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Bank mergers today: New guidelines, changing markets

The right rabbit: Which intermediate target should the Fed pursue?

ECONOMIC PERSPECTIVES

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Bank mergers today: New guidelines, changing markets

John J. Di Clemente and Diana Alamprese Fortier

In June of 1982, the Department of Justice (the Department) issued the long-awaited merger guidelines, replacing those issued in 1968. The guidelines have as their principal objective the reduction of uncertainty associated with the enforcement of the antitrust laws. This reduction of uncertainty is expected to assist managers in their expansion strategies by increasing their understanding of the principles and standards involved in the Department's antitrust analysis. By issuing guidelines, the Department reveals to the business community the nature and extent of its antitrust evaluation.

The reduction of uncertainty regarding the Department's antitrust analysis is important. Uncertainty is not costless. The predictability of competitive problems is critical in the identification of likely merger or acquisition candidates. Some merger proposals make economic or financial sense (i.e., are profitable) only if they are handled in a facile manner. Some mergers may not be worthwhile if substantial amounts of legal costs are required to defend the merger before federal agencies or in the courts.[1]

In addition to affecting the choice of merger candidates, uncertainty revolving around the antitrust standard may also affect the timing of merger proposals. This is reflected in the preparation of documents (e.g., merger applications and supporting documents) relating to the proposal.

If antitrust problems are perceived to exist by the merging parties because they are uncertain of the existing antitrust standard, an undue length of time may be spent in preparing an extensive antitrust defense where none is required. On the other hand, the merging parties may believe that their proposal has little chance of encountering opposition on antitrust grounds and, therefore, be totally unprepared when the issue is raised. Again, it will take a lengthy period of time to prepare a rebuttal to an antitrust challenge.

Thus, the Department issued the merger guidelines to reduce the uncertainty surrounding the applicable antitrust standard and, thereby, reduce the costs associated with this uncertainty in the process. Business management has more productive pursuits than wondering whether contemplated mergers will pass antitrust scrutiny. The Department has established criteria to indicate which mergers are likely not to be challenged and which mergers are likely to be challenged from an antitrust perspective.

The Department of Justice criteria

The 1982 guidelines assume a structural approach toward antitrust policy. With regard to horizontal mergers, that is, mergers involving firms in the same relevant market, the guidelines focus on market structure and the change in that structure as a result of merger proposals should such proposals be consummated.[2] To implement this policy the Department used the Herfindahl-Hirschman Index (HHI) as a summary measure of market structure.[3] The guidelines establish classes of mergers that are likely to be challenged by the Department based on the post-merger level of the HHI and the change

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[1]Paul M. Horvitz, "Alternative Avenues to Interstate Banking," *Economic Review*, Federal Reserve Bank of Atlanta (May 1983), p. 37.

[2]The guidelines are also concerned with conglomerate and vertical mergers. Interested readers should consult the guidelines for the standards regarding these types of mergers.

[3]The HHI is simply the sum of the squares of market shares of each of the firms in the relevant market. Thus, the

Table 1

Department of Justice Merger Guides

Post-merger market concentration	Increase in HHI	Department responses
Highly concentrated (HHI 1800)	Less than 50 points	Unlikely to challenge
	Greater than 100 points	Likely to challenge
	Between 50 and 100 points	Possible challenge*
Moderately concentrated (1000 HHI 1800)	Less than 100 points	Unlikely to challenge
	Greater than 100 points	Possible challenge*
Unconcentrated (HHI 1000)	Not relevant	Unlikely to challenge

*The Department evaluates a number of additional factors in determining whether to challenge a merger in this range. Readers should consult the guidelines for an explanation of these factors.

in the HHI resulting from the merger.[4] Table 1 indicates the critical levels of the post-merger HHI and increases in the HHI and the likelihood of a challenge by the Department.

With issuance of the 1982 guidelines, the business community is acquainted with the Department's *written* standards. However, the question remains whether the Department adheres to these standards in its analysis of actual merger proposals. If it does not, business is again confronted with uncertainty and its attendant costs.

The following sections address the Department's analysis of bank merger proposals under the 1982 guidelines. All of the Department's competitive factors reports, for the period June 1982 through December 1983 that concluded that mergers would entail substantially adverse competitive effects, have been tabulated. It is hoped that this tabulation will shed some light on the concentration levels and market shares the Department deems critical in assessing bank merger proposals. With this in hand, it may be easier to judge whether a bank merger proposal is likely to run into the Department's opposition.

HHI for a market having the structure indicated below is 2200.

Firm	Share (%)	Share²
A	30	900
B	20	400
C	20	400
D	20	400
E	10	100
	100	2200

The HHI ranges from near zero (unconcentrated markets) to 10,000 (monopoly markets).

[4]The increase in the HHI as a result of a merger is twice the product of the market shares of the merging firms. Thus, from the preceding footnote, if Firm D merges with Firm E, the resulting increase in the HHI would equal 400 points (20 × 10 × 2) and the resulting post-merger HHI would equal 2600.

Competitive factors report

Section 18(c) of the Federal Deposit Insurance Act (FDIA) provides, in part, that:

> In the interests of uniform standards, before acting on any application for approval of a merger transaction, the responsible [banking] agency . . . shall request reports on the competitive factors involved from the Attorney General and the other two banking agencies . . .

The reports submitted under section 18(c) assess *only* the competitive factors of the merger and do not evaluate managerial, financial, or convenience and needs factors that are required to be considered by the agency which will ultimately act upon the merger application. Furthermore, the antitrust standard embodied in section 18(c) is virtually identical to that contained in section 7 of the Clayton Act. That is, the responsible agency may not approve any merger "which would result in a monopoly . . . or whose effect in any section of the country may be substantially to lessen competition" unless the agency finds that the anticompetitive effects are "clearly outweighed" by convenience and needs considerations. Thus, it has been held that an

agency may not deny a bank merger or acquisition on competitive grounds under this standard except where the anticompetitive effects rise to a violation of the antitrust laws.[5]

The importance of predicting whether the Department will issue a "substantially adverse" competitive factors report is obvious. First, such reports are carefully considered by the banking agencies in their merger analysis. Any discrepancy in conclusions between the Department and the banking agency must be carefully reconciled. While each banking agency makes an independent analysis of the probable competitive effects of each merger under its jurisdiction, the views of the Department are accorded considerable weight, even if conclusions may differ.[6]

Second, and perhaps more important, the Department may sue to enjoin the merger. Hence, even if the merger passes muster under the analysis of the banking agency responsible for acting upon it, the Department may, nonetheless, seek to prevent the merger under the antitrust laws. Indeed, section 18(c) directs the responsible banking agency to notify the Attorney General of any approval of a merger transaction and delays consummation of the transaction for 30 days after approval to allow the Department time to intercede.[7]

The first eighteen months of enforcement

In the first 18 months of antitrust enforcement under the 1982 guidelines, the Department issued 11 "substantially adverse" competitive factors reports involving mergers or acquisitions of banking organizations under Section 18(c) of the FDIA.[8] In each merger it was found that the substantial increase in concentration in an already (highly) concentrated market, and the decrease in the number of banking alternatives in the relevant market would result in a substantial lessening of competition in the relevant geographic area.[9]

The relevant markets

In order to determine the lawfulness of any proposed merger under the antitrust laws, the appropriate question to be addressed is whether the effect of the merger would be to substantially lessen competition in any line of commerce in any section of the country. This requires a determination of the relevant geographic and product markets prior to any structural analysis.

Geographic market

In determining the relevant geographic market ("section of the country") in the 11 subject mergers, the Department approximates that area where the banks compete and where customers can practicably turn for alternative banking services.[10]

The Department considers several factors in determining that area in which bank customers who are neither very large nor very small find

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[5] *County National Bancorporation* v. *Board of Governors of the Federal Reserve System*, 654 F.2d 1253 (8th Cir. 1981); *Mercantile Texas Corporation* v. *Board of Governors of the Federal Reserve System*, 638 F.2d 1255 (5th Cir. 1981); and *Washington Mutual Savings Bank* v. *FDIC* 482 F.2d 459 (9th Cir. 1973).

[6] See, for example, *St. Joseph Valley Bank*, 68 *Federal Reserve Bulletin* 673 (1982).

[7] Shorter waiting periods are provided for mergers requiring expeditious action.

[8] All competitive factors reports issued by the Department between June 14, 1982 and December 31, 1983 involving mergers or acquisitions between depository institutions in which the competitive effects were deemed to be substantially adverse were requested. Eighteen such reports were received. Hereafter, for the purpose of simplicity, all subject transactions will be referred to as mergers. For reasons of consistency and uniformity, this article analyzes only the 11 mergers filed under the FDIA. Of the remaining seven reports, four were issued to the Federal Home Loan Bank Board, involving transactions between savings and loan associations, and three were issued to the Board of Governors of the Federal Reserve System, involving transactions under the Bank Holding Company Act. An analysis of the thrift mergers is available from the authors upon request.

[9] In only one merger was the market not classified as highly concentrated subsequent to the proposed transaction (*Commercial National Bank of Little Rock*). Since June of 1982 the Department has issued no substantially adverse competitive factors reports involving market extension mergers of depository institutions.

[10] " . . . the area of effective competition in the known line of commerce must be chartered by careful selection of the market area in which the seller operates, and to which the purchaser can practicably turn for supplies, . . . " *U.S.* v. *Philadelphia National Bank* 374 U.S. 321, 359 (1963).

it practical to do their banking business. Among the factors the Department takes into account are: (1) the distance between the merging parties; (2) the distance and travel time to the nearest banking alternative and ease of transportation between banking alternatives; (3) worker commuting patterns; (4) shopping patterns; (5) the location of employment, social, and governmental centers; (6) the economic base of the community (e.g., agricultural or industrial); (7) advertising coverage by various media (television, radio, print); and (8) the locations of other major services (e.g., colleges, hospitals, airports).

Product market

The Department has used two different product markets in its bank merger antitrust analysis: wholesale banking services and retail banking services. By using the wholesale product market, the Department adheres to the doctrine that commercial banking is a distinct line of commerce identified as "the cluster of products (various kinds of credit) and services (such as checking accounts and trust administration) denoted by the term 'commercial banking'."[11] Wholesale banking services are defined by the Department as generally those services provided to commercial customers, including demand deposit accounts, time and savings accounts, and commercial loans. This product market, in the Department's view, is composed of commercial banks.

By also defining the relevant product market as retail banking services, the Department has taken into account the thrust of changes in the financial services industry as a result of the Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St Germain Depository Institutions Act of 1982. In so doing, the Department seems to be indicating that the banking industry is at a stage where it may be unrealistic to distinguish savings banks and savings and loan associations from commercial banks for purposes of the antitrust laws.[12] Among the retail banking services provided to individual (noncommercial) customers, as defined by the Department, are transaction accounts, time and savings accounts, consumer loans, and residential mortgage loans. Both commercial banks and thrifts (generally) are considered by the Department as part of this product market.

Characteristics of the mergers

The salient characteristics of the 11 mergers are presented in Table 2. Two mergers were appraised by the Department using only the product market of wholesale banking services (*Nevada Bank & Trust Co.* and *Citizens American Bank, N.A.*). There were also two mergers analyzed using only retail banking services as the relevant product market (*National Bank & Trust Co. of Norwich* and *The Banking Center*).[13] In the remaining seven mergers, the Department's structural analysis was premised on the use of both relevant product markets—wholesale banking services and retail banking services.

Market concentration

Whether using wholesale or retail banking services as the relevant product market, in all but one case the markets were highly concentrated (HHI greater than 1800) subsequent to consummation of the proposed transaction. With respect to wholesale banking, the high, median, and low post-HHI for the eight highly concen-

[11] *U.S.* v. *Philadelphia National Bank* at 356; *U.S.* v. *Phillipsburg National Bank* 399 U.S. at 360 (1970); and *U.S.* v. *Connecticut National Bank* 418 U.S. at 664 (1974).

[12] See *U.S.* v. *Connecticut National Bank* at 665. For information on these acts see: *Economic Perspectives*, Federal Reserve Bank of Chicago (September/October 1980) and *Economic Perspectives*, Federal Reserve Bank of Chicago (March/April 1983).

[13] In *Nevada Bank & Trust Co.* the two subject banks held 96.5 percent of the market deposits and two public credit unions together held an insignificant 3.5 percent of the market's total deposits. In *Citizens American Bank, N.A.* it was concluded that the inclusion of thrift institutions would have a negligible impact on market concentration. *The Banking Center* dealt with the merger of two mutual savings banks. *National Bank & Trust Co. of Norwich* involved two banks located in markets where thrifts have traditionally been considered to provide significant competition to commercial banks.

Table 2

Bank Mergers and the 1982 Department of Justice Merger Guidelines

Mergers (Date of Department of Justice Report)[a]	Acquiring organization			Organization to be acquired			Herfindahl-Hirschman Index			Four-firm concentration		Type of market[c]	Agency decision
	Deposits ($ mil.)[b]	Market share %	Market rank	Deposits ($ mil.)[b]	Market share %	Market rank	Pre	Post	Change	Pre	Post		(Date)
First National Bank of South Carolina/The Bank of Lancaster and *Central Carolina Bank* (commonly owned banks) (Aug. 25, 1982)	825	18.3	N.A.	50	57.2	1st	4023	6132	2109	100	100	Rural	Approved (Nov. 15, 1982)
		8.2	N.A.		25.2	1st	1912	2333	421	N.A.	N.A.		
National Bank and Trust Company of Norwich/ National Bank of Oxford[d] (Sept. 10, 1982)	242	54.2	1st	15	4.5	7th	3262	3750	488	79.8	84.3	Rural	Approved (April 8, 1983)
Nevada Bank and Trust Company/Nevada National Bank (branch)[e] (Nov. 9, 1982)	4	31.7	2nd	9	64.8	1st	5216	9324	4108	100	100	Rural	Pending
Commercial National Bank of Little Rock/The First National Bank in Little Rock (Dec. 3, 1982)	280	14.0	2nd	267	14.0	4th	1335	1712	377	66.0	74.0	Urban	Approved (May 27, 1983)
		10.0	4th		9.0	6th	925	1171	246		59.0	Urban	
The Banking Center/The Woodbury Savings Bank[d] (Dec. 6, 1982)	627	28.7	1st	103	4.9	6th	1525	1813	288	67.0	72.0	Urban	Approved (Feb. 28, 1983)
Old National Bank of Martinsburg/ Citizens National Bank of Martinsburg (Dec. 13, 1982)	64	37.8	1st	48	23.5	2nd	2759	4536	1777	100	100	Rural	Application Withdrawn (Jan. 24, 1983)
		32.7	1st		20.4	2nd	2191	3525	1344	86.6	97.5		
First National Bank of Mayfield/ The Exchange Bank (Dec. 16, 1982)	27	22.6	2nd	22	18.3	3rd	3384	4211	827	98.8	N.A.	Rural	Denied (April 20, 1983)
		12.2	4th		9.8	5th	2083	2322	239	84.0	93.8		
Citizens American Bank, N.A./State Bank of Green Valley[e] (Jan. 14, 1983)	38	15.9	3rd	21	7.3	6th	1849	2082	233	77.5	84.8	Rural	Denied (March 2, 1983)
First Security Bank of Utah, N.A./ Bank of Iron County (March 9, 1983)	1,700	40.2	1st	20	17.9	3rd	2986	4429	1443	95.1	100	Rural	Denied (June 22, 1983)
		33.3	1st		14.8	3rd	2237	3225	988	87.5	92.1		
Peoples Trust Bank/ Indiana Bank and Trust Company (June 30, 1983)	295	17.9	3rd	341	16.2	4th	2191	2769	578	89.5	97.4	Urban	Denied (Aug. 15, 1983)
		14.4	3rd		13.1	4th	1574	1951	377	72.3	82.7		
The Peoples National Bank Bank of Central Pennsylvania/Farmers Community Bank (Nov. 18, 1983)	110	23.3	3rd	52	11.1	4th	2139	2656	517	88.0	91.8	Urban	Pending (Feb. 16, 1984)
		16.2	4th		7.7	5th	1971	2219	248	84.0	91.7		

[a] Cases are listed in chronological order by date of competitive factors report. [b] Deposit data represent total bank deposits (not market deposits) and are in millions of dollars. [c] A market is designated as urban if it is in whole or in part an SMSA or RMA; otherwise, the market is designated as rural. [d] Only retail product market was used in competitive factors report. [e] Only wholesale product market was used in competitive factors report. N.A. Not available in competitive factors report.

trated markets were 9324, 4320, and 2082, respectively. Using retail banking as the relevant product market lowers these figures significantly to high, median, and low post-HHI of 3750, 2328, and 1813, respectively. The only market that was not highly concentrated had a post-HHI of 1712 using wholesale banking services and 1171 using retail banking services as the relevant product market.

While the basis of the structural analysis in the guidelines is the post-HHI and the change in the HHI, the four-firm concentration ratio was discussed in each merger. Apparently, this ratio still has some significance in the Department's antitrust appraisal. A look at market concentration using the concentration ratio provides a rough comparison to the old (1968) guidelines. Of the eight wholesale markets classified as highly concentrated under the 1982 guidelines, all have a concentration ratio greater than 75 percent prior to the transaction, and hence would be considered highly concentrated under the 1968 guidelines. Similarly, of the eight highly concentrated retail markets pursuant to the 1982 guidelines, all but two are also highly concentrated according to the 1968 guidelines prior to the proposed transaction.

Relative size and change in HHI

In all cases the increase in the HHI resulting from the proposed merger significantly exceeds the thresholds of challenge outlined in the guidelines. The smallest increase in the HHI, 233 points, resulted from a merger between the third largest and sixth largest banks in the market with 15.9 percent and 7.3 percent market shares, respectively *(Citizens American Bank, N.A.)*. The largest increase in the HHI, 4108 points, involved a merger between the top two banks in the banking market, controlling 64.8 percent and 31.7 percent of market deposits *(Nevada Bank & Trust Co.)*. The smallest and largest increases in the HHI for all markets (i.e., both retail and wholesale markets) occurred in wholesale banking markets.

Focusing on retail product markets, the smallest increase in the HHI is 239 points resulting from the combination of the fourth and fifth largest banks in the market, holding 12.2 percent and 9.8 percent of market deposits *(First National Bank of Mayfield)*. Notice that this HHI figure is not significantly different from that in the wholesale markets. However, the largest increase in the HHI for retail markets is 1344 points, which is significantly lower than that for wholesale markets. The 1344 point increase in the HHI involved the merger of the two largest banking organizations in the relevant market, controlling 32.7 percent and 20.4 percent of total market deposits *(Old National Bank of Martinsburg)*.

As indicated, the large relative size of the subject organizations contributed directly to the prohibitively large increases in the HHI. In all but two of the eight wholesale markets, one of the merging parties is either the largest or second largest organization in the market. And in the two exceptions, the acquiring banks ranked third largest in the relevant market. Similarly, for the eight mergers using retail product markets, five involved the largest organization in the market.

Absolute size

Percentages aside, small absolute size seems to provide no barrier to the issuance of a significantly adverse competitive factors report by the Department.[14] Although three mergers involved an acquiring organization that ranked among the ten largest financial institutions in the state, the remaining cases all involved organizations with less than $342 million in total market deposits. Indeed, of these eight mergers, the median size of the acquiring organization was $87 million in total market deposits, whereas the median size of the acquired firm was only $35 million in total market deposits.

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[14]"Mergers of directly competing small commercial banks in small communities, no less than those of large banks in large communities, are subject to scrutiny under these standards. Indeed, competitive commercial banks play a particularly significant role in a small community unable to support a large variety of alternative financial institutions." *U.S.* v. *Phillipsburg National Bank* at 356.

Actual enforcement

All eleven mergers significantly surpassed the 1982 guidelines' structural thresholds indicating likelihood of a challenge by the Department. Notwithstanding the violations of the guidelines, only four mergers were denied by the relevant bank regulatory authority. Two mergers *(Old National Bank of Martinsburg and Nevada Bank & Trust Co.)* were withdrawn. Another merger remains pending before the Comptroller *(The Peoples National Bank of Central Pennsylvania)*.

Of the four mergers approved by the bank regulatory agencies, the Department has filed suit in only one *(National Bank & Trust Co. of Norwich)*.[15] In determining whether to litigate, the Department reviews all its competitive factors reports in which the competitive effects were considered to be substantially adverse. Additional information pertinent for a more in-depth antitrust analysis is sometimes requested. Such information may be obtained from other banking organizations and bank customers as well as other sources.

Differing analyses

Each bank regulatory agency, in ruling upon mergers between depository organizations, uses the Department's guidelines as an aid in its analysis. Although each of the approved mergers violated the structural criteria of the 1982 guidelines, each banking agency also considered other nonstructural factors that lessened the anticompetitive effects implied from a purely structural analysis.

There are several differences between the analysis used by the Department in issuing its substantially adverse competitive factors reports and that used by the relevant regulatory agency in reaching its approval on the same merger. One is the consideration of convenience and needs factors, and the conclusion that such factors outweigh the anticompetitive effects of the proposed transaction *(The Banking Center)*. Another difference was in a basic premise of the analysis, the determination of the relevant geographic market *(First National Bank of South Carolina, National Bank and Trust Co. of Norwich*, and *Commercial National Bank of Little Rock)*. (For an elaboration on the basic premises of the structural analyses, see the following section.) Approval also resulted from an analysis of "nonstructural factors" of the merger, i.e., sections III(B) & III(C) of the guidelines. Among such factors considered were ease of entry and market characteristics *(National Bank & Trust Co. of Norwich* and *The Banking Center)*.

The Comptroller, unlike the Department, also extended its analysis beyond mere market shares *(National Bank & Trust Co. of Norwich* and *Commercial National Bank of Little Rock)*. As indicated in section II(D) of the 1982 guidelines, a firm's market share may overstate or understate its true competitive influence.[16]

Continuing uncertainties

Evidence from the first year and one-half of operation under the guidelines indicates that the bank regulatory agencies and the Department differ somewhat in their antitrust analyses. Also, it is clear that the Department becomes concerned with bank mergers only when the guidelines are significantly surpassed.

That the Department's application of the merger guidelines in the sphere of commercial banking differs significantly from the thresholds as stated in the guidelines should not be viewed as an inconsistency. The reason for this is that the guidelines *assume* that the major premises of the structural analysis—the relevant markets—are properly defined. In regard to commercial bank-

[15] *U.S.* v. *National Bank & Trust Co. of Norwich* No. 83 CIV 537 (N.D. N.Y., filed May 6, 1983). The Department has filed a consent decree to end this suit. The decree calls for the divestiture of two branch offices and an end to defendant's home office protection.

[16] By using total organization deposits rather than market deposits and market share, the Comptroller in this particular instance *(National Bank & Trust Company of Norwich)* employs the theory that the competitive ability (market power) of a firm within a relevant market should not be measured only by its presence in the market but also should include all or part of its services provided outside of the market. On this point see, William Landes and Richard Posner, "Market Power in Antitrust Cases" 94 *Harvard Law Review* 937 at 963-67.

ing, it is not at all clear as to what precisely are the relevant product and geographic markets. Thus, market shares calculated using wholesale or retail banking as the product markets and countywide approximations as the geographic markets will not generally possess the significance they might when markets are more accurately defined. The ambiguities of market definition that rob market shares and concentration measures of their ordinary significance are discussed below. It is important, therefore, to be aware of the differences between the Department's written standards as expressed in the guidelines and the revealed standards as expressed in the competitive factors reports under discussion. It is likely that these differences exist because of market definition problems. The Department is well-advised to be more lenient in seeking to apply the merger guidelines to commercial bank amalgamations.

Product market issues

A long line of court decisions regarding the relevant product market in commercial bank merger cases has held that commercial banks compete only with other commercial banks. *Philadelphia National Bank*[17] represented the first time the antitrust laws of the U.S. were applied to commercial bank mergers by the Supreme Court. The Court determined that commercial banks were unique institutions that were more or less insulated from the competition provided by other financial services firms based on the unique "cluster" of products and services offered by commercial banks.

This rationale has been upheld by the Supreme Court in later decisions, notably in *Phillipsburg National Bank*[18] and *Connecticut National Bank*.[19] Lower courts also have generally followed the lead of the Supreme Court in this matter, as have the bank regulatory agencies. And, to a great extent, the Department is bound by these prior decisions. Yet much has happened in the years following the Supreme Court's most recent affirmation of its product market determination in 1974.

Market forces and legislative and regulatory change have served to erode the commercial banking cluster argument to such an extent that it is now unreasonable to consider commercial banking a distinct line of commerce. The market forces that compelled legislative and regulatory change are by now well known. Foremost among these market pressures were the high and volatile interest rates associated with the latter 1970s that caused bank and thrift deposit rate ceilings to bind and that subsequently resulted in severe bouts of disintermediation. During this period, new, unregulated institutions and instruments were developed; the money market mutual fund is the most prominent manifestation. Finally, technological advances in the processes of collecting, storing, manipulating, and transmitting data have revolutionized cash management and facilitated innovations such as sweep accounts. The advances in technology have made entry into banking (at least in a *de facto* sense) easier, thereby reducing barriers to competition between depository and nondepository financial institutions.

The market forces compelling these changes have pressured legislators to liberalize restrictions on depository institutions, especially those restrictions related to thrift institutions. The Depository Institutions Deregulation and Monetary Control Act of 1980 and the Garn-St Germain Depository Institutions Act of 1982 have far-reaching effects with respect to the competitiveness of thrifts vis-à-vis commercial banks.

The Monetary Control Act authorizes all federally chartered savings and loan associations to offer nonbusiness negotiable order of withdrawal (NOW) accounts; invest up to 20 percent of assets in consumer loans, commercial real estate loans, commercial paper, and corporate debt securities; issue credit cards and extend credit in connection therewith; and apply for trust and fiduciary powers under restrictions and protections similar to those applicable to national banks. In addition to the expanded powers granted savings and loan asso-

[17]U.S. v. *Philadelphia National Bank* 374 U.S. 321 (1963).

[18]U.S. v. *Phillipsburg National Bank* 399 U.S. 350 (1970).

[19]U.S. v. *Connecticut National Bank* 418 U.S. 656 (1974).

ciations, federal mutual savings banks were authorized to invest up to 5 percent of assets in commercial loans and to accept demand deposits in connection with commercial, corporate, and business loan relationships.

Through the Monetary Control Act, federally chartered thrifts were able to offer individuals the convenience of "one-stop shopping" and, in effect, become their "department store of finance." Nevertheless, the Monetary Control Act did little to aid thrifts in serving the business customer. Without expanded powers to make loans to commercial enterprises, thrifts were not likely to be viewed as full competitors of commercial banks.

With Garn-St Germain, the resemblance of federally chartered thrifts to commercial banks becomes even greater. The ability of thrifts to provide services to commercial enterprises was enhanced in the interest of preserving the viability of thrifts. The act increases the percentage of assets that may be invested in commercial real estate and consumer loans to 40 percent and 30 percent, respectively. In addition, thrifts are permitted to invest up to 10 percent of capital and surplus in state and local securities and invest up to 10 percent of assets in personal property (leasing). Most important, however, is the authority granted thrifts to invest up to 10 percent of assets in secured or unsecured commercial loans ("pure" commercial loans) and to offer demand deposits to business customers with whom the thrift has a business, corporate, commercial, or agricultural loan relationship. These expanded powers granted under Garn-St Germain allow a federally chartered thrift to invest up to 75 percent of its assets in commercial investments.

While commercial banks and thrifts may be different entities with different missions, the differences between them are not substantial in an antitrust perspective. It is problematic whether the new powers granted thrifts will be enough to qualify them as being within the line of commerce of bank mergers. In this vein, the Supreme Court indicates that in delineating a line of commerce

> its contours must, as nearly as possible, conform to competitive reality. Where the area of effective competition cuts across industry lines, so must the relevant line of commerce . . .[20]

Thus, in *Continental Can*, the Court held that because of the *interindustry* competition between glass and metal containers, it was necessary to treat as a relevant product market the combined glass and metal container industries, noting that for some end uses glass and metal containers did not and could not compete. Indeed, *complete industry overlap need not be shown*.

In reality, a federal thrift might closely resemble a commercial bank, notwithstanding the percentage of asset limitations on commercial assets available for investment and the prohibition on offering demand deposits to individuals. Although technically more limited, the powers granted thrifts under the Monetary Control Act and Garn-St Germain suggest that serious consideration be given to including thrifts in the line of commerce.[21]

However, to limit the line of commerce in bank mergers to thrifts and commercial banks would be irrational. Competition must be recognized where, in fact, competition exists.[22] The Department has recognized the expanded powers of thrifts to some extent. This recognition is manifested in its dichotomy of banking into wholesale and retail banking in several of the mergers herein reported. The presence of thrifts alone would serve to erode the significance of bank market shares and concentration measures. Yet, the Department must also be cognizant of the competition afforded commercial banks by nondepository institutions. The presence of a

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[20]U.S. v. *Continental Can Company* 378 U.S. 441, 457 (1964).

[21]The Board of Governors has taken cognizance of the expanded powers of thrift institutions:

> . . . thrift institutions have become, or at least have the potential to become, major competitors of commercial banks not only in the provision of consumer banking services but also in the provision of commercial lending services. These developments, coupled with the size and market share held by thrift institutions in numerous markets, persuaded the Board that in many cases the competition afforded by thrift institutions to commercial banks may be substantial. *First Tennessee National Corp.*, 69 *Federal Reserve Bulletin* 299 (1983).

[22]*Brown Shoe Company* v. *U.S.* 370 U.S. 294, 326 (1962).

substantial number of nondepository competitors in various submarkets, such as business loans, consumer loans, and trust services that comprise the "cluster" of commercial bank services has been documented in a number of studies by the Federal Reserve Bank of Chicago.[23] In addition to these studies, a number of surveys have revealed that businesses, particularly small businesses, obtain financial services from a broad spectrum of financial services providers aside from commercial banks and thrifts.[24]

Moreover, although commercial bank chief executive officers feel that other local or regional banks provided the current source of their most significant competition, a large percentage of these executives mentioned thrifts (64 percent) and brokerage and insurance firms (35 percent) as providing significant competition.[25] More important perhaps is the impression held by the bank executives that Sears, Merrill Lynch, Shearson/American Express, Prudential-Bache, and E. F. Hutton will be their major competitors by 1990. The first three of these organizations are presently viewed as strong competitors by the bank executives (see Table 3).

Thus, even though the competition provided by thrifts and nondepository institutions is difficult to quantify, it must neither be ignored nor understated. Because of the difficulty of coming to grips with nonbank competition, the Department is justified in not relying solely on the HHI thresholds contained in its guidelines in assessing bank mergers. The apparent liberalization of the guidelines in the case of bank mergers is a reasonable position to take given the uncertainties of product market definition.

Table 3

Institution	Strong competitor	
	Now	By 1990
Sears	83%	86%
Merrill Lynch	47%	85%
Shearson/American Express	38%	70%
Prudential-Bache	15%	40%
E. F. Hutton	12%	25%
Kroger	1%	11%
Aetna	—	9%

SOURCE: *American Banker*, March 15, 1984. Table reflects the percentage of bank chief executive officers surveyed responding to whether the listed institutions are regarded as strong competitors to commercial banks.

Geographic market issues

Uncertainties in the definition of the relevant product market engender uncertainties in the definition of the relevant geographic market in bank mergers. The delineation of the appropriate section of the country as an economically viable and realistic geographic market is not without theoretical and practical problems.

The market in theory and practice

Theoretically, a geographic market is that area which encompasses those buyers and sellers that exert and react to common demand and supply forces that determine the price and quality (nonprice attributes) of a particular output. Although there is agreement conceptually on the definition of a market there is less agreement in practice as to the proper delineation of a geographic market. The lack of a single definitive and pragmatic method of determining the appropriate geographic market is evident in the differing methodologies used by the courts and regulatory agencies.[26]

[23]H. Rosenblum and D. Siegel, "Competition in Financial Services: The Impact of Nonbank Entry", *Staff Study 83-1* (May 1981); H. Rosenblum and C. Pavel, "Financial Services in Transition: The Effects of Nonbank Competitors", *Staff Memorandum 84-1* (January 1984); and H. Rosenblum, D. Siegel, and C. Pavel, "Banks and Nonbanks: A Run for the Money", *Economic Perspectives*, Federal Reserve Bank of Chicago (May/June 1983), pp. 3-12.

[24]For example, see P. Watro, "Financial Services and Small Businesses", *Economic Commentary* (January 11, 1982), Federal Reserve Bank of Cleveland and V. Andrews and P. Eisemann, "Who Finances Small Business Circa 1980?", *Studies of Small Business Finance*, The Interagency Task Force on Small Business Finance (1981).

[25]*American Banker*, March 15, 1984, p. 4. These are excerpts from a national survey of bank chief executive officers compiled by Egon Zehnder International, a management consulting firm. Chief executive officers of the nation's largest 2,000 banks were surveyed.

[26]Discussion of the relevant product and geographic market is continued in Section IIA-IID of the Department's guidelines.

Having determined in prior Supreme Court bank merger cases that the relevant product market is commercial banking, the task remained to define a relevant geographic market both consistent with economic theory and the commercial realities of the banking industry. This market must encompass that area where the competitive effects of the merger would be direct and immediate given the location of the merging banks and the practical alternatives available to customers. In this case, practical alternatives are considered other commercial banks.[27]

Recognizing that in the cluster of banking services some services/products are more local in nature than others, and that each customer's economic scale determines his range of practical alternatives of bank services, the Court faced a dilemma. It was concluded that the antitrust standard for analysis should focus on the locally-limited customer, i.e., consumers and small businesses. Thus, geographic markets were determined to be the localized area encompassing the parties to the merger.[28]

In applying this standard, the Department and the bank regulatory agencies disagree on the appropriate methodology to determine the geographic market.[29] This is evident in agency approvals of bank mergers where the Department has issued substantially adverse competitive factors reports. This is not surprising considering that the practice of geographic market definition is more of an art than a science and includes a good deal of judgment. Even if one *assumes* the relevant product market to be commercial banking, the determination of the geographic area in bank mergers is subject to dispute.

As market forces and regulatory and legislative change have affected the appropriate product market relevant to bank mergers, so too have they influenced relevant geographic markets. As far back as 1965, the lower courts divided the commercial banking business into two distinct product submarkets, wholesale accounts and retail accounts. Each was found to have a different geographic market.[30]

Over the past decade, the U.S. has witnessed a relaxation of legal barriers to entry in terms of the liberalization of state branching laws and holding company bank expansion both intrastate and interstate. In addition, the Board of Governors has significantly broadened the array of bank-like services that bank holding companies may offer without geographical constraint.[31] Moreover, unregulated financial services concerns providing bank-like services are not bound by the geographic constraints faced by banking institutions.

Perhaps more important than the relaxation of legal restraints on location are the developments in technology that serve to reduce transactions costs, facilitating competition over wider geographic areas. This can be observed in the development and expansion of ATM networks, videotex home banking services, and banking by mail and telephone.

In light of the above, the once locally-limited banking customer is now confronted with a broader range of financial services providers serving a broadened geographic area. Inasmuch as these important developments are extremely difficult to assess quantitatively, a strick application of the Department's guidelines to commercial bank mergers is inappropriate.[32]

Conclusion

Based on this limited sample of mergers, it appears that the Department becomes concerned

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[27] *Philadelphia National Bank* at 359; *Phillipsburg National Bank* at 362 and *Connecticut National Bank* at 668.

[28] *Philadelphia National Bank* at 360-61 and *Phillipsburg National Bank* at 363-64.

[29] See Paul R. Watro, "Geographic Banking Markets," *Economic Commentary* (September 12, 1983), Federal Reserve Bank of Cleveland.

[30] *U.S.* v. *Manufacturers Hanover Trust Co.*, 240 F. Supp. 867 (S.D.N.Y. 1965).

[31] Sue F. Gregorash., "Seventh District: Leader or Follower in the Interstate Banking Movement?" *Economic Perspectives*, Federal Reserve Bank of Chicago (March/April 1984). Also see Federal Reserve System Regulation Y (12 CFR Part 225).

[32] This view is expressed in a forthcoming Federal Reserve Board *Staff Study* by Jim Burke, "Antitrust Laws and the Limits of Concentration in Local Banking Markets."

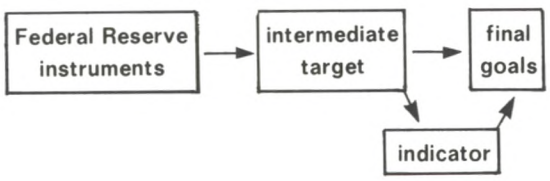
and comments on those mergers which would *significantly* surpass the thresholds of the guidelines' structural criteria. As we have discussed, the Department is justified in not opting for a strict application of the guidelines in bank mergers because of the uncertainties associated with the definition of the relevant markets. It should be noted that in all its competitive factors reports the Department notes that its analysis, which is based solely on information in the subject merger application and other available facts, "is not intended, and should not be relied upon, as precedent or policy" of the Department's Antitrust Division. Notwithstanding this disclaimer, which, if taken seriously, would render the reports essentially otiose, competitive factors reports do provide guidance to interested parties, including the bank regulatory agencies, concerning the application of the merger guidelines by the Department.

The right rabbit: Which intermediate target should the Fed pursue?

Gillian Garcia

The importance of monetary policy to economic well-being is widely acknowledged. Given the recurring problems of recession and inflation that have plagued the U.S. and the world economies for the past two decades, there is general interest in attempts to improve the conduct of monetary policy. During the 1970s and the early 1980s monetary policy has been conducted using an intermediate targeting approach. This paper discusses the relative merits and demerits of the several alternative candidate intermediate targets.

The Federal Reserve uses one or more intermediate targets when it conducts monetary policy because it believes that it operates more effectively this way than if it directed its tools immediately at its ultimate objectives. Under intermediate-targeting, the Fed first sets goals for the final economy in terms of the rate of growth of final output and the rate of inflation. It then estimates the level or the growth rate for its intermediate target or targets that are most consistent with achieving these ultimate goals. Finally it sets its policy instruments at levels commensurate with hitting the intermediate target. That is, policy is conducted according to the schema



Note the use of an indicator in the conduct of monetary policy. This is some variable (not one of the final objectives) which is influenced by monetary policy and which gives early information on the likely outcomes for the final goals. For example, data on retail sales (available more quickly and more frequently than GNP figures) provide one of many possible indicators.

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Recent experience

In the years immediately before October 1979, the Fed used an interest rate as its main intermediate target, but it was felt that this procedure encouraged inflation. Consequently, in October 1979, the Fed increased its emphasis on the M1 targets and switched to using nonborrowed reserves as the instrument to hit those targets. However, even after the change, inflation initially continued to be a severe problem; interest rates rose to high levels and became more volatile. The economy experienced two recessions within a short period. Many observers argued that the change in operating procedures had exacerbated the economy's ills and a lively debate developed both within and outside the Fed on the relative merits of various potential intermediate targets.

During fall 1982, the Federal Reserve announced that it would pay less attention to movements in M1 in the near term. It pointed out that the relationship between M1's behavior and the final economy was being obscured by several developments in the financial markets. In particular, the phaseout of All Savers Certificates and introduction of the money market deposit accounts (MMDAs) and Super NOW accounts were expected to obscure M1's underlying movements. In the short run, the portfolio shifts resulting from these developments would most likely be effected via M1, the medium of exchange. Consequently, observed changes in M1 growth might reflect merely a reshuffling of funds between accounts with similar purposes, but which happened to be in different money classifications (M1, M2, etc.), rather than a sig-

Glossary

On intermediate targeting

Goals. The features of the economy which the Fed wishes ultimately to influence, such as the growth of real GNP, the inflation rate, or the unemployment rate.

Indicators. Variables that are not final goals but which provide advance information on the economy's likely performance in achieving its goals.

Instruments. Variables which the Fed most closely controls such as the federal funds rate, the discount rate, the level of depository institution reserves, and the reserve requirement ratios.

Intermediate targets. Variables between the instruments and goals over which the Fed has some leverage, such as a monetary aggregate, a credit aggregate, an interest rate, or a money index.

Instruments

Reserve requirements. The amount of funds (held either as vault cash or, directly or indirectly, as deposits at Federal Reserve Banks) that depository institutions must hold in support of their transactions (and some other) accounts.

Federal funds rate. The interest rate at which depository institutions trade reserves and other immediately available funds overnight.

Discount rate. The rate the Federal Reserve Banks charge depository institutions to borrow reserves to meet any deficiencies.

Intermediate targets

M1. Currency in circulation, demand deposits, other checkable deposits, and travelers checks.

M2. M1 plus overnight repurchase agreements (RPs) and overnight Eurodollars (issued to U.S. residents by foreign branches of U.S. banks worldwide), most money market mutual funds (general purpose and broker-dealer), money market deposit accounts, small time and savings deposits.

M3. M2 plus term RPs and term Eurodollars, institution-only money market mutual funds, large time deposits.

L. M3 plus nonbank public holdings of U.S. savings bonds, short-term Treasury securities, commercial paper, and bankers acceptances.

K. Total domestic nonfinancial debt.

Monetary base. Currency in circulation and depository institution reserves.

Divisia indices. Quantity index numbers corresponding to M1, M2, M3, and L that weight the components of each aggregate by their user (or opportunity) cost.

Debit-weighted index. A quantity index of available media of exchange that are weighted to reflect their respective turnover rates.

Nominal interest rate. The annual rate of interest received on a given investment, particularly risk-free Treasury bills.

Real rate of interest (before taxes). The nominal annual rate received or expected over a time interval, less the inflation rate experienced or expected over the same interval. No allowance is made for taxes.

Real after-tax rate of return. The real rate adjusted for the taxes incurred by the particular investor on the interest earned.

Technical terms

Velocity. The speed with which money (particularly M1) changes hands during any year—calculated usually as the ratio of GNP to M1.

Reserve multiplier. The relationship between the stock of depository institution reserves and the quantity of money (usually M1).

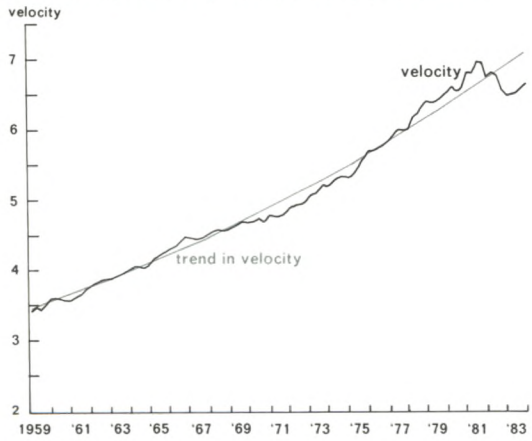
Repurchase agreement (RP). A bookkeeping transaction that temporarily converts a (demand) deposit into a deposit backed, typically, by a Treasury security. RPs allow an institution to reduce the level of its required reserves and the customer to earn (higher) interest rates on his funds.

Turnover. The rate at which any aggregate (or its components) changes hands per year.

Debits. The volume of funds deducted from the different kinds of bank account, i.e., a measure of the work being performed by the account in effecting transactions.

nificant shift in either monetary policy or the public's demand for transactions balances. This possibility was regarded as even more likely because velocity, the ratio of nominal GNP to M1, was behaving more oddly than usual during the 1981-1982 recession. Since the end of World War II, the trend in velocity has been upwards. In recessions this growth typically decelerates, but in 1981-82 velocity actually *declined sharply,* as shown in Figure 1.

Figure 1
The velocity of money declined sharply in 1981-82



Thus, in fall 1982, the question of what alternative intermediate target to use became more urgent. That an answer had to be found was clear — for the Humphrey Hawkins Act mandates that the Fed report its intentions for money and credit growth to Congress semi-annually. And, in fact, it does so each February and July. Moreover, several bills had been introduced into the Congress to direct the Federal Reserve to adopt one of several alternative targets.

Public opinion on the issue

While Congress and the financial press were debating the relative merits of the alternatives—M1, M2, M3, L (the Federal Reserve's measure of liquid assets), a broad credit aggregate, a real or a nominal interest rate, nominal GNP or even no intermediate target at all—the public had several opportunities to express its views. Two surveys of professional opinion were conducted. One surveyed academic economists and the second reported the views of financial market participants.

The results of these two surveys are reported in Table 1. Academic economists surveyed by the House Banking Committee in April 1983 showed a 2:1 preference for switching away from a monetary aggregate to some other intermediate target. Favored alternatives were, in order of preference: a mix of economic indicators, the monetary base, nominal GNP, and interest rates. Financial market participants, surveyed by Money Market Services Inc. in July 1983, favored retaining a monetary aggregate target, particularly M1. Alternatives favored by this group were, in order: nominal GNP, a credit aggregate, a mix of indicators, and the monetary base.

Table 1
Results from two surveys of public preference regarding intermediate targeting

Target	Percentage of academic economists who prefer[1]	Percentage of financial analysts who prefer[2]
Monetary aggregate:	30.8	56.6
M1		(37.7)
M2/M3		(18.9)
Other:	62.6	39.5
Monetary base	(15.5)	(5.6)
Credit aggregate	(3.3)	(9.4)
Interest rate	(7.7)	(1.9)
Mix of indicators	(24.3)	(7.5)
International variables	(1.1)	(0.0)
Other	(1.9)	(0.0)
Nominal GNP	(8.8)	(13.2)
Reserves	(0.0)	(1.9)
Final goals directly	2.2	3.7
Real GNP	(1.1)	(0.0)
Inflation	(1.1)	(3.7)
Don't know/Unclear	4.4	0.0
	100.0	98.8

[1]90 academic economists were surveyed.
[2]53 financial economists were surveyed.
SOURCE: Academic economists were surveyed by Congressman Fernand St Germain for the Domestic Monetary Policy Subcommittee of the House Banking, Finance and Urban Affairs Committee in April 1983. The bankers and dealers were surveyed by Money Market Services Inc., in July 1983.

These surveys indicate a substantial divergence of opinion. Three possible reasons come to mind to account for this divergence. First, there is a difference in the timing of the reports. Academic economists were surveyed by letter by Congressional chairman Fernand St Germain in April 1983. Money Market Services surveyed dealers and brokers by telephone three months later. However, it seems unlikely that such a small lapse in time could have been responsible for such a large divergence of opinion.

Second, it is possible that different segments of the population hold different opinions. It is often argued that those more concerned about unemployment than about inflation prefer nonmonetary indicators. Many academic economists fall into this category. Those who worry about inflation more than unemployment, choose a narrow money aggregate. Market participants, concerned about the adverse effects of inflation on the money and capital markets, may belong to this group.

Third, and this is the position taken in this paper, it may be that there are genuine uncertainties about the relative merits and demerits of the various alternatives. Therefore, these advantages and disadvantages are explored further here.

The pros and the cons

The intermediate target question is not new, but the events described above prompted a surge of research into the topic. This article summarizes some of the recent research and discusses the pros and cons of the several proposed targets: the monetary base, M1, M2 and/or M3, a credit aggregate, an interest rate (either real or nominal), nominal GNP, or one of the two new money index numbers.

Four criteria are used to evaluate the alternative targets. First, the chosen intermediate target should be closely and causally related to the final targets set for monetary policy. Second, it should be an accurate leading indicator of those final targets. Third, it should be closely and reliably connected to the instruments over which the central bank has direct control. Fourth, its data should be available on an accurate and timely basis.[1]

M1

M1 consists of currency in circulation, demand deposits, other checkable deposits, and travelers checks. That is, it measures transactions balances.[2] Despite the Federal Reserve Board's expressed concern about M1's usefulness in the recent environment, four strands of current research support its continued use in the long run. First, Batten and Stone (1983) show that M1 continues to meet the first criterion listed above. That is, it explains real GNP and inflation well. The relatioship can be summarized in a "St Louis equation" for the period 1960.II to 1982.IV. The St. Louis equation relates the annualized quarterly growth rate of GNP (Y) to the similar growth rates for M1 and high employment government expenditures (E) for the current and previous four quarters. That is,

$$\dot{Y}_t = a + \sum_{i=0}^{4} m_i \dot{M}_{t-i} + \sum_{i=0}^{4} e_i \dot{E}_{t-i} + u_t.$$

Batten and Stone show that, despite changes in operating procedures, M1 continues to explain GNP. It explains GNP before October 1979, when the Fed was using a nominal interest rate as its intermediate target. It explains GNP when the Fed was using M1 as its intermediate target and it explains GNP during late 1982 when the Fed changed its intermediate target emphasis once again—this time to the broader aggregates, M2 and M3. For example, Batten and Stone find that M1 explains 31 percent of the quarter-to-quarter variation in nominal GNP and over 80 percent of the short-term variation in the inflation rate. Moreover, despite an estimation bias

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[1]The Federal Reserve, itself, has some ability to influence the performance of any intermediate target when judged by the third and fourth criteria. An important issue is whether the Fed could, if it wished to, change its procedures to allow it to directly control, via its instruments (existing or new), an important economic variable. An ancillary issue is whether it could then arrange to have the necessary data available on an accurate and timely basis.

[2]It does not, however, include money market mutual funds or money market deposit accounts, which have limited transactions features.

against the monetarist model, it is found to be as successful as are the well-known large econometric models in forecasting nominal and real GNP and the inflation rate.

Second, research by Thomas Gittings (1983) at this bank demonstrates the usefulness of M1 as an intermediate target. Gittings has built a small macro model in the St. Louis tradition, but with the long-run neutrality of money assumption formally imposed. The neutrality assumption means that a change in the growth rate of money or credit, when this is used as the intermediate target, eventually causes an equal change in the rate of inflation and does not have a permanent effect on the level of real output. The model's specification contrasts with the St. Louis models, which do not impose this assumption, and with the several large macro models, which are so constituted that neutrality is achieved only after very long lags.[3] The model works well until the last quarter of 1982. At that time, many macro models experienced difficulty—a difficulty reflecting the unusual behavior of velocity, which will be discussed further below.

Gittings' model can be used to ask which of several money and credit aggregates best explains GNP and inflation. The answer is M1. The superiority of M1 over this period is demonstrated in Figures 2-7.

The Gittings model of real GNP and inflation was built on data that ended with 1976. Consequently, four tests are available for judging the performance of the three intermediate targets examined in these charts (M1, M2, and the Federal Reserve's credit aggregate, K). These are the ability of each aggregate to track real GNP both "in-sample" (through 1976) and "out-of-sample" (after 1977) and to track inflation over both intervals, as well.

M1, in sample, tracks the extent and the timing of the upward and downward spurts in both real GNP and inflation reasonably well. While M2 and K track real GNP well, they do not so accurately portray in-sample the inflation rate. Out-of-sample, none of the three variables successfully tracked the range of post-1976 variation in real GNP or inflation. But then it is (deliberately) asking a lot (much more than is asked of the large commercial econometric models) to forecast seven years out of sample. In short, these simulations show that M1 predicts real GNP and the inflation rate better than does the monetary base or M2 and as well as any credit aggregate. That is, M1 meets the first and second criteria for an intermediate target better than do most alternatives and at least as well as credit.

Third, research by William Barnett (1982) and Paul Spindt (1983) shows that M1 continues to explain the economy well in normal times. However, in abnormal times, such as 1974-76 and 1982-83, the policymaker may find supplementary information provided by one of the two new monetary indices useful. These are discussed further below.

Fourth, several economists have advocated using a credit target as a supplement or replacement for M1. In justifying this position, Benjamin Friedman (1982) has conducted a large number of empirical tests on time series data. These tests, together with those by Edward K. Offenbacher and Richard D. Porter (1983) at the Federal Reserve Board, show that while some credit measures perform as well as M1 in explaining economic events, none does better than M1 alone.

No intermediate target is perfect; there are three main disadvantages to using M1 in this way. First, the continuing process of financial innovation—such as the growing use of credit cards and repurchase agreements, has served to increase the (velocity) relationship between M1 and GNP. Second, this regular upward trend was sharply reversed (see Figure 1) during the 1981-2 recession. The reasons for velocity's decline were not (and still are not) well understood. Third, the gradual extension of reserve requirements to nonbank depository institutions and the downward adjustment of requirements for many banks has distorted the multiplier relationship between reserves and M1. These problems, particularly the first two, caused the Fed to deemphasize the use of M1 during Fall 1982. Thereafter M2 and M3 were given greater attention than before.

[3]Some economists feel that the lags observed in the large macro models are artifically long because of econometric estimation problems.

Figure 2
The M1 version of Gittings Model predicts real GNP reasonably well until 1982 . . . .

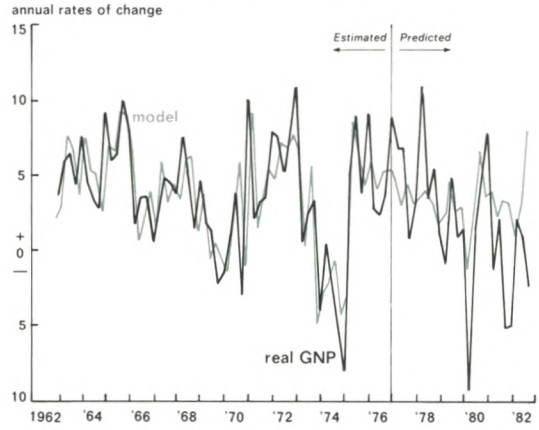
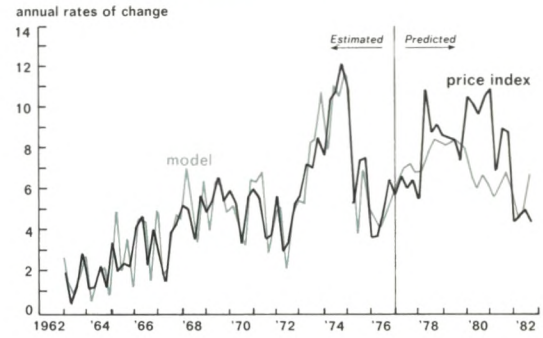


Figure 3
. . . And does almost as well with the implicit GNP deflator (price index)



Nevertheless, the four strands of research support M1's usefulness in explaining movements in the economy. While it failed during the last quarter of 1982, during the first half of 1983, and also in 1974-76, M1 has otherwise been a good predictor of the economy. M1 also meets the last two criteria for an intermediate target. That is, it is closely related to the Fed's instruments such as the federal funds rate, and the supply of nonborrowed reserves (Bryant, 1983). Further, the Fed has experience in its use and this experience has provided detailed, accurate, and timely data on the movements of M1 and its components.[4]

The monetary base

The monetary base consists of currency in circulation and depository institution reserves. Such bank and thrift reserves are comprised of currency on hand and deposits held at the Federal Reserve. Some economists are currently advocating use of the monetary base as a surrogate for M1 in the present environment. Advocates of the base argue that the Fed is better able to control the base than M1, while the base governs the growth of M1 and should, therefore, also be closely related to the final economy. According to these economists, the base meets criteria (3) and (1) above. There is, however, debate on these issues.

For example, currency is supplied according to the public's needs, so that the Fed does not control this component of the base. Further, there is debate as to what extent the Fed controlled the supply of reserves to depository institutions under a system of lagged reserve accounting, (LRA), which was in effect in the period from September 1968 through January 1984. Under lagged reserve accounting, depository institutions held reserves in one week against the deposits they had held two weeks earlier. Then, if the institutions were to meet their legal obligations, the Fed had to supply the necessary quantity of reserves, which had already been determined. Thus, while the Fed could control the quantity of unborrowed reserves, it was forced to supply any deficiency in the form of borrowed reserves. In short, critics question whether the Fed under LRA actually had any better control over the base than it had over M1.

In February 1984, the Fed moved to a system of almost contemporaneous reserve accounting. It is too early to say what are the implications of this change for the choice of an intermediate target. Students of reserve accounting predict some small improvement in monetary control (Laurent 1984).

[4]The Fed does acknowledge problems in obtaining accurate seasonal adjustments for its M1 data. These problems hamper the use of daily and weekly, rather than longer period data, and they make the "fine tuning" of monetary policy more difficult. Consequently work is currently underway to improve the Fed's seasonal adjustment procedures (Pierce, Grupe, and Cleveland).

Figure 4
In its M2 version, the Gittings Model does not predict real GNP as well . . .

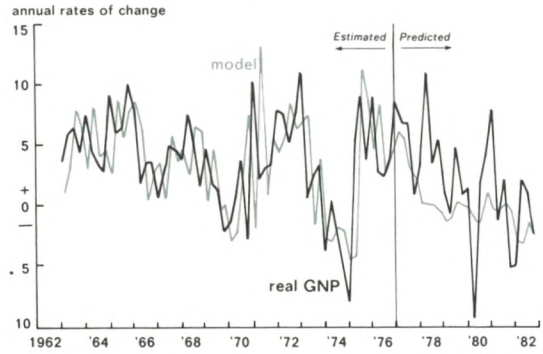
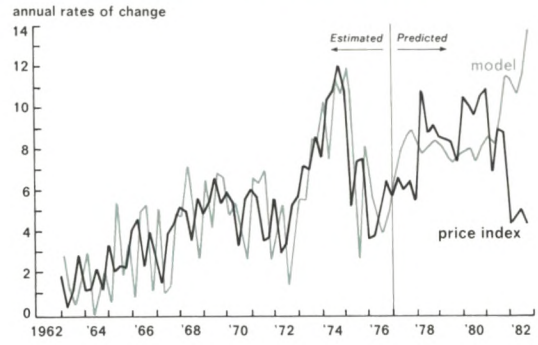


Figure 5
. . . and does even worse with the price index



The question of control over the monetary base has been tackled by Balbach (1981), who argues that while the Fed does not control all items of its balance sheet at all times, it does have sufficient control for enough of the time to counteract any currency or reserve accretion that exceeds the target. Moreover, base data are accurate and are available on a very timely basis, so they satisfy the fourth criterion.

Other critics have disputed whether the relationship of the base to the level of GNP is either stable or predictable—properties necessary if the Fed is to be able to use the base to adequately control the economy. This question was answered earlier in the affirmative by Balbach and also by Johannes and Rasche (1982). With both of these relationships taken care of, the Fed should be able to use the base as its intermediate target. However, Hafer and Hein (1983) admit that the base has recently failed the third criterion test. That is, the base multiplier, which measures the relationship between the quantity of the monetary base and the stock of money, became erratic in 1982. In fact, Hafer and Hein argue that much of the well-known and oft-criticized volatility in money growth during 1982 was attributable to shifts in the base multiplier and was not due to erratic base growth. In such a case, the Fed would need to react quickly and to anticipate accurately changes in the multiplier if it were to precisely control M1. Consequently, economists who essentially want to control the M1 money supply, and who are willing to do so by monitoring the monetary base when they are prevented from using M1 itself, would have had difficulty in successfully pursuing this alternative during the last two years or more.

M2 and M3

These are the two aggregates which the Fed has said it is, at the time of writing, following most closely, together with M1. M2 consists of M1 plus money market deposit accounts, small time and savings deposits, most money market mutual funds (general purpose and broker-dealer), overnight repurchase agreements (RPs), and Eurodollars. M3 adds term RPs and Eurodollar deposits, large CDs and other large time deposits, and the remaining money market mutual funds (institution-only MMMFs).

The switch from M1 to the broader aggregates involved the least dramatic revision of intermediate targeting procedures and so would allow an easy return to M1 targeting. There are some problems in adopting this approach however.

First, the introduction and rapid growth of the MMDA during the first quarter of 1983 made it difficult to interpret M2 movements.[5] This presented a practical problem for the Federal Reserve in deciding upon the target range of growth rates to set for the broader aggregates at the beginning of 1983 and specifically what rates

[5]The effect of the new accounts on the money aggregates is discussed further in Garcia and McMahon (1984).

Figure 6
The K (debt) version of Gittings Model predicts real GNP better than the M2 version, but not as well as M1

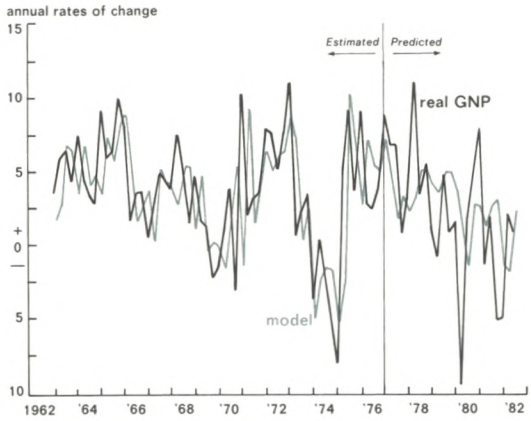
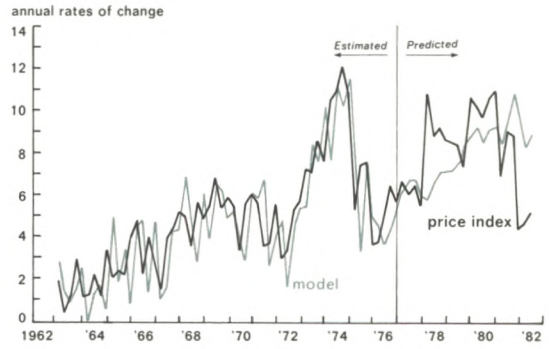


Figure 7
K predictions of the implicit GNP deflator are better than the M2 predictions



to report to Congress in February 1983. During this espisode, the problem was overcome by shifting the period used for base comparison from fourth quarter 1982 (the calendar quarter typically used as a base for comparison) to the middle of the first quarter of 1983—after the major part of the disruption had passed.

However, other problems are more difficult to cope with. For example, M2 (and *a fortiori* M3) is a conceptual mish-mash. Unlike M1, which measures transactions balances, M2 has no particular distinguishing features, such as operationalizing the concepts of transaction balances (or credit supply in the case of K). Consequently, the transactions demand approach to monetary theory and policy, which is applicable to M1, does not relate readily to M2, M3, or L. Some economists use an alternative theory, that of portfolio balance, to rationalize the use of M2 as an intermediate target. In this case, M2 would represent transactions balances plus their very close substitutes. But the composition of M2, which includes some illiquid, long-term time deposits, and other shorter-term time deposits which carry withdrawal penalties, call into question M2's ability to represent this concept.

Moreover, the increasing ability under deregulation to pay market interest rates on components of M2 has confused the relationship of M2 to output, employment, and inflation. This problem is so serious that it is not even clear what is the direction of the effect of an increase in interest rates on the level of M2, which perversely could *rise*. For example, this happened in the case of money market mutual funds, a component of M2. MMMFs rose sharply with market interest rates during the late 1970s and early 1980s.

In this situation, reliance has to be placed on empirical relationships—estimates of the multiplier and of velocity—in setting policy. But in times of change, past empirical relationships may be unreliable. For example, empirical relationships are now being disrupted by the changing financial structure. Financial innovation and financial deregulation have increased the percentage of M2 and, to a lesser extent, M1 components that pay market interest rates. Ten years ago this percentage was very small. In December 1978 it was 6.3 percent. By December 1983 it had risen to 63 percent.[6]

This makes an important difference to the way M2 responds to policy stimuli. Ten years ago if the Fed considered that the economy was growing too rapidly, it would tighten policy. When the Fed tightened (i.e., slowed down the rate of growth of reserves), market interest rates rose. Then, money's opportunity cost rose because it did not earn interest. Consequently, its growth decreased. When the money stock growth decreased, the stimulus to the economy sub-

[6]Moreover, since the introduction of the money market certificate in June 1978, most of the growth in the nontransactions components of M2 has occurred among those components that pay market-related rates. This fact serves to strengthen the arguments made in the text.

Table 2
Correlations between M2 and RGNP growth rates

M2 Growth	1968.1—1978.2	1978.3—1984.1
Contemporary	0.520	0.017
Lagged one quarter	0.584	0.384
Lagged two quarters	0.533	0.341
Lagged three quarters	0.394	0.041
Lagged four quarters	0.217	0.227

sided. By fall 1982 the scenario had changed. If the Fed were to tighten, interest rates would rise, money market mutual funds (a component of M2) and M2 itself might also rise, instead of declining. Consequently, if the Fed were to tighten some more, the growth of economic activity would slow because of interest rate pressures. However, M2 might continue to rise because it contains components that pay market interest rates, whose volume rises as rates rise.

This change has served to weaken the relationship between M2 and real GNP. In the prederegulation era, real GNP (RGNP) rose with (and also one or two quarters after) M2. This association is demonstrated in Table 2. However, since the second quarter of 1978, the association has become weaker. The deterioration is also demonstrated in the table.

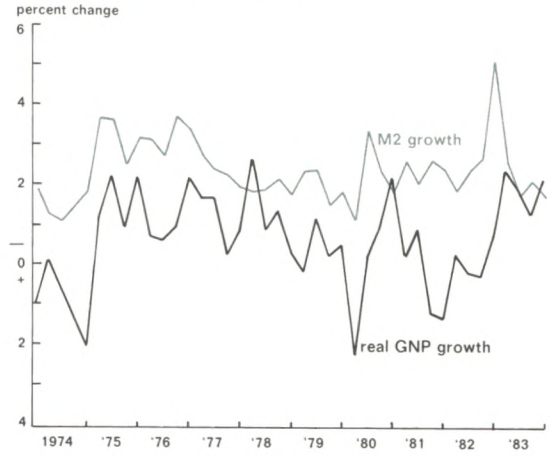
In fact, recently M2 has been behaving countercyclically to the business cycle, instead of procyclically. This change is demonstrated as occuring during 1980 in Figure 8. Research by Ross Starr (1982) also makes this point well. Such behavior makes M2 (or M3) a potentially misleading intermediate target: it thus fails the first two tests.[7]

However, recent research by Thomas D. Simpson at the Federal Reserve Board demonstrates how M2's changed relationship to the business cycle can be utilized in policy setting. This research is based on a portfolio allocation theory of M2 demand. As M2 components have increasingly come to pay market rates, the interest sensitivity of M2 has declined. In a portfolio demand model, money holders allocate their wealth among alternative assets. Consequently household net worth replaces GNP as the principal explanatory argument of the M2 demand function. This relationship can be used for policy purposes, if a stable and predictable relationship can be demonstrated between household net worth and GNP. Simpson's work provides evidence that household net worth can be used as a leading indicator of GNP.

Nevertheless, neither M2 nor M3 perform well on the remaining two criteria. Under current operating procedures, the Fed controls the quantity of its chosen aggregate through the supply of depository institution reserves. The configuration of reserve requirements is important here. Some components of M2 (and M3) carry reserve requirements and some do not. Consequently, any Fed attempt to limit the growth of M2 or M3 aggregates can be thwarted by portfolio shifts out of components that carry reserves to those that do not. Control via a reserve instrument, therefore, may be difficult.

Further, data on M2 and M3 are not so readily available as those for M1. While M1 data are available weekly, some M2 and M3 components are available only monthly. In short, M2 and M3 are generally agreed to be impractical interme-

Figure 8
Quarterly growth in real GNP and M2



[7]More work is needed to clarify this phenomenon. For example, the question arises whether the same phenomenon will carry over to M1 with the advent of Super NOW accounts and the likely introduction of business transaction accounts paying market rates.

diate targets for sole use on a long term basis; they do, however, provide valuable supplementary information.

Credit

During the past two years there have been several recommendations that the Federal Reserve use a credit aggregate instead of, or in addition to, a monetary target. Attention within the Federal Reserve System was drawn to this matter when Frank E. Morris (1982), President of the Federal Reserve Bank of Boston said, "I have concluded, most reluctantly, that we can no longer measure the money supply with any kind of precision." And, "the time has come to design a new control mechanism for monetary policy, one which targets neither on interest rates nor on the monetary aggregates."

At the same time, several analysts advocated using a debt or credit variable instead of a monetary aggregate as the intermediate target. The research work to support these claims derived from two sources.

First, Modigliani and Papademos (1980) showed how commercial bank credit could be integrated into a traditional, pre-DIDMCA (Depository Institutions Deregulation and Monetary Control Act) model of the monetary sector. The research demonstrated that to operationalize a bank-credit-alternative intermediate target, the system of reserve requirements would need to be redrawn to control credit rather than money. This work provides the theoretical framework for meeting criteria (1) and (3) above.

Changes in the technology of financial intermediation and in the laws governing it, have reduced the disparities between banks and thrifts. Now both groups supply transactions balances. In recognition of this fact, transactions account balances provided by both industry groups are included in M1. By analogous argument, the supplies of credit issued by both groups must be recognized as influencing the level and growth of real GNP and the inflation rate. However, the fundamental theoretical work has not (yet) been extended to describing the transmission of both bank and thrift credit to the final economy. Such an extension is necessary if depository institutions credit is to become the principal intermediate target.

Second, empirical work by Benjamin Friedman, using vector autoregression techniques, has demonstrated that a different credit variable (total domestic nonfinancial credit) has been as closely associated to GNP as M1. Moreover, it has been more closely associated than other potential intermediate targets in the recent past. Friedman argues [1982, pp. 4-5] that,

> The evidence indicates that, in each of the four criteria considered, total net credit is just as suitable as any of the monetary aggregates to serve as an intermediate target for monetary policy in the United States. As long as the Federal Reserve System continues to use an intermediate target procedure, this evidence is consistent with adopting a two-target framework based on both money and credit, thereby drawing on information from both sides of the public's balance sheet for the set of signals that govern the systematic response of monetary policy to economic events.

This advocacy caught the attention of Congress, particularly when the economy was enduring the worst recession since the 1930s. Several bills were introduced into Congress to compel the Federal Reserve to adopt some alternative to monetary targeting.

There are, however, several problems with the credit alternative. On the one hand, the absence of a currently relevant theoretical model for either depository institution credit or for the Fed's debt variable, K, (and Friedman's domestic nonfinancial credit variable) leaves the possibility that the observed empiricial relationships might be accidental. This position is supported by empirical research by Offenbacher and Porter (1983) of the Federal Reserve Board staff. Their research shows that the performance ranking of the various intermediate targets as obtained by Friedman is peculiar to the particular set of tests he conducted. The same tests conducted in a different order yield different results, ones more favorable to M1.

It may also happen (particularly in the absence of the necessary theoretical model) that on accomplishing the revision of reserve require-

ments needed to provide "credit control," the observed empirical relationships would change. Credit could then even cease to be closely associated with GNP.[8] More likely is the case that the observed size of the response would change, as lenders sought ways to avoid the tax imposed by reserve requirements. This would leave the Fed in a quandary as to the level of stimulus necessary to achieve any desired objective.

The absence of experience in operating in this way naturally gives rise to caution. Caution is especially appropriate where carefully constructed and timely data are lacking. While the data situation is improving, credit and debt data are not available in such rich detail, or on such a timely and accurate basis, as are those for M1.[9]

Interest rates

The large macro models of Keynesian descent use interest rates as the transmitter of monetary policy to the final economic goals. The modus operandi of monetary policy during much of the early and mid 1970s was also expressed in terms of interest rates. That is, the theoretical and empirical relationships necessary to meet criteria (1), (2), and (3) have been met and have been acted upon in the past. Moreover, accurate data are available on a timely basis, so that interest rates evidently present a viable alternative target.

As the 1970s progressed, however, a fundamental problem was perceived in applying these theoretical and empirical relationships. The interest rate which the Fed influences most directly—the federal funds rate—is a *nominal* interest rate, unadjusted for inflation, past, present, or anticipated. But the rate which influences spending plans and ultimately the production of goods and services, is a *real* rate (or numerous real rates). The problem in using a nominal interest rate target is that the relationship between the nominal rate and the final goals can be subject to great uncertainty. This occurs when the policy maker is unable to distinguish between the real and the inflationary components of the nominal rate.

Conceptually, the real rate adjusts for inflation (and sometimes also for taxes), which overstates the true return on investments. That is, the real (before-tax) rate that will be earned on a pending investment of say, one year's maturity, is the interest rate to be earned less the inflation rate that will hold over the year.

A different question then arises as to whether the Fed can hit a real interest rate target. Several practical problems exist, concerning the translation from nominal to real rates and conversely. Should the Fed want to use a real rate as its intermediate target (as proposed, for example, in two 1982 Congressional bills), these difficulties must be resolved. Examples of the practical problems are given and pursued in research by C. Cumming and C. Miners (1982) of the Federal Reserve Bank of New York. For example, the authors ask whether in choosing, say, a nominal rate, it should be one important to households in their spending/saving decisions, or to businesses in making their capital investment plans. Both rates are relevant to determining the economy's direction. But pairs of interest rates influencing these plans have not followed the same path in the past and cannot be expected to do so in the future. They can give conflicting signals, therefore. The authors also ask whether the targeted rate should be adjusted for taxes—and if so, whose? In both cases, the authors argue that a market rate available to households and adjusted for their taxes, is relevant.

If a real rate is to be used, should it be ex post or ex ante? That is, should it be the real rate that held in the recent past, or the one anticipated for the near future? Economists respond that the expected real rate is the variable relevant to decision-making. But a proxy for expected inflation may not be readily available. Instead, therefore, past or present data are often used. Moreover, the question then arises, which deflator—there are several to choose from—should be adopted? If ex ante, over what horizon should the interest rate expectations be formed?

[8]Charles Goodhart (1984) of the Bank of England has made this point so forcefully that it has become known as "Goodhart's law."

[9]If the Federal Reserve decided to make credit its principal intermediate target, it could require institutions to provide the data it needed. However, this adjustment would take time to be made satisfactorily.

The authors debate these questions in their paper, then they construct several after-tax and/or real rates, which implement the different alternatives. The behavior of the several resulting measures clearly illustrates the difficulties and potentially serious ambiguities that beset interest-rate targeting. For example, the different interest rate series have behaved differently over times past. They yield different turning points, have different growth rates, and have different cyclical patterns. As a result of their different responses, the different series would give rise to very different policy prescriptions with regard to the policy necessary to achieve any given Fed objective.

Public and Congressional pressure to readopt nominal interest rate targeting or to switch to real interest-rate targeting now appears to be over. Whether this change should be attributed to the practical problems illustrated in the research or to the end of the recession is debatable. Ironically, at the same time that Congressional pressure has receded, many Fed watchers claim that since fall 1982 the central bank has once again, de facto, been targeting interest rates (specifically the federal funds rate) rather than M2, M3, or M1. This interpretation is denied by the Federal Reserve.[10]

Nominal GNP

Several eminent economists, Robert Gordon (1983), Robert Hall (1983), John Taylor (1984), James Tobin (1980), and James Meade (1978) have recently spoken favorably of targeting nominal GNP. First, the argument needs to be made that the growth of nominal GNP (NGNP) should be considered a potential intermediate target, rather than one of the Federal Reserve's ultimate goals. (However, as the discussion below reveals, NGNP would be an intermediate target of a different color.) The growth of nominal GNP ($\dot{Y}$) equals the growth of real GNP ($\dot{Q}$) plus the inflation rate ($\dot{P}$).

$$\dot{Y} = \dot{Q} + \dot{P}$$

While both of the right hand variables are final goals, one is a good and the other is a bad. Setting targets for the growth of nominal GNP does not directly imply a growth rate for either goal so NGNP would be an intermediate target. However, proponents argue that NGNP targeting would work to produce a favorable outcome in the resulting division of NGNP growth between inflation and growth in real output. This argument—one about stabilizing the business cycle—will be discussed further below.

Pros

Proponents argue that NGNP targeting would improve the economy's performance with respect to the first criterion, the relationship between the target and the goals. That is, targeting NGNP would tend to stabilize real GNP when velocity goes off track (as it did seriously, from 1981 to 1983). The reason is that in order to keep NGNP (which is the product of the money stock and velocity) growing at a fixed rate, the money supply must be increased when velocity declines or velocity growth slows. The depressing effects of a decline in velocity, or the inflationary effects of its rise, are thus countered.

Targeting NGNP, it is argued, would also combat inflationary shocks. Because nominal GNP is the product of real GNP and the price level, an upward shock to the price level would be countered by a decrease in output. The resulting excess capacity in the economy puts downward pressure on the price level, which allows real GNP to recover.

Similarly, an upward stimulus to output growth arising from an improvement in productivity would produce a decrease in the inflation rate where NGNP growth was being held constant.

Thus, the important arguments in favor of NGNP targeting concern its power to stabilize the economy. However, a recent paper by Pro-

[10]Governor Henry C. Wallich (1984) explains how this misperception can arise. The Federal Reserve states that it is using the level of depository institution reserves as its principal instrument to influence the growth of the money aggregates. To do so the system needs accurate projections of reserve availability.

"In the absence of trustworthy projections, the funds rate at times may be a more accurate indicator of reserve availability than the (Staff's) reserves projections. If the manager decides to act on the signal from the funds rate in assessing the volume of reserves needed, he may create the appearance that he is working to influence the rate. . . " (Wallich 1984, p. 14).

fessor John Taylor (1984) points out that the answer is not so clearly in favor of NGNP targeting as the proponents claim. The issue is more complex.

Cons

Professor Taylor argues that the stabilization advantages of NGNP targeting are more apparent than real. The arguments presented above say only that the direction of the initial response to new shocks to velocity or prices is correct. Beyond the initial response, however, Taylor argues that NGNP targeting leads to overshooting and the propagation of cycles.

With regard to the second criterion for an intermediate target—that of being a leading indicator—the principal argument in favor of M1 as an intermediate target is that it leads GNP. If this is so, to target on NGNP instead of M1 would delay the policymaker's response, a response which is often already criticised for being too slow.

This issue has been ignored in the recent academic discussions. These discussions typically begin: "if NGNP and M1 were contemporaneous then . . . ." But if M1 does indeed lead NGNP, as is almost universally claimed, the issue would be clear cut in favor of M1.

In response to this criticism, Robert Gordon (1983) suggests that the Fed target forecasts of NGNP to reestablish the leading indicator property of the intermediate target. But to make this proposal more convincing Gordon would need to show that an average of consensus forecasts of GNP is a better indicator of GNP than current M1. And this has not yet been demonstrated.

With regard to the third criterion for evaluating an intermediate target, the verdict is not favorable to NGNP. That is, the relationship of the policy instruments (open market operations, etc.) to NGNP are not well understood. Chairman Volcker in his July 20, 1983 testimony to Congress expressed this most forthrightly by denying that the Fed can control NGNP. "The Federal Reserve alone cannot achieve within close limits a particular GNP objective—real or nominal—it or anyone else would choose. The fact of the matter is monetary policy is not the only force determining aggregate production and income" (Volcker 1983, p. 14). Finally, with respect to the fourth criterion, the NGNP data are available only quarterly and after a delay.

In short, NGNP would *not* be a useful intermediate target for fine-tuning monetary policy on a weekly basis. Its forecasts do, however, have value as an indicator. When accurate, they give advance notice of the likely successes (or failures) of a monetary policy that is formulated in terms of one or more monetary targets. Such an NGNP indicator would be particularly useful in keeping policy on track. And, to some extent, NGNP may already be used by some FOMC members in this manner, for the Federal Reserve Board staff regularly prepares forecasts of GNP behavior for use by FOMC members. But that is *not* using NGNP as a intermediate target, in the usual sense of that term.

Index numbers

Some of the most interesting work on the definition of money has been conducted at the Federal Reserve Board by William Barnett, Edward Offenbacher, and Paul Spindt (1981). For many years the definition of money was straightforward: it consisted of currency in circulation and demand deposits. Both were the principal accepted means of payment. On a variety of rationales, the public's holdings of these means of payment reflected its spending intentions. Increases in the stock of money foretold increased spending plans and conversely. But more recently, financial innovations (spurred by advances in communications technology, and previously by incentives provided when high market interest rates were confronted by regulatory restrictions on the payment of interest on many depository institution accounts) have made it increasingly difficult to distinguish transactions from savings balances.

The growth of multi-purpose financial assets made controversial the old all-or-nothing approach to defining money. Under the old approach, a decision had to be made at what level of aggregation (M1, M2, or some broader aggregate) a financial instrument should enter the money aggregate hierarchy. As an alternative, or

The Divisia Indices

Divisia Indices are quantity index numbers that are measured relative to the money stock available in some arbitrarily chosen base year whose stock is set at 100. Thus, they have *no* physical dimension; that is, they are not expressed as dollars. The research is this area has been done principally by Barnett (1982), but also in cooperation with Offenbacher and Spindt (1981) at the Federal Reserve Board.

Divisia numbers are constructed to correspond to the current aggregates, so there are Divisia M1, M2, M3, and L. The Divisia numbers differ from the traditional monetary aggregate numbers in that the components are weighted. A distinguishing feature of the weighting scheme used is a price, called a "user cost" in the technical literature. The user cost is measured by the spread between the rate of return earned by the component (zero on demand deposits and currency and during 1983 near 7% on Super NOW accounts) and that earned on some benchmark financial asset. The benchmark asset is one supposed to serve only as a store of value, and one which does not cater to money's other functions—as a medium of exchange, a unit of account, or a standard of deferred payment.

The idea here is that people reveal the moneyness of any asset by the amount of interest they are willing to forego in payment for the monetary services it provides. In practice then, demand deposits get large weights in the index, because demand deposits are many and they have a large interest rate spread. On the other hand, money market mutual funds' weights are reduced because they receive near benchmark interest rates and, therefore, have a low spread. The weight given to Super NOWs is small for two reasons. First, there are few Super NOWs relative to demand deposits. Second, they have smaller interest rate spreads than demand deposits.

The debit-weighted index numbers (M_Q)

These quantity index numbers ignore the current monetary aggregate definitions in an attempt to construct a measure of money as a medium of exchange. Any asset so usable is to be included in the index, where it is given a weight which reflects its turnover rate during the same time interval. The intuition behind the weights used here is that people reveal the "moneyness" of a third-party transferable asset through its turnover rate.

A complex modern economy has several different transactions media (such as currency, demand deposits, NOW and Super NOW accounts, money market deposit accounts, and money market mutual funds). These different transactions media are weighted by their share in the total value of debits (transactions) that is encompassed by the aggregate. Consequently, the M_Q data constitute a "debit-weighted" index. Thus, the different weighting scheme makes this index different in purpose and behavior from the Divisia numbers.

The total value of debits achieved by a component is equal to the number of its dollars available for use times their turnover rate. Here then, the weight given to a component depends on both its relative size and its turnover rate. Consequently, demand deposits are again doubly important compared to Super NOW accounts, because not only are demand deposits bigger in value but they also turn over much more rapidly. Some relevant data in turnover rates are given in the table.

Turnover rates of some M_Q components
December 1983
Data at annual rates

Demand Deposits	453.0
ATS - NOW Accounts	16.4
MMD Accounts	3.6

SOURCE: Board of Governors of the Federal Reserve, *Federal Reserve Bulletin*, February 1984, Table A14.

The M_Q numbers are potentially useful when M1 velocity (as recently) is changing in an unusual way and when new financial assets are being introduced into the financial system.

supplement, an index number approach is now being recommended. In it, money data would be constituted by weighting financial asset components according to their "moneyness." That suggestion has now been twice implemented—in the Divisia and debit-weighted quantity index numbers.

With respect to the four criteria listed for an intermediate target, Divisia aggregates, described in the box, do not appear at present to be viable alternatives or supplements to the regular money stock data. The theory underlying the transmission mechanism is not readily available, new techniques for Fed control would need to be put into place, the data are not well developed, and the empirical relationships of Divisia aggregates to the final economy show similar problems to those of the aggregates themselves. In short, Divisia aggregates do not offer a practicable alternative intermediate target, at this time.

The more recent debt-weighted index numbers, M_Q, appear more promising, however. These index numbers, the work of Paul Spindt (1983), are also pure quantity index numbers measured relative to some arbitrary base year. They differ from the Divisia numbers in not beginning from the existing M1, M2, M3, and L definitions. Rather, as described in the box, they seek to approximate the medium of exchange function of money. That is, they weight the transactions components of the monetary aggregates by their usage rates, measured by the value of debits accomplished.

Implications of M_Q for policy

During the first half of 1983, data for M1 levels and growth rates were substantially above target, which suggested that monetary policy should be tightened. The problem was less serious for the broader aggregates, however; this suggested that tightening might have been inappropriate. In this type of situation where regulatory innovations are causing portfolio shifts, the debit-weighted index can be helpful. It makes allowance for the fact that the turnover rates on the new money market deposit and Super NOW accounts are low. Consequently, a dollar housed in a Super NOW may not carry the same implications for consumer spending and GNP as would a dollar of demand deposits. It also recognizes that relocating savings from demand deposits to market-rate-paying assets will *raise* the turnover of remaining demand deposit funds.

The bottom line is that in the years 1973-1975 the debit-weighted index grew somewhat faster than M1, reinforcing the belief that monetary growth was very expansive at that time. On the other hand, from 1979 through 1983, the debit-weighted numbers have grown more slowly than M1, suggesting that money growth has been less expansive than some people fear.

With regard to the four intermediate target criteria, the debit-weighted index numbers promise to provide useful supplementary material. (Spindt does not propose that M_Q be used as an alternative target.) The debit-weighted numbers meet the first two criteria well. Being derived theoretically from the quantity equation that relates the money stock to GNP, these index numbers are closely related to GNP and (given that GNP behavior tends to lag behind any monetary stimulus or decline) they are good predictors of future GNP behavior.[11] With regard to the third criterion, Fed policy procedures are not currently designed to control such an index number. Further, they are not likely to be redesigned to this end, because the numbers are being recommended as indicators, not targets.

The main argument against their use lies in data problems. Not all the necessary data are currently available. For example, no data exist on the turnover rate of currency. The scarcity of information about currency use should be remedied when the results of a survey of household usage of currency and transaction accounts—a survey designed by the Federal Reserve Board and executed by the Survey Research Center in Michigan—become available. There remain, however, problems in separating solely financial transactions from those directly concerned with the creation of GNP. Consequently, it appears

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[11]The quantity equation in its income version, defines the nominal value of GNP—real GNP (Q) times the price level (P)—to the stock of money (M) times the velocity of circulations; this is

$$MV = PQ.$$

that these index numbers provide potentially valuable supplementary information, but that they need further development before they will reach their full potential.

Conclusion

This article has discussed the pros and cons of several currently favored intermediate targets. The evidence presented suggests that no alternative improves on M1 in meeting the four criteria, although each of those suggested provides valuable supplementary information. While further research on the subject is under way, the passing of two problems—the disruptive effects of financial innovations on the growth of M1 and puzzling steepness of the 1982-83 fall in velocity—suggests that the case for using M1 as the preeminent intermediate target is strengthening. Even so, a reinstatement should not be etched in stone. Interest rate deregulation is now spreading to transactions deposits and the implications for M1 are not yet well understood. Consequently, any reemphasis on M1, may last only until some better approach to policymaking can be devised.

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