended are financed.

[13] See GRAMLEY (1982) and SIMPSON-PARKINSON (1984).

ceilings, and the increased competition within the financial industry have weakened non-price credit rationing and reinforced the role of changes in interest rates. In fact, the case has been made, by Kareken (1984), that if credit constraints do become binding then the system will change so as to avoid them in the future.

Finally, even assuming that "equilibrium" rationing is still an important characteristic in some credit markets, is this theory applicable to a credit (or debt) aggregate which is so broad as to include the entire government debt and all borrowing by the private sector? The aggregate which Friedman suggested, and the FOMC later adopted, is in fact the total debt of public and private sectors (it only excludes corporate equities). As of year-end 1983, government debt (including both federal and state-local obligations) represented 30% of total debt outstanding. On the other hand, if we add up government and private securities, bonds, and open market paper we get 41% of the outstanding debt. And if we take into account the fact that there are many large firms which would be very rarely denied credit by the banks, we can see that less than 50% of total debt can be considered as assets of financial intermediaries to which the model of credit rationing could be applied.

In sum, for such a broad credit aggregate we cannot define a single transmission mechanism to economic activity. Its main components transmit (or reflect) different impulses to spending decisions. *Availability effects* on borrowing units could be significant (but then actual credit growth will simply mirror economic activity) and yet not apply to government debt. On the other hand, if we take into account the balance sheet linkage between debt owed and debt owned, the credit aggregate can be interpreted as the supply of financial assets. The link from debt to economic activity can therefore be interpreted along the lines of *wealth effects* on spending decisions, if we assume that investors are not willing to expand indefinitely their holdings of financial assets in relation to their incomes, but will alternatively consume more or hold real assets. A broad credit aggregate which summarizes different transmission mechanisms may still be a relevant *indicator* for assessing monetary policy effects but it is unlikely to be the most significant *target* for monetary policy. Also, it is doubtful whether the central bank could exercise much control (at least in the short run) over a credit aggregate that in recent United States experience — as well as in previous Italian experience[14] — has been

[14] The Italian experience with credit targets is examined in some detail in VACIAGO (1985). The debt aggregate being "monitored" in the United States is similar to the "total domestic credit" aggregate adopted in Italy since 1974, which only excludes Italian residents' direct borrowing abroad.

increasingly influenced by fiscal policy. As we have already noted, debt is the sum of government and private sector borrowing in credit markets. And in order to effectively control that aggregate, monetary policy should succeed in changing credit flows to the private sector to exactly offset any change in government debt. Operating through the effects of interest rates on credit to the private sector, control of total debt by monetary policy instruments might be feasible but only in the long run. The more so in an open economy with effective capital mobility: if rising interest rates have to provide an offset to the "excessive" growth of debt they could also induce capital inflows. Thus, it will only be through the associated exchange-rate appreciation that full control of the total debt aggregate will eventually be achieved. But if this is true, we can see that eventual control of the debt aggregate is in fact only guaranteed by the adherence to a monetary *target* which, having been defined independently from fiscal policy, will automatically lead to higher interest rates and to an appreciating exchange rate in response to any debt-financed fiscal expansion. Credit availability and wealth effects as summarized by the credit aggregate can be taken into account in defining the monetary targets; and by monitoring debt expansion the authorities can also assess the portfolio (substitution) effects and the direct transaction (velocity) effects that adherence to the predetermined monetary targets is transmitting to the economy.

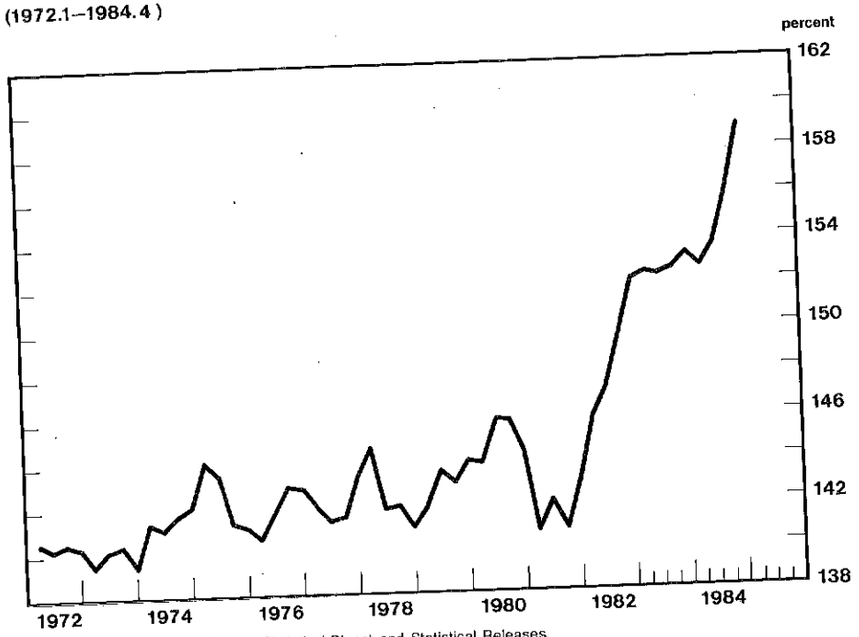
Does recent U.S. experience confirm this interpretation of the role of broad credit aggregates? At first sight, the available evidence points to a positive answer, but some important qualifications are necessary. In the 1982-84 period, debt growth has been faster than GNP growth: the debt/income ratio rose from 140 (1981 year-end) to an historical peak of almost 160 at 1984 year-end (see Chart II). The expansion of the credit aggregate reflected the *net* effect of an unprecedented imbalance between an expansionary fiscal policy and a non-accommodating monetary policy. In fact, the strength of debt expansion reflected only moderate crowding out of private borrowing due to rising real interest rates and exchange-rate appreciation. But the fast growth in the credit aggregate was mirrored in a sharp deterioration in the U.S. current account of the balance of payments, as U.S. government debt expanded faster than private debt and debt incurred abroad rose faster than debt incurred in domestic markets.

Therefore, if we consider the entire 1982-1984 period, we find a pattern which closely resembles past Italian experience: a higher debt-to-income ratio is partly accommodated through higher real

Chart II

Debt to income ratio

(1972.1–1984.4)



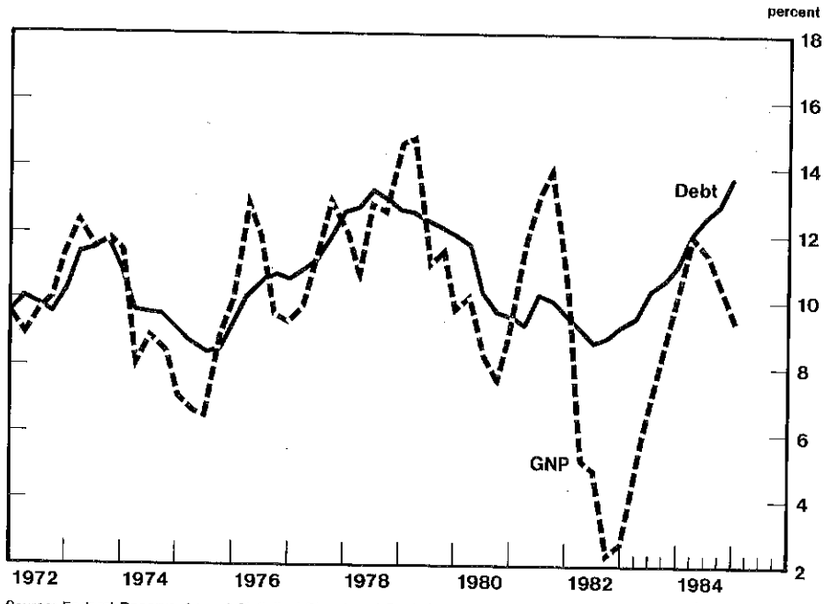
Source: Federal Reserve Annual Statistical Digest and Statistical Releases.

interest rates and partly through a widening external deficit. And one could make the case that only by returning to a lower debt/income ratio a permanent reduction in real interest rates *and* in the external deficit could be obtained. However, in the short run, the interaction between developments in debt, monetary aggregates and nominal GNP is more complex than long-run trends would suggest. The expansion of debt continued unabated in 1983 and 1984, and in fact it accelerated in 1984, while both the monetary aggregates *and* GNP slowed down in the second part of 1984 (see Chart III). While in 1983, actual debt growth remained inside (although in the upper half) of the stated range, in 1984 it went further above the "monitoring range" anticipated by the FOMC. Although no specific mention to this can be found in the FOMC minutes, one could therefore make the case that in the spring of

Chart III

Growth in debt and GNP

(4 quarter changes; 1972.1–1984.4)

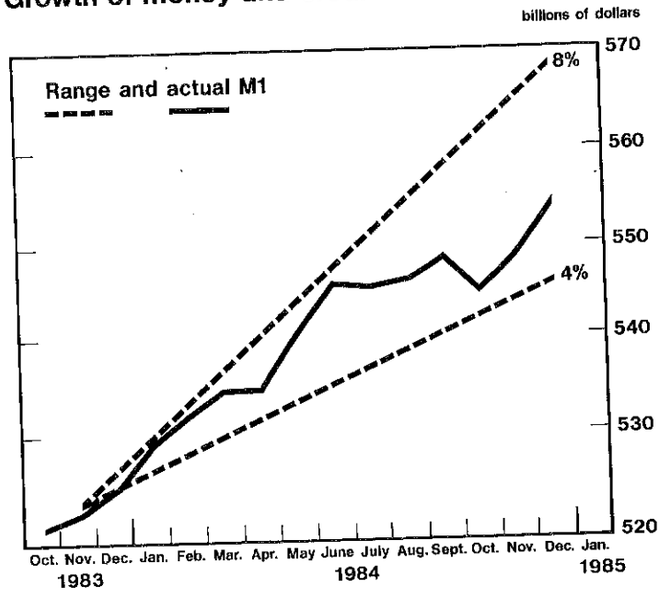


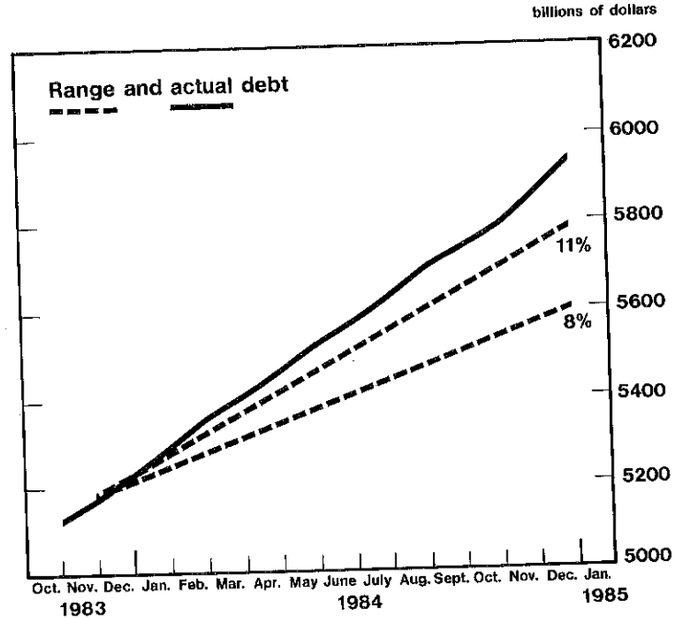
Source: Federal Reserve Annual Statistical Digest and Statistical Releases.

1984 monetary policy was tightened — notwithstanding the fact that M1 growth was still inside its target range — because of the overshooting of debt growth (see Chart IV). Pressure on bank reserves and rising interest rates — up to the summer of 1984 — led to a slow-down in monetary aggregates and in GNP growth, and then to a loosening in monetary policy in the last part of the year. Again, the case could be made that since debt continued to grow rapidly, the authorities loosened their policy by less than they would have otherwise done. In the short run, however, this policy could lead to contradictory results: a slow down in GNP growth, given the expansion of debt, would still increase the debt/income ratio and therefore lead to further problems. It is probably safer to assume that it is the underlying upward trend in

Chart IV

Growth of money and credit in 1984





Source: Federal Reserve statistical releases.

debt (and its rising ratio to income) which worries the monetary authorities and that constrains their basic stance. If this is so, there is no need for a short-run reduction in M1 growth to reflect any overshooting of debt expansion above its "monitoring range"; temporary changes in the growth of monetary aggregates will have almost no effect on the growth of debt. A fast expansion of debt, however, should indicate that the actual mix of fiscal and monetary policies continues to exert long-run expansionary effects on the economy and this assumption would influence the setting of monetary targets.

In conclusion, the following points should be noted. No single transmission mechanism can be detected for a credit aggregate which is so broad[15] as to encompass all government and private debt, whether incurred in domestic markets or abroad, both short and long, and whether incurred in open markets or from credit extended by financial intermediaries. The lack of a well defined and unique transmission mechanism, and the limited control that, at least in the short run, the central bank can exercise over this broad aggregate, argue against its choice as the main *target* for monetary policy.[16] But it can be assumed — as confirmed by recent experience — that the underlying trend of a broad credit aggregate, which measures the *net* effect of fiscal and monetary policies, can provide potentially useful supplementary advance information on the economy, and therefore be used in judging the appropriateness of the monetary targets. The more so if financial innovation and deregulation continue to alter in an unpredictable manner the velocity of monetary aggregates. The information provided by a broad credit aggregate, however, is not so relevant for the assessment of short-run monetary targets, since its developments have a bearing on the economy which are more significant in the long run. In fact, while in 1982-84 the unprecedented increase in the debt/income ratio is evidently associated with historically high real interest rates and a drastic deterioration in the U.S. current balance of payments, no such correlation emerges in the short run. The debt/income ratio stabilized in 1983 but real interest rates were on average higher (and the external

[15] Of course, "broad" refers to its economic meaning and not simply to the fact that the stock of debt is ten times greater than the stock of M1.

[16] In fact, in his most recent research on this topic, FRIEDMAN (1984a, 1984b) denies that there are invariant quantitative regularities in the monetary and financial aspects of the U.S. business cycle experience and raises new doubts on designating specific financial variables as targets of monetary policy.

deficit greater) than in 1982; that ratio continued to increase in 1984 and yet real interest rates declined after the summer. In the short run, changes in interest rates and in GNP can be explained more by changes in the monetary aggregates than by changes in the ratio of debt to income.

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REFERENCES

AXILROD, S.H. "Monetary Aggregates and Monetary Policy in a Deregulated Financial World", in Federal Reserve Bank of San Francisco, *Interest Rate Deregulation and Monetary Policy*, Proceedings of a Conference, November 28-30, 1982.

BLINDER, A.S., *Credit, Working Capital, and Effective Supply Failures*, Institute for International Economic Studies, Seminar Paper No. 265, Stockholm, 1983.

BLINDER, A.S., "Comment", *Brookings Papers on Economic Activity*, No. 1, 1984.

BLINDER, A.S., and STIGLITZ, J.E., "Money, Credit Constraints and Economic Activity", *A.E.A. Papers and Proceedings*, May 1983.

DAVIDSON, L.S. and HAFER, R.W. "Some Evidence on Selecting an Intermediate Target for Monetary Policy", *Southern Economic Journal*, October 1983.

FRIEDMAN, B.M., *The Relative Stability of Money and Credit "Velocities" in the United States: Evidence and Some Speculations*, National Bureau of Economic Research, Working Paper No. 645, 1981.

FRIEDMAN, B.M., "Money, Credit, and Federal Reserve Policy: Reply to Porter and Offenbacher", *Federal Reserve Bank of Richmond - Economic Review*, November-December 1983(a).

FRIEDMAN, B.M., "The Roles of Money and Credit in Macroeconomic Analysis" in J. Tobin ed., *Macroeconomics, Prices and Quantities*, Blackwell, Oxford, 1983(b).

FRIEDMAN, B.M., *Money, Credit and Interest Rates in the Business Cycle*, National Bureau of Economic Research, Working Paper No. 1482, 1984(a).

FRIEDMAN, B.M., *The Value of Intermediate Targets in Implementing Monetary Policy*, National Bureau of Economic Research, Working Paper No. 1487, 1984(b).

GOLDSMITH, R.W., "The Stability of the Ratio of Nonfinancial Debt to Income" in this *Review*, No. 150, September 1984.

GRAMLEY, L.E., "Financial Innovation and Monetary Policy", *Federal Reserve Bulletin*, July 1982.

KAREKEN, J.H., "Bank Regulation and the Effectiveness of Open Market Operations", *Brookings Papers on Economic Activity*, No. 2, 1984.

KOPKE, R.W., "Must the Ideal 'Money Stock' be Controlled?", *New England Economic Review*, March-April 1983.

LAVOIE, M., "The Endogeneous Flow of Credit and the Post Keynesian Theory of Money", *Journal of Economic Issues*, September 1984.

MAYER, T., "Comment" in Federal Reserve Bank of San Francisco, *Interest Rate Deregulation and Monetary Policy*, Proceedings of a Conference, November 28-30, 1982.

MORRIS, F.E., "Monetarism withouth Money", *New England Economic Review*, March-April 1983.

PORTER, R.D. and OFFENBACHER, E.K., "Empirical Comparisons of Credit and Monetary Aggregates Using Vector Autoregressive Methods", *Federal Reserve Bank of Richmond - Economic Review*, November-December 1983.

ROBINSON, M.A., "Debt and Economic Growth" (1959), reprinted in L.S. Ritter ed., *Money and Economic Activity*, Houghton, Boston, 1961.

SIMPSON, T.D. and PARKINSON, P.M., *Some Implications of Financial Innovations in the United States*, Board of Governors of the Federal Reserve System Staff Studies, No. 139, 1984.

SOLOMON, A.M. "Unresolved Issues in Monetary Policy", *Federal Reserve Bank of New York - Quarterly Review*, Spring 1984.

TOBIN, J., "Redefining the Aggregates: Comments on the Exercise", in *Measuring the Money Aggregates*, Subcommittee on Domestic Monetary Policy of the Committee on Banking, Finance and Urban Affairs - House of Representatives, No. 96-100, U.S. Government Printing Office, Washington, 1980.

VACIAGO, G., *Monetary Policy with Credit Targets: the Italian Experience*, forthcoming.

VOLCKER, P.A., "Statement before the Committee on Banking, Housing, and Urban Affairs", U.S. Senate, February 16, 1983, *Federal Reserve Bulletin*, March 1983.