

Federal Reserve Bank of New York

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The Banking-Commerce Controversy Revisited

Mr. Chairman, members of the Subcommittee, I am delighted to appear before you this morning to discuss—in accordance with your request—the specific features of the Administration's proposals to modify the current restrictions on the ability of commercial banks to affiliate with both securities firms and commercial entities. Because it is more controversial and because it has more far-reaching implications, I shall concentrate much of my prepared statement on the so-called banking-commerce question.

I should say at the outset that while I do have some differences of view with the Treasury on a few specific points—including the banking and commerce question—I enthusiastically applaud the efforts of Secretary

I very much share the view of the Treasury and the President that these [financial system] issues are a high priority on the national agenda for 1991, and I support the thrust of the great bulk of the approach suggested by the Treasury.

Brady and his associates at the Treasury to put before the Congress and the nation a truly comprehensive approach to reforming and modernizing the banking and financial system in the United States. Unless this task is successfully completed—and completed soon—I fear we face renewed and more intense stress in our finan-

Statement by E. Gerald Corrigan, President of the Federal Reserve Bank of New York, before the Subcommittee on Telecommunications and Finance of the House Committee on Energy and Commerce, April 11, 1991.

cial system, with all of its implications for strains in the economy at large and a further deterioration in the international competitive position of U.S. financial institutions. Thus, I very much share the view of the Treasury and the President that these issues are a high priority on the national agenda for 1991, and I support the thrust of the great bulk of the approach suggested by the Treasury.

In part I welcomed this invitation to appear before the Subcommittee because it provided me with an opportunity to take a step back and reconsider my personal views on whether the separation of banking and commerce should be continued. In preparing this statement I have gone to considerable lengths to give the benefit of the doubt to the arguments for permitting commercial firms to control banks. But the more I analyze the issue,

I have gone to considerable lengths to give the benefit of the doubt to the arguments for permitting commercial firms to control banks. But the more I analyze the issue, the more I am sure that it would be a huge mistake to eliminate the barriers Congress has constructed between banking and commerce.

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Basic reform of the system is needed and needed badly. At the very least, we should put those reforms in place and permit them to run their course before we

give any further consideration to permitting commercial firms to own and control banking institutions having access to the public safety net.

This statement is organized and presented in eight sections as follows:

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The text of this statement is obviously very lengthy. I apologize for that, but its length reflects the fact that the mixing of banking and commerce raises many very substantive questions, some of which are quite subtle. Concern about these issues is reflected in the widespread present-day prescriptions against such combinations in the international community as well as in a long-standing Anglo-American caution about such arrangements that reaches back some three hundred years.

The bottom line of the statement is, however, quite clear. I remain opposed to combinations of commercial and banking organizations.

The bottom line of the statement is, however, quite clear. I remain opposed to combinations of commercial and banking organizations because (1) when firewalls are needed most, they will not work; (2) it is inevitable that at least parts of the supervisory system—if not the safety net—will be extended to commercial owners of banks; (3) the risks of concentration of economic resources and power are great; and (4) the potential benefits that might grow out of banking-commercial combinations strike me as remote at best and illusory at worst, at least under present circumstances.

Definition of terms

One of the immediate problems that must be confronted in the debate on banking-commerce is the need for a consistent definition of terms within which the debate can be framed. The crucial issue is not whether a manufacturing firm or a retail firm may own or control a company that engages in financial services or even

whether an industrial company directly engages in the provision of financial services. Rather, the core question—in the context of other problems associated with banking-commercial combinations—is whether such a business entity should be permitted to own and control

The core question ... is whether such a business entity should be permitted to own and control financial institutions that, in turn, have direct or indirect access to the federal safety net associated with banking institutions.

financial institutions that, in turn, have direct or indirect access to the federal safety net associated with banking institutions.

It follows, therefore, that we must have a clear conception of what we mean by the terms “control” and “safety net.” The dictionary definition of “control” is a useful starting point in that it stipulates that control means the “power or authority to guide or manage.” But even that definition is only a starting point because we all know that in the day-to-day world of corporate affairs it is not always easy to pinpoint the circumstances in which financial or other arrangements produce the result of “control.” Fortunately, however, there is a long-established body of banking law and administrative rulings that helps clarify that ambiguity. That history tells us that control is *presumed to exist* when ownership exceeds 24.9 percent and that control *may exist* when ownership is far less than 24.9 percent. Control is presumed not to exist when ownership is less than 4.9 percent. These parameters strike me as a very reasonable range within which the debate can be framed.

The definition of the safety net is rather straightforward, even though the precise application of that definition to particular cases can be difficult. For these purposes, a financial firm may be said to have access to the safety net if it, directly or indirectly, has deposit insurance, has access to the discount window of the central bank, has access to the account and payment services of the central bank, and is subject to official supervision. The ambiguity that can arise in the application of this definition centers on two main points: first, whether the distinction between direct versus indirect access to the safety net matters; second, whether concerns about access to the safety net apply equally to all of its components or whether one or more elements, such as deposit insurance and access to the discount window, take on special significance in particular applications of the definition.

While the specifics may vary from country to country, the *de facto* presence of an official safety net for banks

is universal. The mere presence of a safety net implies something of a covenant between those institutions that are the beneficiaries of the safety net and the society at large. Under the terms of that covenant, the affected institutions agree to conduct their affairs in a safe and impartial manner. As a part of that covenant, such institutions are subject to official regulation, the burden and costs of which are accepted in exchange for the privileges and protections afforded by the safety net. Looked at in this light, one of the key problems facing banking and other financial institutions is that technology and other forces have fundamentally altered the historic balance between the burdens of regulation and

One of the key problems facing banking and other financial institutions is that technology and other forces have fundamentally altered the historic balance between the burdens of regulation and the protections and privileges afforded by the safety net. We see this quite vividly in the diminished value of the banking franchise.

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All of this brings into sharp focus the question why all nations have a safety net and regulated financial institutions in the first place. In other words, why don't we simply treat banks and other financial institutions the same way we treat gas stations and furniture stores? The fundamental answer to that question lies in the essential functions that banking institutions perform. That is, in the context of market economies, the tasks of mobilizing savings, channeling those savings into the most productive uses, and providing the means through

In the context of market economies, the tasks of mobilizing savings, channeling those savings into the most productive uses, and providing the means through which payment is made are seen as having such unique economic and fiduciary importance as to justify both regulation and the safety net.

which payment is made are seen as having such unique economic and fiduciary importance as to justify both regulation and the safety net. For example, since these institutions can perform these functions only with someone else's money, and because the risks inherent in the performance of these functions are so obvious, all

nations take at least some steps to protect depositors and investors and to regulate some aspects of the credit origination process.

But such protections, important as they are, cannot fully explain the nature of the safety net arrangements in this country, to say nothing of arrangements in other countries that often go farther in protecting financial institutions and their customers than is the case in the United States. The missing link is, of course, what central bankers and others call "systemic risk." By systemic risk I mean the clear and present danger that problems in financial institutions can quickly be transmitted to other institutions or markets, thereby inflicting damage on those other institutions, their customers, and ultimately the economy at large. More than anything else, it is the systemic risk phenomenon associated with banking and financial institutions that makes them different from gas stations and furniture stores. It is this

More than anything else, it is the systemic risk phenomenon associated with banking and financial institutions that makes them different from gas stations and furniture stores. It is this factor—more than any other—that constitutes the fundamental rationale for the safety net arrangements that have evolved in this and other countries.

factor—more than any other—that constitutes the fundamental rationale for the safety net arrangements that have evolved in this and other countries.

Looked at in this light, it seems to me very clear that a society should care, and care a lot, about who it is that controls financial institutions that have access to the safety net. By the same token, I would concede that those public policy concerns are not similarly present in a situation in which an auto manufacturing company or a retailer has a financial subsidiary, so long as neither the auto company nor anyone else has any illusions that it or the financial subsidiary has access to the safety net. Admittedly, I can imagine circumstances in which the sudden and uncontrolled failure of a major financial subsidiary of a manufacturing company could pose significant problems for financial markets and financial institutions more generally. Similarly, I must also admit that the competitive presence of financial subsidiaries of commercial firms—even when operating wholly outside the safety net—has been a factor in undermining the value of the franchise of banks. This may be especially true when the terms of credit or other transactions with the financial subsidiary are heavily subsidized by the parent company.

All of that notwithstanding, the banking-commerce

question does not stand or fall on whether commercial firms can provide financial services; it does not even stand or fall on the presence or absence of the Bank Holding Company Act. The key question is whether we, as a society, should care about who owns and controls

The banking-commerce question does not stand or fall on whether commercial firms can provide financial services.... The key question is whether we, as a society, should care about who owns and controls banking institutions that have access to the safety net.

banking institutions that have access to the safety net and the terms and conditions—if any—under which such arrangements should be permitted.

International experience

Impressions to the contrary, examples in other major countries in which commercial firms control banking firms (recognizing that in most countries banking and securities firms are one and the same) are *very much* the exception rather than the rule. In fact, I am not aware of a single example in which such a pattern of ownership would apply to a major banking institution, and I can think of only a limited number of cases in which it would apply at all, even though there may very well be some examples that I am not acquainted with.

Having said that, I will quickly state that (1) there are cases abroad in which banks own large stakes in commercial firms; (2) there are many countries in which banks have greater flexibility in the scope of their relationships with commercial firms than is the case in the United States; and (3) there are countries where, as a general matter, ownership interests in banks and corporations generally are not as widely distributed as is the typical case in the United States. But commercial control of banking institutions having access to the safety net is by far the exception, not the rule, even though in a number of countries, including the United Kingdom and Germany, the absence of commercial control of banks occurs by practice and tradition rather than as a matter of strict legal prohibition.

While on this subject of statutory arrangements abroad, I find it interesting that within the very recent past we have had two important countries—Italy and Mexico—that have had experience with commercial and banking combinations, and have enacted sweeping new legislation strictly precluding commercial firms from controlling banks in the future. In the case of Italy, ownership of banks in excess of 5 percent is subject to approval by the Bank of Italy, and in no case can a

single owner's holdings exceed an absolute ceiling of 15 percent. Mexico's new law limits ownership to 5 percent, with an absolute ceiling of 10 percent.

The point of this, of course, is that if the United States were to authorize commercial firms to control banking institutions having access to the safety net, we would be alone among the major countries of the world in

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permitting such arrangements. Perhaps being alone in that regard should not bother us. But on the other hand, perhaps experience around so much of the rest of the world is telling us something.

A brief history of banking and commerce

Those who favor permitting banking-commercial combinations here in the United States often point out that over the broad sweep of the financial history of the United States we have had noteworthy examples of commingling banking and commercial activities. However, such examples are the exception, not the rule. Moreover, the full history of banking in the Anglo-American tradition seems quite clearly to point to a public policy bias against such combinations.

The history of the banking-commerce issue over most of the eighteenth and nineteenth centuries must be

Much of the earlier debate about the banking-commerce issue did not center squarely on the issue of who should be allowed to own banks. Rather, it centered on the extent to which the charter of banking corporations would permit such an institution to engage in a broad range of activities.

viewed in the context of prevailing legal and business practices. For example, for most of that period, the corporate form was in a state of evolution as a natural outgrowth of the early and more mature stages of the Industrial Revolution. Thus, most corporations were chartered by some political jurisdiction to perform specified functions. Partly for that reason, much of the earlier debate about the banking-commerce issue did not center squarely on the issue of who should be allowed to own banks. Rather, it centered on the extent

to which the charter of banking corporations would permit such an institution to engage in a broad range of activities, including activities that in today's terminology would fit squarely on the "commercial" side of the ledger.

While there surely were examples in which banking and commercial activities were authorized in the same business entity, there is ample evidence that such combinations were viewed with concern as a matter of broad public policy. For example, when the Bank of England was chartered by the British Parliament in 1694, the chartering act contained a clear prohibition against the bank engaging in commerce. Specifically, the act provided:

And to the intent that their Majesties' subjects may not be oppressed by the said corporation by their monopolizing or engrossing any sort of goods, wares or merchandise, be it further declared ... that the said corporation ... shall not at any time ... deal or trade ... in the buying or selling of any goods, wares or merchandise whatsoever.

Almost one hundred years later, Alexander Hamilton drafted the chartering legislation of the Bank of the United States, which was enacted on February 25, 1791. Hamilton's model for the Bank of the United States was influenced importantly by the charter of the Bank of England, and it contained similar restrictions. Specifically, Section 7, Article X reads:

The said corporation ... shall not be at liberty to purchase any public debt whatsoever; nor shall it directly or indirectly deal or trade in any thing, except bills of exchange, gold or silver bullion, or in the sale of goods really and truly pledged for money lent and not redeemed in due time; or of goods which shall be the produce of its lands.

Moreover, Section 8 states:

And be it further enacted, that if the said corporation, or any person or persons for or to the use of the same, shall deal or trade in buying or selling any goods, wares, merchandise, or commodities whatsoever, contrary to the provisions of this act, all and every person and persons, by whom any order or direction for so dealing or trading shall have been given, and all and every person and persons who shall have been concerned as parties or agents therein, shall forfeit and lose treble the value of the goods, wares, merchandises, and commodities, in which such dealings and trade shall have been.

In drafting the charters of each Bank of the United States, Congress was sensitive to issues relating to ownership of banks. No individual or partnership could own more than 4 percent of the shares of the First Bank. No individual, company, or corporation could hold

more than 0.875 percent of the shares of the Second Bank.

In the period immediately after the chartering of the Banks of the United States, there were some cases in which banking and commercial entities or activities were commingled. Yet, in a number of states and in the charter of the Second Bank of the United States enacted in 1816, the stipulations against such combinations of activities were retained.

Concerns about commingling banking and commercial activities were again recognized in the National Banking Act of 1864, which stipulated that nationally chartered banks would be limited to exercising "such incidental powers as shall be necessary to carry on the business of banking." Interpreting this phrase narrowly, the courts subsequently ruled that it would be "ultra vires" (beyond the proper scope or in excess of legal authority) for a bank to carry on a mining, manufacturing, or trading business; to engage in the buying or selling of cattle; or to operate a railway.

While the issues associated with the commingling of banking and commercial activities were very much a part of banking history in the last two centuries, it was not until this century that the question of commercial ownership of banks was joined.

While the issues associated with the commingling of banking and commercial activities were very much a part of banking history in the last two centuries, it was not until this century that the question of commercial ownership of banks was joined. The ownership issue began to surface in the legislative debate surrounding the enactment of the Clayton Act. However, it was not until the late 1930s that the debate in today's terms really took shape. In that time frame, the Federal Reserve Board, among others, began to call for legislation that would curb the growing practice of commercial firms owning banks—a trend that was (perhaps ironically) taking hold in part to save banks from the repercussions of the depression.

The efforts that began in the late 1930s culminated with the passage of the Bank Holding Company Act of 1956. The 1956 act's major restrictions applied only to companies controlling two or more banks. However, in response to the subsequent growing importance and scope of the one-bank holding companies, the 1970 amendments to the act closed the so-called one-bank loophole, although a similar loophole for so-called unitary thrifts was left in place and remains to this date.

Much of the legislative debate about the 1970 amend-

ments to the act centered on the distinction between corporate "conglomerates" and "congeneric" corporations. The result of the conglomerate/congeneric debate was the adoption of a limited congeneric proposal—bank holding companies could engage in activities "closely related to banking." Companies engaged in a broader range of activities had a ten-year temporary grandfather period to divest themselves of either their

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banks or their impermissible nonbanking activities.

To summarize briefly, for the greater part of this nation's existence, the fact that commercial firms did not own and control banks, with some exceptions, was the generally accepted state of affairs. Beginning in the 1930s, commercial firms began to acquire smaller banks. This growing tendency was dealt with in federal legislation in 1933, 1965, and 1970, but the matter was not fully laid to rest. Now that we are at a watershed in terms of the structure of our financial system, we once again have an opportunity to get it right.

The arguments for combining banking and commerce

While contemporary experience around much of the industrial world and the history of banking in the Anglo-American tradition would, taken by themselves, seem to constitute sufficient grounds to go slowly in moving toward permitting commercial firms to control banks, neither that history nor those global practices constitute necessary or sufficient reason to reject banking-commercial combinations out of hand.

Indeed, in a market economy—especially one such as the United States that is so deeply rooted in the tradition of freedom and entrepreneurial enterprise—there is a strong philosophical bias toward permitting any institution the right to go into any business, including banking. On the other hand, the very essence of public policy has its roots in the central proposition that the common good can dictate circumstances in which individual prerogatives must be limited. It was precisely this line of reasoning that led Adam Smith to the conclusion that banking had to be regulated when, in *The Wealth of Nations*, he wrote:

Such regulations may, no doubt, be considered as in some respect a violation of natural liberty. But those exertions of the natural liberty of a few individuals, which might endanger the security of the

whole society, are, and ought to be, restrained by the laws of all governments; of the most free, as well as of the most despotical. The obligation of building party walls, in order to prevent the communication of fire, is a violation of natural liberty, exactly of the same kind with the regulations of the banking trade which are here proposed.

Against this background I, for one, do not feel apologetic in taking the position that the case for permitting commercial firms to control banking institutions should be based on some affirmative public policy reasons to

I, for one, do not feel apologetic in taking the position that the case for permitting commercial firms to control banking institutions should be based on some affirmative public policy reasons to take this step.

take this step. In those circumstances, I think it only reasonable to ask: first, why would commercial firms want to control banking institutions; second, what public policy ends would be served by such arrangements; and third, how credible are the safeguards against abuse, recognizing that even the most ardent of the proponents accept the fact that such safeguards are necessary?

As to the first of these questions, namely, why would commercial firms want to control banking organizations, I can see several possibilities: First, the commercial firm may conclude that the rate of return on such investments is greater than is available on alternative investments. Second, the commercial firm may conclude that such investments provide a vehicle to diversify its cash flow and/or its profits. Third, the commercial firm may see synergies between its basic business and one or more aspects of the banking business. Fourth, the commercial firm may see advantages in having indirect access to one or more elements of the safety net. While it is never stated, I must confess that I wonder at times if another motivation for such combinations might not be a desire on the part of some firms to further leverage their own capital position.

In considering the question why commercial concerns might wish to make investments in banks, it is important to keep in mind that any commercial firm can make sizable passive investments in one or more banking institutions under existing laws and regulations. Similarly, such passive investments could easily provide major elements of income diversification. On the other hand, if control is sought or achieved, or if the investment is motivated by perceived synergies or by a desire to gain indirect access to the safety net, then it must

follow that concerns about conflicts of interest, unfair competition, concentration, and the extension of the safety net *must* be present, even if differences of opinion exist as to the nature and depth of those concerns.

If control is sought or achieved, or if the investment is motivated by perceived synergies or by a desire to gain indirect access to the safety net, then it must follow that concerns about conflicts of interest, unfair competition, concentration, and the extension of the safety net *must* be present.

Indeed, to my knowledge, all of the proponents of blending banking and commerce recognize that the potential for such problems is present when control of the bank exists. However, in the face of those concerns, the argument is made that allowing such combinations will provide important public benefits that—given appropriate safeguards and firewalls—will more than compensate for the risks. The most important public benefit that is cited in this regard is that such arrangements would provide a needed source of fresh capital to the banking system or to individual banks. It is also suggested—though not as forcefully—that commercial ownership of banking organizations will provide, presumably through synergies, greater innovations and efficiencies that will lower costs for financial services to their end users. Finally, it is suggested—drawing on the experience in countries like Germany and Japan—that close linkages between banks and commercial firms will promote greater economic stability.

Regardless of how much weight one puts on the potential benefits associated with permitting commercial firms to control banks, virtually everyone acknowledges that such arrangements must be accompanied by strong regulatory safeguards to protect against potential abuse. While the list of existing or suggested safeguards or firewalls is long, in generic terms they fall into three major categories: first, limits on which banks can be acquired by which commercial firms; second, various firewalls that limit transactions and/or interaction between the bank and its commercial owner; and third, various arrangements whereby the authorities can force a commercial owner of a bank to take certain actions—including divestiture—in the event the bank is in jeopardy.

In considering the merits of any or all firewalls, it is important to keep several things in mind: First, firewalls by their nature must limit synergies. Thus, the higher and thicker the firewall, the less the synergy. Indeed, if the firewalls are fail-safe, the synergies must all but disappear. Second, firewalls by their nature seem incon-

sistent with the essence of control. If, to use the dictionary definition, the “power or authority to guide or manage” is present, it is very hard to conceive of conditions in which firewalls can be said to be fail-safe. Third, the acid test of firewalls arises in the context of adversity either to the banking institution itself, a cross-stream affiliate, or the parent. That is, in the face of serious problems, is it reasonable to conclude, based on experience, that the marketplace—here and abroad—

The acid test of firewalls arises in the context of adversity either to the banking institution itself, a cross-stream affiliate, or the parent.... The obvious danger is that in times of stress, firewalls become walls of fire!

will distinguish one entity from another within the framework of a business conglomerate with common ownership of the component parts? Unless one can be quite sure of that result, the obvious danger is that in times of stress, firewalls become walls of fire!

The risks associated with combining banking and commerce

From a public policy perspective there are three sets of risks associated with permitting commercial firms to control banks. The first is the historic concern about conflicts of interest, unfair competition, and concentration. The second is the contagion risk—or the dangers that problems in one part of an overall entity cannot, in market terms, be contained and isolated from other parts of the firm. The third set of risks are those surrounding the potential extension of the safety net—or at least parts of it—to the firms that control the banking organizations.

I do not believe it is necessary to elaborate in any detail on the nature of the risks regarding conflicts, unfair competition, or excessive concentration that can grow out of situations in which commercial firms control banks. The nature of those potential sources of risk has been recognized for centuries.

While those sources of potential concern have been widely recognized, it should be stressed that they arise because they constitute a threat to what I like to call the impartiality of the credit decision-making process. As such, they go right to the heart of one of the most important functions of banking institutions in a market economy.

It should also be stressed that in the contemporary world of high-speed, high-complexity finance, practices that cross the line between potential problems and actual problems can be very difficult to detect until it is

too late. This is especially true if the entity that controls the banking organization is not itself subject to direct official supervision or oversight. This is an important point since I suspect that none of the advocates of commerce and banking combinations would favor the extension of the kind of direct and continuing supervi-

Indeed, the nature of government involvement in business that would seem to grow out of such arrangements [banking-commerce combinations] would in itself seem contrary to the role of government in a market economy.

sion of bank holding companies we now have to commercial owners of banking institutions. Indeed, the nature of government involvement in business that would seem to grow out of such arrangements would in itself seem contrary to the role of government in a market economy.

The second set of risks associated with banking and commercial combinations—namely the so-called contagion risks—pose even more difficult problems. By contagion risks I mean, of course, the danger that problems in any one part of a business will adversely affect other parts of the business despite firewalls and/or legal separations between particular business units within the company as a whole.

The contagion problem is, of course, multifaceted. That is, the concern does not simply center on the relatively narrow question of what happens if the banking entity itself gets into trouble. In fact, the contagion problem can be more difficult to cope with in a situation in which adversity at the level of the parent impairs the well-being of the bank.

In any of these circumstances, the important question relates to how the marketplace and how the owners and managers of such institutions react to adversity. That is, faced with adversity, do the owners and managers walk away from troubled affiliates or do they conclude that reputational and other considerations require that they make efforts to stabilize the troubled affiliate in order to protect the well-being and the reputation of the entity as a whole? Similarly, and even more important, what does experience tell us about the manner in which the marketplace reacts to these circumstances? That is, in the face of serious problems in one part of a financial entity, does the marketplace continue to deal with the other parts of the entity on a business-as-usual basis or do market participants shy away from the affiliated companies as well as the troubled entity?

On both of these points it seems to me that the

evidence is overwhelming that firewalls and corporate separateness do not stand up well in the face of adversity and that the contagion risks are very real indeed. It is noteworthy in this regard that in a recent ruling regarding the relationship between Credit Suisse and Credit-Suisse First Boston, the Swiss Federal Supreme Court squarely acknowledged the existence of the contagion problem even in the face of legal separateness.

It seems to me that the evidence is overwhelming that firewalls and corporate separateness do not stand up well in the face of adversity and that the contagion risks are very real indeed.

Specifically, the court said:

The Drexel affair has shown that isolating a company that was in itself solvent could not protect it from a loss of repute. Since the insolvency of one member of a banking and financial group leads to a loss of confidence in the other members, the Federal Banking Commission is justified in requiring evidence that sufficient own funds [capital] are available within the group as a whole.

This ruling by the Swiss Federal Supreme Court is important not only because it seems to be a common sense affirmation of what experience suggests, but also because it tends to reflect the widespread view outside

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of the United States that banking and financial firms are a single entity. This is important because even if we in the United States can convince ourselves that firewalls and legal separations can be made to stick in any circumstances, it will accomplish little if the international financial community does not accept that view. This is particularly true in a context in which all major U.S. financial firms—and therefore the well-being of the financial system at large—are highly dependent on foreign counterparties for a wide range of activities—including funding.

As I look at experience in the United States and around the world, it seems clear to me that Walter Wriston had it exactly right when, a number of years ago, he said:

For example, it is inconceivable that any major bank would walk away from any subsidiary of its

holding company. If your name is on the door, all of your capital funds are going to be behind it in the real world. Lawyers can say you have separation, but the marketplace is persuasive, and it would not see it that way.

The realities of the contagion problem give rise to the third set of risks associated with banking and commerce combinations, and those risks include, of course, the dangers that such combinations bring with them the likelihood that at least some parts of the safety net will be extended to the commercial owner of banking institutions, especially in times of stress.

It seems clear to me that the mere fact of permitting commercial firms to own and control banking organizations carries with it at least the implicit transfer of some elements of the safety net to such firms.

However, fully aside from situations involving severe financial strains, it seems clear to me that the mere fact of permitting commercial firms to own and control banking organizations carries with it at least the implicit transfer of some elements of the safety net to such firms, if in no other way than through the official sanction of the particular combination in question. For example, I assume that even the proponents of merging banking and commerce would agree that the acquisition of a bank by a commercial company would be subject to some sort of official approval process. I assume they would also agree that a part of that application process would have to focus on the financial strength of the acquiring firm as well as the regulatory and managerial firewalls that they agree should be constructed. I assume they would further agree that some such applications would be approved while others would be denied and that some form of ongoing monitoring would be necessary. In making this point, I should emphasize that commercial firms wishing to own banks undoubtedly will not be limited to a few "blue chip" companies. To the contrary, the list of *potential* acquirers will include all comers—something I am convinced we should be especially sensitive to in this era in which the fate of seemingly very strong companies can fall on difficult times so very quickly and irreversibly.

Therein, of course, lies the dilemma. That is, even the official act of approving an application of a commercial firm to acquire a bank seems to carry with it the extension of at least some elements of official oversight to the acquiring firm in a manner that brings with it—at least by implication—an official blessing of the transaction and the relationship. As I see it, this subtle but

certain extension of an element of the safety net is not something we should take lightly since we must be prepared to live with its consequences in foul weather as well as in fair.

When the potential sources of risk associated with commercial ownership of banks are considered, there can be honest differences of judgment about how great and how clear and present those dangers may be. That is why these risks and potential risks must, in the end, be carefully weighed and balanced against the potential benefits of banking and commerce combinations. That is the task of the next section of this statement.

Balancing the risks and the benefits

It is clear to me that in current circumstances the weight of the arguments against permitting commercial firms to own and control banking institutions is very powerful on a number of counts. While any one of these factors seems to me persuasive, it is the cumulative weight of all the arguments that is truly compelling:

First, when firewalls are needed the most, they will not work. This is important not only in its own right but also because, as mentioned earlier, every serious proposal to permit commercial firms to own banks depends—either implicitly or explicitly—on the premise that firewalls are fail-safe and will stand up in the face of stress. Not only is that premise inconsistent with experience, but it also seems to me to be an outright contradiction since the concept of control is incompatible with the concept of fail-safe firewalls. To put it differently, control seems inescapably to entail responsibility. To make matters worse, the very instant that synergies are

If the firewalls are fail-safe, the synergies must disappear, and if the synergies disappear, the central economic argument that public benefits will flow from such combinations is rendered moot.

stipulated—either explicitly or implicitly—the contradiction becomes glaring. If the firewalls are fail-safe, the synergies must disappear, and if the synergies disappear, the central economic argument that public benefits will flow from such combinations is rendered moot.

I am not suggesting that separately capitalized subsidiaries and firewalls (or, better stated, Chinese walls) may not serve a useful public policy purpose. To the contrary, such arrangements can be a very big help in minimizing problems of potential conflict of interest and unfair competition. They can also be very helpful in facilitating a sensible system of func-

tional supervision. But it would be a serious mistake to conclude or to assume that firewalls can protect against the contagion problem.

The marketplace views these banking and financial entities as a whole; indeed, that is how these firms typically are managed, and in many cases their integrated nature is a feature of their advertising. To believe things would somehow be different with commercial ownership of such firms seems to me to strain common sense and experience to the limit. Therefore, if we have commercial ownership, there will be an entirely new dimension to the contagion problem—namely, the implication for the banking entity should there be serious problems

It is worth pondering what would have occurred in 1980 had Chrysler owned a family of banking institutions having access to the safety net. Similarly, what might have happened if Texaco were in a similar position at the time of the Penzoil litigation?

with the parent. For example, it is worth pondering what would have occurred in 1980 had Chrysler owned a family of banking institutions having access to the safety net. Similarly, what might have happened if Texaco were in a similar position at the time of the Penzoil litigation? It is also worth keeping in mind that the corporate landscape is currently littered with dozens of “fallen angels,” many of which might well have owned banks in happier times. Finally, it is also worth noting that if we go back twenty-five or thirty years we can find examples of commercial companies that were seen as financially invincible—and thus strong candidates to own banks—that are today a mere shadow of their earlier profile, if that.

In short, I draw very little comfort from the track record of firewalls, especially their reliability in times of stress. Given that the invincibility of firewalls would be even more important in the case of commercial ownership of banking institutions, the risks associated with such arrangements seem to me entirely too great.

Second, it is inevitable that at least parts of the supervisory system—if not the safety net—will be extended to commercial owners of banks. Partly because it would be so very imprudent to rely on firewalls, permitting commercial firms to control banks would, of necessity, entail at least some elements of the regulatory and supervisory apparatus being extended to the commercial owners of

banks. The application process itself guarantees that result, as does even the most subtle imposition of a source-of-strength doctrine. Similarly, with all or most of the capital of the bank downstreamed from the parent, the supervisor would have to look to the

Permitting commercial firms to control banks would, of necessity, entail at least some elements of the regulatory and supervisory apparatus being extended to the commercial owners of banks.

parent to see what lies behind that capital. More generally, the enforcement of firewalls—even those governing transactions flows—would have to entail at least some interaction between the supervisor and the parent. At a minimum, all of this will complicate the already difficult moral hazard problem. At worst, it could entail a greatly expanded role for the government in the affairs of corporate America—a result that I suspect few would welcome.

But the even larger question is whether, in the face of adversity, such combinations might result in the *de facto* extension of other aspects of the safety net to the owner of the bank. As I said earlier, the mere fact of official sanction of some such combinations and the denial of others seems to carry with it some elements of that risk. How much further that risk might be extended in the face of serious problems is hard to judge, but it seems clear to me that the best way to avoid that risk is to avoid creating the preconditions under which it could arise.

If we were to permit commercial firms to control banks, it is clear that the potential dangers in terms of concentration of economic resources and economic power—with all of the potential implications for compromising the impartiality of the credit decision-making process—could be serious indeed.

Third, the risks of concentration of economic resources and power are great. That is, if we were to permit commercial firms to control banks, it is clear that the potential dangers in terms of concentration of economic resources and economic power—with all of the potential implications for compromising the impartiality of the credit decision-making process—could be serious indeed. Since this is as much a social and political issue as it is an economic issue, I tend to shy away from placing

too much emphasis on this factor. Even though I choose to do that in recognition of the official position I hold, I would be less than candid if I did not acknowledge that I, too, worry about the broad socioeconomic—and perhaps even political—implications of these arrangements that have been raised by Henry Kaufman and others.

The potential benefits that might grow out of banking-commercial combinations strike me as remote at best and illusory at worst, at least under present circumstances.

It is important to keep in mind that while these concerns may seem remote today, once we start down the very slippery slope of combining banking and commerce we will, in practical terms, have already passed the point of no return. Turning back will not be easy or cheap.

Finally, the potential benefits that might grow out of banking-commercial combinations strike me as remote at best and illusory at worst, at least under present circumstances. The one possible exception to this is the source-of-capital argument, which is discussed further below. However, that issue aside for the moment, the two other economic arguments (that is, the efficiency argument and the economic stability argument) just do not strike me as very convincing. For one thing, both depend on synergies that, as outlined earlier, collide head-on with the firewall problem. But even if we fully ignore the firewall issue, it seems a major leap to conclude that commercial-banking conglomerates would, in fact, yield sizable efficiencies. Indeed, the history of conglomerates generally is, at best, checkered. Again, the financial capital issue aside, the two most obvious sources of such gains in efficiency that are not inherently objectionable would seem to lie in the areas of technology and managerial expertise. However, if better or different technology or management is needed, it can be acquired directly.

With regard to the economic stability argument, it must be acknowledged that in Germany and Japan in particular, there are closer relationships between banking and industry than is the case in the United States. And it must also be acknowledged that in recent years the overall economic performance of those two countries has, by many standards, been quite good. However, there are also other countries where banking-commercial relationships are very close but economic performance has been mixed or worse. What that suggests, of course, is that economic performance is much more a function of the

fundamentals of macroeconomic policy than it is a function of national preferences as to industrial structure.

Moreover, even if we were to grant that there is some marginal net benefit to economic performance growing out of these arrangements, the question remains whether there may not be costs—either economic or social—growing out of such arrangements that would outweigh the potential benefit. That is probably more a political question than an economic one, so I must leave it to others to consider the possible trade-offs involved.

There is one final aspect of this issue, and it relates to the motivations for commercial ownership of banks. If the motivation is either a desire to gain access to the safety net or large-scale synergies, the problems are obvious. If it is diversification of income, it is clear that there are all kinds of ways commercial firms can diversify their income, including owning financial subsidiaries that unambiguously do not have access to the safety net. Finally, if the returns in banking are so superior to returns available on alternate investments, then it is clear that capital would flow to banking quite freely and naturally with no need for the capital resources of industrial firms to augment traditional sources of capital.

However, as we all know very well, the current situation in banking is not one in which relative returns command that lofty position in the eyes of investors. Indeed, the pattern of price-earnings ratios of even the most successful banking organizations over recent years tells us that in unmistakable terms. Thus, the

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strains in the banking system and the associated pressures on the financial position of the deposit insurance fund are the major factors that give rise to the suggestion that permitting commercial firms to own banks is desirable on public policy grounds, in that such arrangements will provide the needed fresh capital to the banking industry.

While this argument deserves careful attention under current circumstances, I find it unpersuasive. For one thing, as I have said on earlier occasions, it is by no means clear to me that the banking system is materially short of capital. The problem may well be too much capital chasing too few good loans. Beyond that, there is ample room for commercial firms to make passive investments in banking institutions even under existing

rules. Finally, in a market economy, capital is attracted by profits and returns. If an industry cannot compete—especially because of outdated laws and regulations—it will not, and should not, attract capital. On the other hand, if the unnecessary and outdated structural impediments to profitability are removed, capital should flow quite naturally. At the very least, this says to me

I would not be allergic at all to providing some greater flexibility regarding commercial firms' ownership stakes in banks and vice versa, so long as the control issue is not breached or threatened.

that before we as a nation take the essentially irreversible step of permitting commercial firms to own and control banking firms, we ought to put in place the kind of basic reforms the Treasury and others have suggested and see what happens. I, for one, have little doubt that where capital is needed and can serve its purpose, it will be available from conventional sources. As a part of that process, and as I have said on earlier occasions, I would not be allergic at all to providing some greater flexibility regarding commercial firms' ownership stakes in banks and vice versa, so long as

The case for permitting commercial firms to own and control banking institutions should rest on some compelling and affirmative public policy reason. In the current circumstances, I simply do not see compelling public policy reasons to follow that course of action.

the control issue is not breached or threatened.

To summarize, the position I have taken on the banking-commerce question is that, given the obvious risks, the case for permitting commercial firms to own and control banking institutions should rest on some compelling and affirmative public policy reason. In the current circumstances, I simply do not see compelling public policy reasons to follow that course of action. Thus, under present and foreseeable circumstances, I remain opposed to such combinations.

Combinations of banking and securities firms

While I am strongly opposed to combinations of banking and commercial firms, I have been, and remain, in favor of authorizing combinations of banking and securities firms—given, of course, appropriate corporate structure and safeguards. The reasons that I favor such combinations are in many ways the mirror image of the reasons I

am against banking-commercial combinations. Those factors include the following:

Unlike banking and commerce, combinations of banking and securities firms are the rule, not the exception, throughout the industrial world.

First, unlike banking and commerce, combinations of banking and securities firms are the rule, not the exception, throughout the industrial world. In fact, as things stand now, only Japan and the

Combinations of banking and securities companies strike me as wholly in keeping with the spirit of congeneric financial corporations. Indeed, even within the narrowly defined limits of Glass-Steagall, banks are actively engaged in a wide range of securities activities.

United States do not permit such combinations. Moreover, in a number of important countries, securities activities take place directly in the bank and not in an affiliated company.

Second, combinations of banking and securities companies strike me as wholly in keeping with the spirit of congeneric financial corporations. Indeed, even within the narrowly defined limits of Glass-Steagall, banks are actively engaged in a wide range of securities activities. More recently, and reflecting the thrust of competitive and technological developments, banks and securities companies alike have aggressively been moving into each other's traditional lines of business here and abroad. Banking organizations now have securities affiliates here and abroad, and securities companies now have banks here and abroad. Moreover, there is now a wide range of specific activities in which banking organizations and securities firms compete directly. Examples include foreign exchange; writing and brokering of interest rate and currency swaps; underwriting and trading in a wide range of Eurocurrency debt and equity instruments; underwriting and dealing in a wide range of governmental securities, here and abroad; underwriting or private placement of commercial paper; and, on a limited scale, underwriting of debt and equity securities here in the United States. Obviously, none of these close parallels in business activities are to be found among banking and commercial firms.

Third, bank holding companies—including such

companies that own securities subsidiaries—are and should be subject to official supervision at the level of the holding company. They are also subject to functional supervision at the level of the bank or securities affiliate of the holding company. This means that the official supervisory process does not have to reach into a new segment of corporate America, as would be the case with banking and commercial combinations.

More important, it also means that problems at the level of the parent that might adversely affect the bank should be easier to detect and remedy. Indeed, the mere presence of officially promulgated capital standards, consolidated reporting requirements, and periodic inspections at the level of the holding company provides some greater assurance against contagion problems coming from any direction. I might add in this regard that the principle of consolidated supervision of banking institutions is the norm throughout the industrial world. This principle is the basic line of reasoning that lies behind the ruling of the Swiss court in the Credit Suisse case that was cited earlier.

Fourth, because *some* elements of the safety net—in this case, official supervision and regula-

While I am under no illusion about firewalls—especially their ability to deal with the contagion problems—I do believe that so-called Chinese walls can play a very useful role in guarding against conflicts of interest and unfair competition.

tion—apply to the holding company owners of banks, it does not follow that all other elements of the safety net need or should apply to the holding company or to its nonbank subsidiaries. This is surely the case with deposit insurance. On the other hand, in Japan and the United Kingdom, securities firms that are not affiliated with banks do have account relationships with the central bank, and in Japan such firms also have access to the discount window at the Bank of Japan.

Fifth, while there is something to be said for the so-called limited universal bank model, I believe that securities activities (with some exceptions) of banking firms should be conducted in a separately capitalized subsidiary of the holding company, and that the banking activities of securities firms should be organized similarly. While I am under no illusion about firewalls—especially their ability to deal with the contagion problems—I do believe that so-called Chinese walls can play a very useful role in guard-

ing against conflicts of interest and unfair competition. Such arrangements have, for example, worked well over the years in relationships between trust departments of banks and the bank as a whole. It is also true, as noted earlier, that separately capitalized entities can also facilitate functional supervision. However, functional supervision is not good enough. We also need consolidated supervision at the level of the holding company.

Thus, combinations of banking and securities firms should be permitted as long as appropriate supervisory standards and policies are in place. However, such arrangements can give rise to one major practical problem: there will be a handful of securities firms owned by commercial companies that would not be allowed to own insured depository institutions. That is, securities firms that are not controlled by commercial firms would

Prompt and comprehensive reform of the banking and financial system is long overdue. Therefore, I would urge the Congress to move as promptly as possible toward the enactment of broad-based progressive legislation this year.

be free to own insured depositories but those controlled by commercial firms would not. This may seem arbitrary, but it is a natural outgrowth of the argument against the direct or indirect control of banking firms by commercial entities. This would not, of course, preclude commercial companies from owning and controlling financial subsidiaries, as is now the case. But it would put a halt to such firms owning and controlling banking institutions with access to all elements of the safety net.

Summary

The long-term implications as to how the United States should best reform and restructure its banking and financial system cannot be anticipated with precision. That, inevitably, points to the case for care and caution in the process. The need for caution is at the heart of the reasons that I oppose banking and commercial combinations in the present circumstances.

However, the need for caution cannot be allowed to result in paralysis. Prompt and comprehensive reform of the banking and financial system is long overdue. Therefore, I would urge the Congress to move as promptly as possible toward the enactment of broad-based progressive legislation this year. Few items on today's national agenda strike me as having greater importance, and even fewer will have greater importance for the long-term well-being of not just the banking and financial system but also the economy at large.

The Effect of Imports on U.S. Manufacturing Wages

by David A. Brauer

The benefits of international trade have been recognized at least since Adam Smith emphasized them in *The Wealth of Nations* more than 200 years ago. Yet while trade is advantageous for the economy as a whole and exports help to support earnings and employment, foreign imports may put downward pressure on earnings and employment in domestic import-competing industries. In the United States, the ratio of manufacturing imports to domestic supply doubled between 1975 and 1985. During the same period, and in the years since, the real hourly earnings of U.S. manufacturing workers have stagnated. This article examines whether the increased penetration of imports has been a major factor behind the sluggish growth of manufacturing wages in the United States.

In investigating the connection between import flows and manufacturing wages, this article looks at both aggregate and industry-level data, focusing particularly on the period since 1975. The analysis reveals that when other factors known to influence wages are taken into account, increased exposure to imports has had a very modest tendency to result in lower wages within industries.¹ Specifically, the increase in imports

appears to have reduced the level of *aggregate* manufacturing wages by ½ percent to 1 percent between 1975 and 1985.

Although imports affected wages adversely, other factors accounted for the bulk of aggregate wage movements. Productivity growth slowed sharply between 1973 and 1982, limiting employers' ability to boost real wages. Rapidly declining unionization rates, especially after 1980, reduced the bargaining power of much of the work force. Rapid labor force growth combined with several recessions to increase the unemployment rate, exerting downward pressure on wages. Export growth was also slow during this period. Finally, many workers were not fully compensated for the inflation arising from energy shocks in 1973 and 1979.

While the aggregate impact of imports on wages has been rather small, this study does find systematic evidence that the influence of imports on wage determination has increased over time. In addition, it highlights the importance of industry characteristics in determining the direction and magnitude of this effect. In industries producing nondurable goods, increases in imports have been associated with significant reductions in wages. By contrast, in industries producing durable goods, increased import penetration does not appear to have adversely affected wage movements, at least through the mid-1980s. Indeed, if anything, the evidence suggests that in the most heavily unionized durable goods industries, wages initially tended to increase in response to import competition.

The first section of the article gives an overview of the data. It is followed by a discussion of the possible theoretical connections between an industry's exposure

¹These results are consistent with those found in earlier research. For instance, see Richard B. Freeman and Lawrence F. Katz, "Industrial Wage and Employment Determination in an Open Economy," in John M. Abowd and Richard B. Freeman, eds., *Immigration, Trade, and the Labor Market* (Chicago: University of Chicago Press, 1991). John Abowd and Thomas Lemieux find that increases in the import penetration ratio depressed union members' real wages in the United States, though not in Canada ("The Effects of International Competition on Collective Bargaining Outcomes: A Comparison of the United States and Canada," National Bureau of Economic Research, Working Paper no. 3352, May 1990).

to competition from imports and the wages earned by its workers, together with an analysis of changes in the relationship between imports and wages over time. Next, the article presents results showing the impact of a given increase in imports on a typical worker's wages. A detailed comparison of the data at two points in time—1975 and 1985—is used to analyze the effect of increases in imports on wages within industries.

An overview of the data

The United States manufacturing sector has become increasingly integrated with the international economy. Chart 1 shows a clear upward trend in the import penetration ratio, defined as imports divided by the sum of imports and domestic shipments, between 1958 and 1989.² This ratio increased from 5.4 percent in 1970 to 6.6 percent in 1975, 8.6 percent in 1980, and 13.1 percent in 1985, according to figures calculated from the National Bureau of Economic Research (NBER) Immigration, Trade, and Labor Market Data Files.³ The chart also shows that until 1980 the ratio of exports to output exhibited a clear upward trend. In the early 1980s, however, the value of the dollar rose sharply, encouraging imports and discouraging exports. Thus, in the first half of the 1980s, the export ratio declined to a level only slightly greater than that of the mid-1970s. After the dollar's value peaked in 1985, the import penetration ratio stabilized, and the export-to-output ratio resumed its upward trend.

The increase in the import penetration ratio since the early 1970s has been accompanied by stagnating real wages and employment. Table 1 summarizes developments in manufacturing wages since 1960, for all industries as well as for durable and nondurable goods sectors separately. The first two columns illustrate the path of real hourly manufacturing wages. After rising at an annual rate of 1.5 percent from 1960 through 1973, real wages were flat during the late 1970s and declined throughout the 1980s. The stagnation in real wages reflects in part a shift in compensation to nonwage

forms such as medical and pension benefits and higher payroll taxes. Nonetheless, the real hourly compensation received by manufacturing workers (columns 3 and 4) leveled off in the 1980s, after growing rapidly during the 1960s and early 1970s and more slowly in the late 1970s. The last two columns suggest that the stagnation in real wages reflects factors other than a slowdown in labor productivity growth, since productivity grew at a healthy pace, particularly in durable goods manufacturing, during the 1980s.

The downward trend in manufacturing employment since the late 1970s is documented in Table 2. Both the average level of employment over the course of a business cycle (column 1) and the peak level of employment during the cycle (column 2) were lower during the 1980s than earlier. In addition, the average annual employment growth rate (column 3), measured from trough to peak, was much slower in the 1980s than in previous expansions. Although other factors, such as labor-saving technological change and declining demand for some goods, may be partially responsible, the weak performance of manufacturing employment has coincided with the increase in import penetration ratios and therefore merits examination along with the effect of imports on wages.

²Note that import penetration ratios represent just one way of viewing foreign competitive pressures. They are not, for instance, directly affected by foreign investment in domestic manufacturing facilities. (In fact, other things being equal, a foreign producer's move to replace imports with goods produced at a U.S. facility would *reduce* measured import penetration.) Import penetration ratios also do not capture possible differences in quality between domestically produced and imported goods. These considerations, along with others, could have consequences for wages and employment beyond the results presented here.

³The NBER Data Files cover 428 manufacturing industries, each observed annually between 1958 and 1985. For further details, see the appendix to this article. In addition, see John M. Abowd, "The NBER Immigration, Trade, and Labor Markets Data Files," National Bureau of Economic Research, Working Paper no. 3351, May 1990.

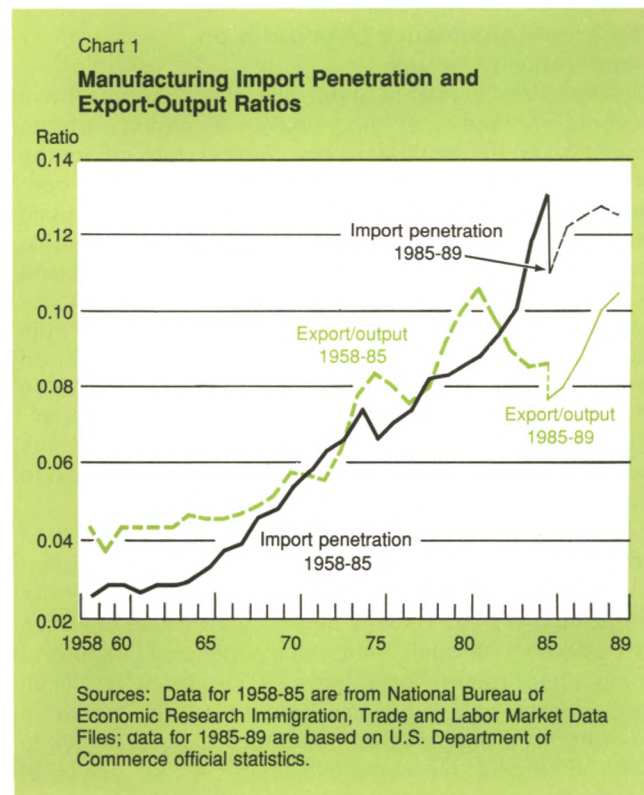


Table 1

Manufacturing Wages and Productivity, 1960-89

	Real Hourly Wages†		Real Hourly Compensation		Productivity‡	
	(1) Level	(2) Average Annual Increase (Percent)	(3) Average Index (1982 = 100)	(4) Average Annual Increase (Percent)	(5) Average Index (1982 = 100)	(6) Average Annual Increase (Percent)
All industries						
1960-69	8.19	1.5	80.0	2.1	66.8	2.9
1970-73	8.95	1.5	91.2	1.6	80.8	3.8
1974-79	9.19	0.0	98.1	1.1	91.1	1.6
1980-89	8.77	-0.9	99.6	-0.0	114.2	4.0
Durable goods						
1960-69	8.72	1.3	80.0	2.0	72.6	2.7
1970-73	9.50	1.6	91.2	1.6	85.5	3.2
1974-79	9.79	0.0	98.2	1.1	94.9	1.2
1980-89	9.28	-1.0	99.2	-0.1	119.4	4.7
Nondurable goods						
1960-69	7.44	1.5	80.3	2.2	59.3	3.0
1970-73	8.17	1.2	91.2	1.4	74.5	4.9
1974-79	8.29	-0.0	97.5	1.0	85.9	2.1
1980-89	8.03	-0.5	100.0	0.2	107.1	3.0

Sources: Bureau of Labor Statistics, *Employment and Earnings* and *Handbook of Labor Statistics*. Productivity figures for 1980 through 1989 are from Bureau of Labor Statistics, *Productivity and Costs* release, March 6, 1991.

†1982-84 dollars.

‡Output per hour of all persons.

The growing influence of imports on manufacturing wages

This section presents evidence that imports have become increasingly important determinants of the wages paid by manufacturers. Before turning to the evidence, however, it may be helpful to review the conceptual linkage between the two. In principle, increased product market competition should lead to lower wages, lower employment, or both. (For a more detailed discussion, see the accompanying box.) Whether the competition stems from imports or any other source, it puts downward pressure on the price of a product. From an employer's perspective, this effect diminishes the value of any worker's contribution to output, and consequently fewer workers will be hired at the prevailing wage rate. The decline in labor demand may in turn exert downward pressure on the wage rate.

In an environment of unionized labor and less than perfectly competitive product markets, workers generally receive "rents," or above-market wages and benefits. Employers are usually able to pass these costs on to customers through their pricing policies. Increased competition from imports, however, can make it difficult to continue passing wage costs through, because demand for a firm's product becomes more sensitive to price changes. Nevertheless, the precise effect of increased competition on wages and employment will

Table 2

Manufacturing Employment, 1960-89

	(1) Average Employment (Thousands)	(2) End Year Employment (Thousands)	(3) Average Annual Growth Rate† (Percent)
All industries			
1960-69	18,092	20,168	2.7
1970-73	19,324	20,155	4.0
1974-79	19,772	21,040	3.5
1980-89	19,307	19,426	0.9
Durable goods			
1960-69	10,378	11,863	3.5
1970-73	11,175	11,882	5.9
1974-79	11,710	12,746	4.5
1980-89	11,410	11,422	1.1
Nondurable goods			
1960-69	7,714	8,305	1.6
1970-73	8,159	8,294	1.7
1974-79	8,081	8,312	2.0
1980-89	7,900	8,004	0.6

Source: Bureau of Labor Statistics, *Employment and Earnings*.

†Trough to the final year of each interval. Trough years—1961, 1971, 1975, and 1983—represent the lowest overall level of manufacturing employment during the interval.

Box: Conceptual Issues

Analyzing the effect of greater product market competition on a fully competitive labor market with no hiring and firing costs is a straightforward exercise. For any group of workers possessing a particular set of attributes (skills and abilities, experience, location, and so forth), employers take the market-determined wage rate as given.[†] They then hire up to the point where the marginal worker's contribution to output (which, in the absence of increasing returns to scale, declines as additional workers are hired) equals the wage rate. Increased product market competition, regardless of its source, will typically result in a lower product price, which is equivalent to a reduction in the value of the marginal worker's contribution to output. Consequently, with the wage rate given, employers will respond by hiring fewer workers than they had previously. Aside from the reduction in employment, increased competition can result in a lower wage rate if the reduction in demand for workers by all employers is sufficiently large relative to the size of the relevant labor market.

In reality, few of the assumptions of perfect labor market competition are satisfied. Modifying these assumptions usually changes the results. One significant alteration, however, leaves the results unchanged. Workers often earn more in their current jobs than they could in the next-best alternative job for which they are qualified. Employers may pay an above-market wage in order to reduce the rate at which their current workers, especially the most productive, quit, thus avoiding recruiting and training costs.[‡] Higher wages can also serve to attract better quality workers or, according to the "efficiency wage" hypothesis, to encourage greater effort.[§] Under these circumstances, employers will probably respond to

increased competition by first reducing employment, just as they did in the case of perfect markets. Industry wages could also fall if the decline in employment causes the industry's demand for workers to fall.

A more interesting case involves industries where firms and workers, the latter often represented by unions, share the gains derived from market power. A union can seek an above-market wage and benefits package because it knows that increased labor costs can be passed on to customers through higher prices.^{||} In these circumstances, the introduction of competition is likely to directly reduce demand for the firm's product, resulting in a downward shift in the associated demand curve for labor. As in the case of perfect markets, this scenario will lead to reduced wages, lower employment, or a combination of the two.^{††} The introduction of competition from imports may also increase the responsiveness of product demand to price changes, so that over time it will become increasingly difficult for employers to pass increases in labor costs through to their customers.

The relative effect of the new competition on wages and employment depends on the specific objectives and attributes of the employer, the industry, and, where present, the union. In an industry characterized by rapid technological change and increasing product demand, the effect of imports may not be obvious (although earnings and/or employment increases will be smaller than they would have been had imports not increased). In general, however, employers will attempt to reduce their labor costs, either gradually through attrition and reductions in the rate of increase in wages and benefits or aggressively through large-scale layoffs, plant closings, and demands for nominal wage concessions. Some unions will offer such concessions to preserve employment in the face of new competition; others will seek to preserve existing wage levels at the risk of some members' losing their jobs.

[†]Strictly speaking, the wage rate should take into account nonwage costs such as payroll taxes and employer contributions to health insurance and retirement plans.

[‡]See Steven C. Salop, "A Model of the Natural Rate of Unemployment," *American Economic Review*, vol. 69 (March 1979), pp. 117-25.

[§]For a formal model of the relationship between wages and worker quality, see Andrew Weiss, "Job Queues and Layoffs in Labor Markets with Flexible Wages," *Journal of Political Economy*, vol. 88 (June 1980), pp. 526-38. Several theories have been proposed to explain the effect of higher wages on effort. Under the "shirking" hypothesis, high wages serve as an extra incentive, prompting the employee to work harder in order to avoid dismissal. See Carl Shapiro and Joseph E. Stiglitz, "Equilibrium Unemployment as a Worker Discipline Device," *American Economic Review*, vol. 74 (June 1984), pp. 433-44. For an alternative explanation that emphasizes sociological phenomena, see George A. Akerlof, "Labor Contracts as Partial Gift Exchange," *Quarterly Journal of Economics*, vol. 97 (November 1982), pp. 543-69.

^{||}Technically, the union members are earning "rents." Even in firms without a union, employers may offer to share rents with their employees in order to prevent unionization. Such actions could be justified by the employer's desire to preserve the freedom to manage without interference from a union.

^{††}The experience of recently deregulated industries is instructive in this context. One study suggests that when the trucking industry was regulated, union drivers operating in the regulated portion of the industry received substantial rents. After five years of deregulation, however, these rents were largely dissipated. See Nancy Rose, "Labor Rent Sharing and Regulation: Evidence from the Trucking Industry," *Journal of Political Economy*, vol. 95, no. 6 (December 1987), pp. 1146-78.

Box: Conceptual Issues (Continued)

It is even conceivable that import competition could, in certain declining industries, result in short-run wage increases.^{4†} When a unionized industry with relatively few dominant firms has long-lasting immobile or industry-specific facilities and equipment, a permanent decline in demand resulting from imports will initially be met entirely through reductions in hours and employment because of the high cost of selling or shutting down capacity. With import competition imposing an upper limit on the industry's productive capacity, any temporary increase in demand will result in increased utilization of labor. Because management has lost the option of expanding capacity, it will be less able to resist union wage demands, and consequently wages could rise in the short run. In the long run, however, as the existing capital stock wears out and plant closings become likely, management's bargaining power will be restored, resulting in downward pressure on wages in addition to employment losses.

These considerations suggest that in the short run, increased import penetration, to the extent that it signifies increased competition, should have a negative impact on employment but an uncertain effect on aggregate or industry wages. Over time, however, we would expect to observe an increasingly strong negative impact on earnings. If unions at first perceive increased import competition to be temporary, they may be unable to

justify long-lasting wage concessions to their members. But as it becomes clear that industries will continue to face competition from imports, and that consequently labor costs must be contained in order to preserve jobs, concessions will become increasingly acceptable. Furthermore, in partially unionized industries, the high-wage unionized firms will probably face greater employment losses than nonunion firms even if imports have no effect on wages at any firm; consequently, industry-wide average wages will decline. Finally, if relatively high-wage unionized industries suffer proportionally greater employment losses as a result of imports, aggregate average manufacturing wages will decline even if the average wage within industries is unaffected.

This analysis of the conceptual issues assumes that imports or other sources of product market competition are determined independently of wages and employment. Nonetheless, the existence of above-market wages and profits in an industry may serve as a signal to potential competitors (both foreign and domestic) that entry can be profitable. The higher the wage, relative to a competitive level, the more vulnerable the industry becomes to competition. Under these circumstances, we would expect to observe a positive correlation between import penetration and wages.^{5§}

^{††}Colin Lawrence and Robert Z. Lawrence, "Manufacturing Wage Dispersion: An End Game Interpretation," *Brookings Papers on Economic Activity*, 1:1985, pp. 47-116.

^{§§}For evidence on this issue, see Lawrence F. Katz and Lawrence H. Summers, "Industry Rents: Evidence and Implications," *Brookings Papers on Economic Activity: Microeconomics*, 1989, pp. 209-75.

depend on the specific objectives of both unions and employers. For instance, some unions, when faced with declining demand, will fight to preserve their wage advantage at the expense of employment, while others will offer wage concessions in order to save their members' jobs. It has even been suggested that in some industries, wages might initially increase in response to increased import competition.⁴

The short-term impact of import competition on wages may therefore be weak or even perverse. Over time, however, noncompetitive systems for wage determination should be eroded by competitive forces. If imports entail increased competition, they should become increasingly important determinants of wages. One way to test this assertion is to examine the distribution of wages by industry. If imports become more

important in wage determination, the degree of import penetration within an industry should become more closely associated with the wages paid by the industry. Chart 2 summarizes the evidence on this issue, using data for 1958 to 1985 drawn from the NBER Data Files for 125 manufacturing industries identified by three digits in the Standard Industrial Classification (SIC) Code.⁵

The solid line in Chart 2 illustrates the simple correlation, by industry, between hourly wages and the import penetration ratio for each year between 1958 and 1984. It shows that during the 1960s the correlation coefficient was negative but small (absolute value less than .1) and not significantly different from zero. In the 1970s and

⁴Lawrence and Lawrence, "Manufacturing Wage Dispersion: An End Game Interpretation." This argument is developed more completely in the box.

⁵The SIC code is a system of categorizing industries by type of product. Industries are aggregated at levels ranging from the least detailed (one-digit) to very detailed (seven-digit). These and all subsequent calculations in this article are carried out at the three-digit level. Examples of three-digit industries include meat products (201), logging (241), and household appliances (363).

early 1980s, however, the connection between high imports and low wages became much stronger, with the absolute value of the correlation coefficient rising from an average of .153 between 1970 and 1975 to .213 during 1976-82 and .298 in 1983-85.

In addition to the simple correlations, a series of annual multiple regression equations are estimated. These relate production workers' hourly earnings to the import penetration ratio while controlling for other factors that can influence wages.⁶ The control variables include the ratio of exports to output, value added per hour worked (a measure of productivity), and the production workers' unionization rate.⁷ The regression coefficients for the import penetration ratio are plotted as the dotted line in Chart 2. They were uniformly negative and over time tended to increase in magnitude. In the latter half of the period, all else equal, every percentage point increase in an industry's import pen-

⁶Results of similar regressions using estimated compensation, which includes nonwage labor costs as well as wages, can be found in David Brauer, "The Effect of Import Competition on Manufacturing Wages," Federal Reserve Bank of New York, Research Paper no. 9030, September 1990. They are generally similar to the results shown here.

⁷The export-to-output ratio is included in light of the observation that export-intensive industries tend to offer high wages. See Lawrence F. Katz and Lawrence H. Summers, "Industry Rents: Evidence and Implications," *Brookings Papers on Economic Activity: Microeconomics 1989*, pp. 209-75. The use of output per hour as an alternative productivity measure does not materially affect the results.

etration ratio was associated with a drop of about 1/4 to 1/3 of 1 percent in hourly wages. By contrast, before 1973 the relationship between imports and wages was weak and not statistically significant.

Aggregate effects

The results summarized above suggest that imports have become more important in wage determination. The next issue to be investigated is the specific impact of a given increase in import penetration on a typical factory worker's wage. One way to examine this effect is to estimate a single equation for hourly wages, using all twenty-seven annual observations available for each industry from 1958 through 1984.⁸ This approach is used in Table 3, which shows a number of equations designed to estimate the average effect of imports on wages in all manufacturing industries (column 1), durable goods producers (column 2), and nondurable goods producers (column 3). In these equations, both wages and value added are measured in real (inflation-

⁸For a slightly different approach using the same data, see Freeman and Katz, "Industrial Wage and Employment Determination." They found that over time a 10 percent annual reduction in industry revenues due to increased import penetration resulted in a modest 0.5 percent reduction in earnings for production workers, with imports having a somewhat stronger impact in the early 1980s than earlier. Their results also showed that the effect of imports on earnings was strongest in highly unionized industries. This finding suggests that when competition was less, unions were more successful than nonunion workers in capturing a portion of monopoly rents.

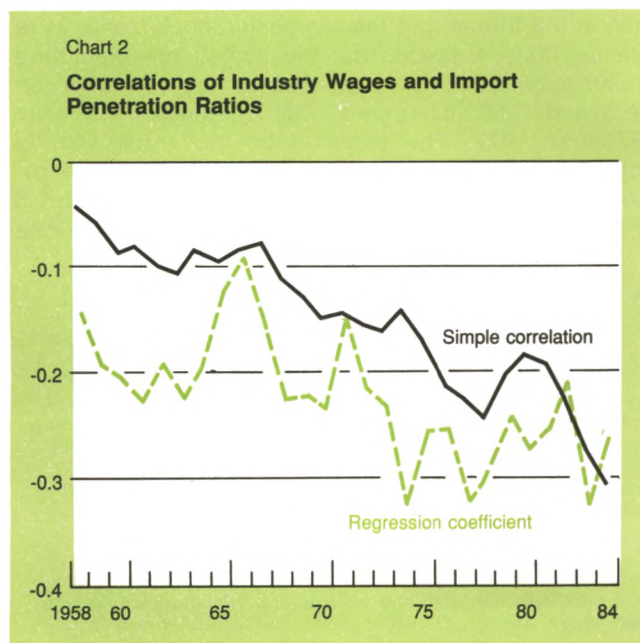


Table 3

Determinants of Real Wages by Three-Digit Industry, 1958-84

Dependent variable: log production workers' real hourly earnings

	(1) All Industries	(2) Durable Goods	(3) Nondurable Goods
Intercept	1.004 (23.78)	1.471 (36.32)	.945 (29.33)
Import penetration ratio	-.326 (14.35)	-.199 (5.88)	-.309 (9.18)
Exports/output	.130 (5.79)	.040 (1.79)	.231 (2.93)
Percent unionized	.003 (9.39)	.001 (1.62)	.005 (18.05)
Log value added per hour	.245 (26.53)	.165 (12.01)	.267 (33.25)
Adjusted R ²	.952	.944	.934

Notes: Regression equations also include year and three-digit industry dummies. Absolute t statistics are given in parentheses.

adjusted) terms.⁹ The equations include a series of dummy variables intended to capture unmeasured fixed industry effects, such as the characteristics of individual workers, that are not related to the import penetration ratio or the other directly observed variables. The equations also include a series of year dummy variables intended to control for cyclical influences on real earnings, long-term wage trends, and shocks affecting consumer prices. Overall, with 125 industries observed each year, the equation is based on 3,375 observations.

The equation including all industries (column 1) indicates that, all else equal, a 10 percentage point increase in the import penetration ratio in a typical industry during the 1958-85 period was associated with a wage reduction of about 3.3 percent. A similar increase in the ratio of exports to output resulted in an increase in real wages of about 1.3 percent. As expected, both unionization and productivity had a positive impact on earnings. The estimated effect of import penetration on wages generally held up under a number of alternative specifications.¹⁰ The inclusion of lagged export and import penetration ratios yielded a long-run wage reduction of about 4 percent in response to a 10 percentage point increase in the import penetration ratio.

The significance of the regression results is best understood through an example. The import penetration ratio in the women's clothing industry rose from around 10 percent in the mid-1970s to approximately 25 percent in the mid-1980s, while real hourly wages fell by about 10 percent. The result in column 1 suggests that the increase in imports was responsible for about half of the real wage reductions observed in the industry. This estimate assumes, however, that all other factors affecting wages paid by this industry were independent of the increase in import penetration and that the relationship between imports and wages was equal in all industries and in all years.

Interestingly, the results were somewhat different when the wage equation was estimated separately for durable and nondurable goods. Results for the durable

goods sector, shown in column 2 of Table 3, indicate that the response of wages to the import penetration ratio was less than for manufacturing as a whole, although it remained negative and statistically significant. By contrast, the results in the nondurable goods sector, shown in column 3 of the same table, were quite similar to those for overall manufacturing. In other words, the relationship between imports and wages was stronger for nondurable than for durable goods producers. Some possible reasons for this divergence will be discussed below.

Because the evidence presented in Chart 2 suggests that imports are exerting a growing influence on wages, one might question the reliability of estimates that assume a stable import effect. An alternative way to look at the effect of imports on wages (and employment) is to compare the wage and employment changes between two periods experienced by industries that faced considerable competition from imports with the changes experienced by industries that did not.¹¹

The specific periods chosen for comparison are 1983-85 and 1975-77. The use of three-year periods minimizes the effects of onetime events that may have affected an industry in any particular year. The three-year period also avoids difficulties associated with the staggered expiration of union contracts. The periods selected represent roughly comparable stages in the business cycle. One major difference between them is that during the latter period the dollar's value was both high and rising.¹² According to the results illustrated in Chart 2, the simple correlation between import penetration and wages was stronger during the latter period than in the former, but the regression coefficients were similar. Table 4 shows that the overall manufacturing import penetration ratio averaged 11.7 percent between 1983 and 1985, compared with 7.0 percent between 1975 and 1977. The export ratio also rose slightly between the two periods. In 1983-85, average real earnings were 3.5 percent lower, and real compensation 1.5 percent lower, than in 1975-77. The unionization rate

¹¹Previous work along these lines found no systematic effect of imports on wages or employment. See Gene M. Grossman, "The Employment and Wage Effects of Import Competition in the United States," *Journal of International Economic Integration*, vol. 2, no. 1 (Spring 1987), pp. 1-23. Grossman studied nine industries in which imports increased significantly between 1967 and 1979. He found that import competition had a significant negative impact on hourly wages in only two industries (ball bearings, radio and television) and caused a large loss of jobs only in the radio and television industry. Two other industries (nuts and bolts, hardware veneer) experienced moderate employment losses.

¹²The real trade-weighted dollar, as measured by the Board of Governors of the Federal Reserve System, averaged 94.7 (March 1973=100) between 1975 and 1977, and 125.8 between 1983 and 1985. Within periods, the dollar's value fell from 93.9 in 1975 to 93.0 in 1977, but rose from 117.1 in 1983 to 131.9 in 1985.

⁹In both cases, nominal values are deflated by the consumer price index. The use of other deflators common to all industries, such as the GNP deflator or the producer price index for manufacturing, did not affect the results. Unfortunately, it was impossible to construct price series for the output of each industry.

¹⁰For further details, see Brauer, "The Effect of Import Competition." One alternative specification replaced the year dummies with the manufacturing unemployment rate and a time trend in order to separate cyclical effects from broad long-term trends. Another substituted output per hour for value added per hour as the productivity measure. In addition, estimated real hourly compensation, including nonwage benefits, replaced the real wage as the dependent variable. None of these exercises materially affected the estimates of the import effect.

also fell between the two periods.

Table 5 summarizes regressions that relate the percent change in real wages by industry between the two periods to the change in the import penetration ratio while controlling for changes in exports, changes in productivity, and unionization.¹³ The coefficient on the import ratio suggests that a 10 percentage point increase in an industry's import penetration ratio yielded a reduction in hourly wages of about 0.9 percent to 1.6 percent, the precise value depending on how unionization was specified. Given the increase in the average import penetration ratio between the two periods, this effect translates to a 0.4 percent to 0.8 percent reduction in aggregate earnings.¹⁴ The effect of imports on wages was statistically significant, however, only in the equation shown in column 1. The evidence is

¹³Regressions and tabulations in this section apply to all 141 three-digit manufacturing industries (including the miscellaneous categories) for which data on imports and exports exist.

¹⁴For an alternative approach to estimating the effect of imports on aggregate wages, see Wayne Vroman and John M. Abowd, "Disaggregated Wage Developments," *Brookings Papers on Economic Activity*, 1:1988, pp.313-38. Using data from the 1964-79 period, they found that a 10 percent increase in nonpetroleum import prices yielded about a 1 percent increase in aggregate earnings. Since higher import prices, all else equal, reduce the vulnerability of U.S. industries to foreign competition, this result is consistent with the findings presented here.

therefore somewhat inconclusive but suggests that imports adversely affect earnings. The estimated effect of changes in exports on wages was positive but very small and statistically insignificant. Thus, while industries in which a large fraction of output is exported tend to pay higher wages, we cannot conclude that an increase in the export-to-output ratio within an industry will lead to increased wages. As expected, higher unionization rates (in terms of both the initial level and the change) had a positive impact on wages, as did higher productivity.

To obtain a more precise measure of the impact of increasing imports, the industries are divided into those experiencing above-average, and those experiencing below-average, increases in import penetration.¹⁵ Table 6 illustrates the initial conditions within these groups, with group averages weighted by employment. For manufacturing as a whole, the differences between the groups with above-average and below-average increases in imports were minor, with two notable exceptions. Estimated labor costs per unit of value added, shown in the next to last column, were somewhat higher in the group of industries that subsequently faced significant increases in imports. The high-import industries were also less capital intensive, as sug-

¹⁵For further detail, see Brauer, "The Effect of Import Competition," especially Table 9.

Table 4

**Summary Statistics for Manufacturing
1975-77 and 1983-85**

	1975	1976	1977	1975-77 Average	1983	1984	1985	1983-85 Average
Average hourly earnings (nominal)	5.03	5.42	5.89	5.45	9.00	9.41	9.94	9.45
Average hourly earnings (real)	9.29	9.47	9.67	9.48	9.02	9.11	9.30	9.14
Average hourly compensation (nominal)	6.00	6.53	7.16	6.56	11.12	11.61	12.17	11.63
Average hourly compensation (real)	11.09	11.41	11.75	11.42	11.14	11.24	11.38	11.25
Total employment (thousands)	16,706	17,211	17,997	17,305	17,002	17,419	17,050	17,157
Import penetration ratio (percent)	6.6	7.1	7.4	7.0	10.0	11.9	13.1	11.7
Export ratio (percent)	8.4	8.1	7.6	8.0	9.0	8.5	8.6	8.7
Unionization rate	47.7	47.0	46.3	47.0	37.2	35.6	n.a.	36.4†

Source: All nominal figures are based on the National Bureau of Economic Research Immigration, Trade, and Labor Market Data Files.

Notes: Hourly earnings, compensation, and unionization rates are for production workers. Employment refers to all workers. Real earnings and compensation are in 1982-84 dollars, deflated using the consumer price index.

†1983-84 average.

Table 5

Determinants of Real Wage ChangeDependent variable: percent change in real wages, by industry
1983-85 versus 1975-77

	(1)	(2)	(3)
Intercept	-2.883 (1.77)	-12.780 (6.17)	-10.641 (5.63)
Change in import penetration ratio	-0.160 (2.23)	-0.093 (1.38)	-0.098 (1.48)
Change in export ratio	0.082 (0.44)	0.010 (0.05)	0.013 (0.07)
Change in percent union	0.177 (1.83)		0.239 (2.71)
Percent union, 1975-77		0.168 (5.08)	0.179 (5.50)
Percent change in value added per hour	0.178 (5.41)	0.200 (6.69)	0.186 (6.27)
Adjusted R ²	.228	.335	.364

Notes: Equations are based on 141 observations. Absolute t statistics are given in parentheses.

gested by the capital-per-worker figures in the last column.

Similar breakdowns within the durable and nondurable sectors are revealing. They show that in the durable goods sector, import penetration increased sharply in relatively high-wage, heavily unionized, and capital-intensive industries such as automobiles, steel, and construction equipment.¹⁶ By contrast, in the nondurable goods sector, the industries most heavily affected by imports were characterized by low wages, low unionization rates, and strongly labor-intensive production.

Table 7 shows changes in wages, unit labor costs, unionization, and the ratio of capital to labor, calculated on the assumption that the employment distribution across industries was unchanged within each group. Thus, these figures abstract from changes in group averages caused by shifts in employment. Real wages and unit labor costs declined in all categories, but for manufacturing as a whole the decline was only slightly greater in industries facing more than a 5 percentage point increase in the import penetration ratio than in

¹⁶The computer and electronic components industries, which thrived despite the increase in imports, are important exceptions to the overall pattern.

Table 6

**Characteristics of Industries
1975-77**

	(1) Employment (Thousands)	(2) Real Hourly Wage†	(3) Percentage Unionized	(4) Import Penetration Ratio	(5) Estimated Unit Labor Cost‡	(6) Capital to Labor Ratio§
All industries	17,205	9.44	47.0	.068	.5429	21.9
Change in import penetration ratio, 1975-77 to 1983-85						
Less than 5 percentage points	10,759	9.54	46.1	.042	.5260	24.0
Greater than 5 percentage points	6,446	9.30	48.3	.108	.5687	18.3
Durable goods	10,007	10.23	51.2	.073	.5722	19.4
Change in import penetration ratio, 1975-77 to 1983-85						
Less than 5 percentage points	5,512	9.61	47.4	.045	.5720	16.6
Greater than 5 percentage points	4,495	10.99	55.9	.108	.5725	22.9
Nondurable goods	7,197	8.36	41.0	.060	.5025	25.2
Change in import penetration ratio, 1975-77 to 1983-85						
Less than 5 percentage points	5,247	9.46	44.6	.037	.4749	31.8
Greater than 5 percentage points	1,950	6.02	33.5	.108	.5612	7.7

Note: Employment refers to all workers; hourly wage and percentage unionized, to production workers only.

†1982-84 dollars, deflated by consumer price index.

‡Ratio of estimated compensation to value added.

§Capital stock, in constant dollars, divided by total employment.

those experiencing a below-average increase in imports.¹⁷

The differences in the response of wages to changes in imports for durable and nondurable goods are striking. For durable goods, real wages actually fell by only 2.1 percent in the high-import group, while they dropped 2.9 percent in the low-import group. In nondurable goods, by contrast, real wages fell by over 7 percent in those industries facing above-average increases in imports, compared with a decline of only 2.4 percent in the low-import group.

As noted, these figures are based on fixed employment weights and ignore shifts in the employment mix between the two periods. Column 6 of Table 7 shows that total employment rose in industries with below-average increases in imports but declined sharply in industries with more than a 5 point increase in the import penetration ratio. The data in column 1 suggest that imports apparently had little direct downward impact on average wages paid by *industries* producing durable goods. Average wages earned by *workers* in this sector, however, could have been further reduced through the elimination of jobs in high-wage industries with strong import growth.

Evidence on this point is provided in Table 7. Column 7 computes the change in simple average wages in each sector without correcting for the shifting of jobs between industries over time. For manufacturing as a whole, actual average real wages fell by 3.7 percent, compared with the 2.9 percent decline shown in column 1. The difference between these figures implies that employment shifts were apparently responsible for a further 0.8 percent reduction in aggregate wages. Employment shifts had their greatest impact in the high-import industries producing durable goods. With employment shifts taken into account, average real wages in this group declined by 5.2 percent, compared with the decline of just 2.1 percent under constant employment shares. In the nondurable goods sector, by contrast, employment shifts had virtually no effect on average wages in the high-import group, despite the pronounced loss of jobs.

The data using constant employment shares shown in column 1 are consistent with the Table 3 regressions, which suggested a stronger and more significant relationship between industry wages and import penetration for nondurable than for durable manufacturing. As a further test, Table 8 repeats the regressions performed in columns 1 and 2 of Table 5, separating the sample into durable and nondurable goods industries.¹⁸

¹⁷Part of the decline in aggregate wages is probably due to the weakening of unions, but industries that experienced import growth and those that did not were equally affected by falling unionization rates. See Richard B. Freeman and James L. Medoff, *What Do Unions Do?* (New York: Basic Books, 1984).

¹⁸The column 3 specification, with both the initial unionization rate and its change included, yields results very similar to those in which only the initial unionization rate is included.

Table 7

Wage Changes Assuming Constant Employment Distribution, 1975-77 to 1983-85

	(1) Real Wage	(2) Percentage Unionized	(3) Import Penetration Ratio	(4) Estimated Unit Labor Cost	(5) Capital to Labor Ratio	(6) Memo: Employment Change	(7) Wage Change Including Employment Shifts
All industries	-2.9	-10.3	5.2	-2.8	27.4	-0.9	-3.7
Change in import penetration ratio, 1975-77 to 1983-85							
Less than 5 percentage points	-2.6	-10.8	1.8	-2.6	20.5	3.2	-3.2
Greater than 5 percentage points	-3.2	-9.6	10.3	-3.1	41.1	-7.9	-4.7
Durable goods	-2.5	-11.0	5.1	-0.8	32.5	0.3	-4.2
Change in import penetration ratio, 1975-77 to 1983-85							
Less than 5 percentage points	-2.9	-11.4	1.8	-0.5	17.8	4.1	-2.8
Greater than 5 percentage points	-2.1	-10.4	8.4	-1.0	45.3	-4.4	-5.2
Nondurable goods	-3.5	-9.4	5.2	-5.9	21.6	-2.6	-2.8
Change in import penetration ratio, 1975-77 to 1983-85							
Less than 5 percentage points	-2.4	-10.1	1.1	-5.3	22.1	2.3	-3.6
Greater than 5 percentage points	-7.1	-8.0	13.9	-7.1	17.0	-15.9	-7.2

Notes: Columns 1, 4, 5, 6, and 7 show percent changes; columns 2 and 3 show percentage point changes.

Table 8

Determinants of Real Wage Change

Dependent variable: percent change in real wages, 1983-85 versus 1975-77

	Durable Goods		Nondurable Goods	
	(1)	(2)	(3)	(4)
Intercept	-8.701 (4.51)	-13.295 (7.23)	-0.964 (0.52)	-12.625 (4.23)
Change in import ratio	0.228 (2.21)	0.236 (2.55)	-0.325 (3.51)	-0.232 (2.40)
Change in export ratio	0.021 (0.12)	-0.036 (0.23)	0.233 (0.60)	0.104 (0.27)
Change in percent unionized	-0.209 (1.40)		0.362 (2.88)	
Percent unionized, 1975-77		0.145 (4.34)		0.169 (2.89)
Percent change in value added per hour	0.202 (4.63)	0.213 (5.42)	0.160 (3.60)	0.200 (4.62)
Adjusted R ²	.242	.391	.361	.361

Notes: Equations (1) and (2) are based on 72 observations. Equations (3) and (4) are based on 69 observations. Absolute t statistics are given in parentheses.

For nondurable goods the impact of changes in imports on industry wages was negative and significant: a 10 percentage point increase in the import penetration ratio yielded an estimated 2.3 percent to 3.2 percent reduction in wages. For durable goods, however, a similar increase in imports would have resulted in a wage *increase* of approximately 2.3 percent.

The latter result is somewhat puzzling and contrasts with some other results in the literature.¹⁹ It is, however, consistent with the hypothesis discussed in the box that increasing import penetration can, at least initially, be associated with increasing wages in industries that are highly unionized, concentrated, and declining. One sim-

¹⁹Freeman and Katz, "Industrial Wage and Employment Determination," found that over time wages fell more in response to imports in highly unionized industries than in industries with low unionization rates. Contrasting results can be found in David A. Macpherson and James B. Stewart, "The Effect of International Competition on Union and Nonunion Wages," *Industrial and Labor Relations Review*, vol. 43, no. 4 (April 1990). Macpherson and Stewart, using data on individual workers between 1975 and 1981, found that wages were less sensitive to imports in highly unionized industries than in industries with lower unionization rates. These authors did find that increases in the import penetration ratio reduced union members' relative wage advantage within industries. Abowd and Lemieux, "The Effects of International Competition," reported similar findings for the United States, but found that increases in imports had no significant impact on union wages in Canada.

Table 9

Determinants of Real Wage Change

Dependent Variable: Percent Change in Real Wage 1983-85 versus 1975-77

	All Manufacturing		Durable Goods		Nondurable Goods	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-3.149 (2.42)	-11.262 (5.58)	-8.355 (4.85)	-10.765 (4.90)	-0.965 (0.52)	-13.084 (3.90)
Change in import penetration ratio	-0.908 (4.92)	-0.423 (1.84)	-0.651 (2.89)	-0.339 (1.13)	-0.636 (1.94)	-0.117 (0.30)
Change in export ratio	0.009 (0.05)	-0.007 (0.04)	-0.085 (0.55)	-0.079 (0.51)	0.208 (0.53)	0.108 (0.27)
Change in percent unionized	0.206 (2.26)		-0.075 (0.57)		0.358 (2.85)	
Percent unionized, 1975-77		0.130 (3.15)		0.077 (1.63)		0.179 (2.68)
Change in imports times percent unionized in 1975-77	2.021 (4.36)	0.856 (1.50)	2.113 (4.27)	1.373 (2.01)	0.888 (0.99)	-0.313 (0.31)
Percent change in value added per hour	0.189 (6.13)	0.203 (6.80)	0.251 (6.18)	0.239 (5.89)	0.157 (3.52)	0.201 (4.59)
Adjusted R ²	.318	.341	.397	.417	.361	.352

Notes: Equations (1) and (2) are based on 141 observations. Equations (3) and (4) are based on 72 observations. Equations (5) and (6) are based on 69 observations. Absolute t statistics are given in parentheses.

pie way to test this effect is to include the interaction between the increase in the import penetration ratio and the initial unionization rate in the wage change regressions. The term for the import penetration ratio could be interpreted as the hypothetical effect of imports on wages in the absence of unionization. A positive coefficient on the interaction term, if combined with a negative coefficient on the pure import penetration term, would indicate that the downward pressure on wages stemming from increased competition from imports could, for a time, be resisted or offset by unions.

Results shown in Table 9 lend support to this conjecture. For all manufacturing, the interaction term was positive and, in one case, statistically significant, with the pure import penetration term magnified relative to the results of Table 5. Consequently, the 4.7 point increase in the import penetration ratio would apparently, in the absence of union resistance, have led to a 2 percent to 4 percent decline in aggregate wages. For durable goods, the interaction term was positive and significant, and more importantly, the pure import penetration term was now negative and, in one case, statistically significant. Thus, it appears that even among durable goods producers, increasing imports would, in the absence of unions, have exerted downward pressure on wages. Such pressure, however, was offset by the tendency of unions to resist wage cutting in the face of declining demand. This tendency appears to explain import competition's weak impact on wages in industries producing durable goods. For nondurable goods, by contrast, the interaction term was not statistically significant and its inclusion added nothing to the explanatory power of the equation. In these industries, union resistance to downward pressure on wages from import competition has been less evident.

Conclusions

There appears to be a statistically significant and grow-

ing inverse relationship between import penetration and earnings, both across industries at a point in time and within industries over time. The effect of imports on aggregate manufacturing wages, however, appears to be small. The doubling in the overall import penetration ratio between 1975 and 1985 reduced average hourly earnings in manufacturing by only about ½ percent to 1 percent.

The effect of imports on wages differs sharply by industry. In the durable goods sector, which tends to be high-wage, capital-intensive, and heavily unionized, wage losses in industries experiencing high import growth were no greater than in other industries. This finding suggests that on the whole unions in these industries resisted wage reductions. Still, employment losses suffered by these generally high-wage industries appear to have put downward pressure on overall average manufacturing earnings. In the nondurable goods sector, low-wage, labor-intensive industries that experienced increased import penetration saw severe wage losses.

Nonetheless, the bulk of the decline in real wages since the early 1970s should be attributed to factors other than increased imports. Real wages declined even in industries that did not experience significant increases in imports. Most notably, from the mid-1970s to the mid-1980s, wage growth was depressed by slow productivity growth, declining unionization rates, the upward trend in unemployment, and stagnant exports, while energy shocks boosted prices.

Finally, the adverse effects of import penetration must be balanced against benefits to the overall economy from international trade. Increased competition from imports contributed to the reduction of costs to consumers. The increase in the overall import penetration ratio generally occurred in the context of expanding international trade, with export ratios resuming their rise in the late 1980s. And although the issue is not discussed in detail in this study, results presented here suggest that increased exports may be associated with higher wages.

Data Appendix

Much of the analysis in this article is based on the National Bureau of Economic Research (NBER) Trade, Immigration, and Labor Markets Data Files, which provide information on 428 manufacturing industries by four-digit Standard Industrial Classification code. This information includes wages and employment (both for production workers and for all workers), industry trade flows, unionization rates, and value added per worker. The data set covers 1958 through 1986, although import and export data are only available through 1985 and unionization data through 1984. Because of questions concerning the reliability of four-digit classifications, the data have been aggregated to the three-digit level. This step yields 143 observations for each year, two of which (SIC 214, tobacco stemming and redrying; SIC 347, metal coatings and engravings) lack information on imports or exports and are not used further. The data set does not include information on the individual characteristics of workers.

Hourly earnings are calculated by dividing the total annual payroll for production workers by total hours, then deflating to 1982-84 dollars using the consumer price index. Both the payroll and hours variables in the NBER data set are based on the Annual Survey of Manufacturers. Hourly compensation is estimated by multiplying

hourly earnings by the ratio of total compensation to total wages as reported in the National Income and Product Accounts. Because the figures in the National Income and Product Accounts are only reported at the two-digit level, with the exception of the motor vehicle industry (SIC 371), it is assumed that the ratio of compensation to wages is constant across three-digit industries within any two-digit classification.

Import and export data for 1972-85 come from the Bureau of Labor Statistics trade monitoring system. For 1958-71 the NBER obtained raw data from the Census Bureau publication "US Commodity Exports and Imports as Related to Output," then adjusted the data using the Bureau of Labor Statistics method for import and export classification. The import penetration ratio is defined as imports divided by the sum of imports plus output. Output refers to the value of industry shipments, in millions of dollars, as reported in the Annual Survey of Manufacturers. The export ratio is defined as the ratio of exports to output. The unionization rate is for production workers and is based on observations from the May Current Population Survey in 1974, 1980, and 1984, with linear interpolation to obtain estimates for other years. Productivity is defined as value added per production worker hour, with value added taken from the Annual Survey of Manufacturers.

The Shifting Composition of U.S. Manufactured Goods Trade

by Susan Hickok

Finished goods are claiming an increasing share of U.S. imports while their share of U.S. exports has remained virtually unchanged in recent years. An examination of these divergent developments in the role of finished goods in U.S. trade suggests that U.S. comparative advantage may be moving away from finished goods and toward industrial supplies. This shift is somewhat disturbing since demand for finished goods appears to be growing rapidly while the outlook for industrial supplies is less dynamic. A declining U.S. comparative advantage in the finished goods sector is also of concern because a strong competitive position in this sector is a sign of an economy's technological sophistication and, to some extent, its market power in the world economy.

This article examines a number of factors that might explain the recent trends in U.S. trade composition. It finds that weak U.S. investment, as measured against the investment performance of U.S. trade partners, has lowered the relative supply of capital to U.S. industry, eroding the traditionally strong competitive position of the United States in the production of finished goods. To a lesser degree, wage restraint in the U.S. steel industry and U.S. steel import restrictions have encouraged shifts in the composition of U.S. trade more favorable to the U.S. industrial supplies sector than to the U.S. finished goods sector. Finally, demand developments have also supported a slightly greater rise in finished goods as a share of U.S. imports than as a share of U.S. exports. But because the differential impact of demand developments on the import and export sides has been small, these developments have contributed only modestly to the divergence in U.S. import and

export composition trends.

The first section of this study details the trends in U.S. import and export composition during the 1980s. In the second section, the various potential determinants of changes in U.S. import and export composition are introduced and analyzed. The concluding sections discuss the implications of the analysis for the future course of the U.S. trade balance and U.S. competitiveness over time.

The changing composition of U.S. trade

Developments in the composition of U.S. manufactured goods trade during the last decade are fairly straightforward.¹ On the import side, U.S. purchases of both foreign finished goods and foreign industrial supplies have risen sharply, but purchases of foreign finished goods have risen much faster. In consequence, finished goods increased from slightly more than 66 percent to slightly more than 77 percent as a share of total U.S. manufactured goods imports between 1978 and 1989 (Chart 1).² The counterpart to this rise was an 11 percentage point fall in the import share of industrial supplies. These changes in import shares are traceable mainly to developments in the machinery and metals

¹Manufactured goods are defined as Standard Industrial Trade Classification (SITC) categories 5 through 8, with industrial supplies making up categories 5 (chemicals) and 6 (leather, rubber, cork, wood, paper, textiles, and minerals) and finished goods categories 7 (machinery and transport equipment) and 8 (furniture, clothing, footwear, instruments, and other manufactured goods). This definition excludes processed food and fuels.

²Because unusual silver bullion sales raised the share of industrial supplies in U.S. exports in 1979 and 1980, 1978 is used as the base year in this study.

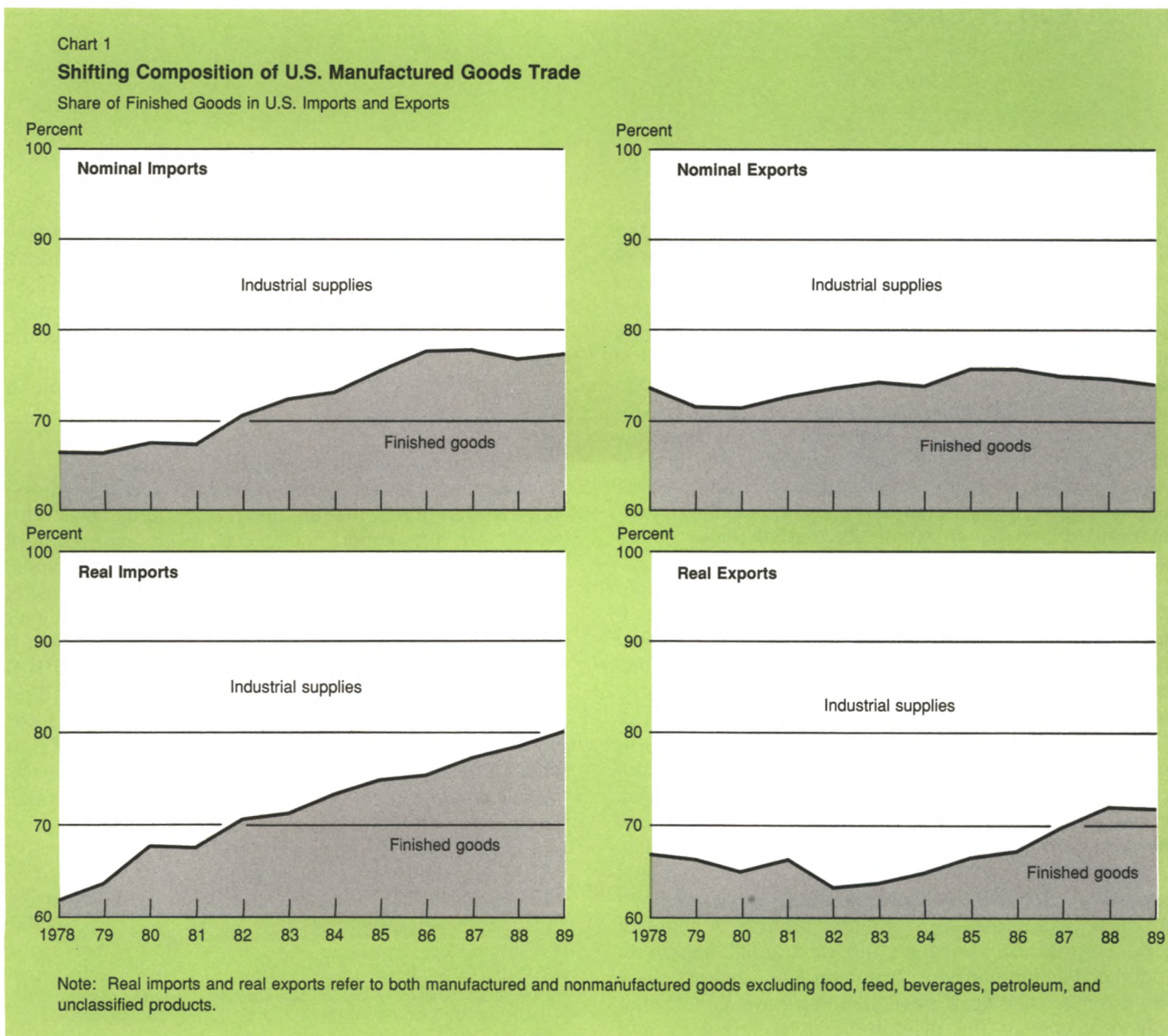
industries.³ Machinery accounted for almost all of the gain in finished goods' import share; primary and fabricated metals suffered most of the share loss for industrial supplies (Table 1).

While the composition of U.S. imports has been shifting, the composition of U.S. exports has remained stable. Finished goods were about 74 percent of total U.S.

manufactured goods exports in both 1978 and 1989. Furthermore, little composition change has been observable within either the finished goods or industrial supplies export category. In particular, the machinery and metals industries have shown only minor share movements.

The distinct difference in import and export composition trends appears to have been even slightly larger in real terms than in nominal terms. Although it is true that finished goods rose as a share of both real imports and real exports between 1978 and 1989, the rise in share was about 13 percentage points greater on the import

³Automotive products fell somewhat as a share of both U.S. imports and U.S. exports between 1978 and 1989 because of relatively slow growth in shipments by U.S. automobile companies across the U.S.-Canadian border. U.S. automobile plants operate on both sides of the border under a free trade arrangement.



side.⁴ This finding suggests that the difference in the evolution of U.S. import and U.S. export composition has resulted from factors affecting real trade flows rather than just relative trade prices.

The tendency for finished goods to represent a rising share of U.S. imports while remaining static as a share of U.S. exports over the last decade has generally held across geographic areas (Table 2).⁵ For every major trade partner except Germany, finished goods sales to the United States have increased substantially as a share of U.S. manufactured imports. At the same time, for all areas except Germany and the rest of Western Europe, U.S. sales of finished goods have shown no

⁴Trade price indexes are not available for manufactured goods alone. The estimate of real changes in the text is derived by deflating nominal U.S. imports and exports of finished goods plus raw materials excluding petroleum by comparable trade price indexes.

⁵Data here and in the rest of the text are in nominal terms because data in real terms are not available.

Table 1

Subcomponents of U.S. Manufactured Goods Trade Composition

(Percent Share)

	Imports		Exports	
	1978	1989	1978	1989
Finished Goods (SITC 7+8)	66.6	77.3	73.7	74.0
Machinery and transport equipment excluding automotive (SITC 70-77, 79)	25.3	35.9	48.6	50.3
Automotive products (SITC 78)	22.6	20.4	13.7	10.4
Other manufactured goods, primarily consumer goods (SITC 8)	18.7	21.0	11.4	13.3
Industrial supplies (SITC 5+6)	33.4	22.7	26.3	26.0
Metals (SITC 67-69)	15.6	8.3	6.2	5.1
Other industrial supplies (SITC 5+6, excluding 67-69)	17.8	14.4	20.1	20.9

significant increase as a share of U.S. manufactured exports. In fact, Germany stands alone as the only major U.S. trade partner for which finished goods have gained more in U.S. export share than they gained in U.S. import share.

The broad similarity across regions in U.S. import and U.S. export composition trends—that is, the substantial rise in import share for finished goods and the lack of significant change in export share for these same categories of goods—suggests that these trends are more closely tied to developments in the United States than to developments abroad. In other words, their evolution appears to be linked to shifts in the ability of the United States to compete in different industries rather than to shifts in the competitiveness of foreign countries.

To be sure, the U.S. import share of finished goods has leveled off during the last three years. Nevertheless, it remains at the elevated level it reached in 1986, indicating that the 1980s developments marked a durable change in U.S. import composition. Overall, U.S. trade composition changes during the 1978-89 period suggest a significant shift in U.S. comparative advantage from finished goods, notably machinery, toward industrial supplies, especially manufactured metals products. This shift appears fundamental and widespread since it is evident in both nominal and real trade flows and in trade flows with almost every foreign country.

Explaining developments in U.S. trade composition

Four factors are generally identified as affecting the composition of an economy's international trade. They are 1) changes in the composition of domestic and foreign demand, 2) changes in the supply of domestic and foreign production inputs (capital and labor), 3) differences across countries in inter-industry labor and other cost developments not directly related to changes in input supply, and 4) government trade policies restricting the import of certain products. These four factors appear to explain fairly well the evolution of U.S. import and export composition during the 1978-89 period.

The impact of these four factors may be summarized

Table 2

Shift in Composition of U.S. Trade toward Finished Goods by Region: 1978-89

(Percentage Point Increase in Finished Goods as a Share of Total U.S. Manufactured Goods Imports and Exports)

	Latin America	Asian NICS†	Japan	Other Asia	Germany	Other Western Europe	Canada	Rest of World	World
U.S. imports	15	5	12	30	1	9	5	-2	11
U.S. exports	2	-1	1	-5	4	7	1	-9	0

†Hong Kong, Singapore, South Korea, and Taiwan.

briefly. Demand developments in the United States contributed the most to the shift in the composition of U.S. imports toward finished goods. Foreign demand developments also favored a substantial shift in U.S. exports toward finished goods. Finished goods, however, did not gain in U.S. export share, an inconsistency explained by supply factors. Although changes in production inputs tended to *boost* the share of finished goods in U.S. imports, they tended to *reduce* the share of such goods in U.S. exports. In fact, production input developments were probably the single most important factor behind the lack of change in finished goods' share of U.S. exports. They also explain to some extent why finished goods rose more rapidly in U.S. import share than demand developments alone would have suggested. The remaining two factors, changes in production costs and trade restrictions, contributed further to the rise in finished goods import share by cutting imports of industrial supplies. Consequently, they also explain some of the divergence in U.S. import and export developments, although their overall impact was significantly smaller than that of changes in production inputs.

Shifting demand patterns

Changes in the composition of U.S. and foreign demand are an obvious factor affecting the composition of U.S. trade. As economies grow, demand for finished goods generally rises faster than demand for industrial supplies.⁶ Unfortunately, because data are not available on the composition of world demand, it is impossible to calibrate directly the extent to which this expected shift occurred worldwide during the 1978-89 period. Nevertheless, since the comparative advantage positions of individual countries do not affect the composition of world exports in aggregate, the shift in the composition of world exports may be taken as a proxy for the shift in the composition of world output and world aggregate demand.⁷ Between the years 1979 and 1987 (the ear-

liest and latest years, respectively, for which data is available on a consistent basis), world exports of finished goods grew 96 percent while world exports of industrial supplies rose only 55 percent. Given initial share levels in 1978, this difference in growth translates into a 5 percentage point rise in finished goods (from 63 percent to 68 percent) and a concomitant 5 percentage point decline in industrial supplies as shares of world manufactured goods exports over the course of this period.

On the U.S. side, shifts in the composition of U.S. demand mirrored shifts in the composition of world demand. U.S. demand for finished goods grew about 40 percentage points faster than U.S. demand for industrial supplies, a difference roughly equivalent to that between these same components in world demand. The difference in U.S. demand growth rates translates into a 7 percentage point rise (from 56 percent to 63 percent) in finished goods and a 7 percentage point fall in industrial supplies as shares of total U.S. manufactured goods purchases.

The roughly similar world and U.S. demand developments could be expected to result in commensurate shifts of about 5 percentage points and 7 percentage points in favor of finished goods in the composition of U.S. exports and imports, respectively.⁸ On the import side, U.S. demand shifts would thus appear to explain in aggregate somewhat more than half of the 11 percentage point increase in finished goods as a share of total U.S. manufactured goods imports. On the export side, in contrast, foreign demand shifts raise the question why there was no rise in the share of finished goods.

Changes in input supply

Changes in supply factors help explain this puzzle. They also offer some understanding of why the composition of U.S. imports shifted more toward finished goods than did the composition of total U.S. demand. The most obvious change in supply factors has been the much stronger growth in capital investment abroad than in the United States over the last two decades. Stronger foreign investment resulted in a significantly faster rise in the average foreign capital/labor ratio than in the U.S. capital/labor ratio during this period.

Capital investment and capital/labor ratio develop-

⁶Technically, U.S. demand developments should be excluded from world demand developments to calculate the impact of foreign demand shifts on U.S. exports. Moreover, U.S. and world demand shifts should be weighted by the initial U.S. import and export compositions to assess the impact of the shifts on U.S. trade. If these two corrections were made and the results extrapolated to 1989, the results would still suggest that demand developments alone boosted finished goods roughly 5 percentage points as a share of U.S. exports and 7 percentage points as a share of U.S. imports.

⁶If industrial supplies consisted solely of intermediate products used in the production of finished goods, the only reasons for an observable difference between the growth in demand for industrial supplies and the growth in demand for finished goods would be that a country's degree of vertical integration in manufacturing changed or that intermediate products accounted for a declining share of the total value of finished goods. But in the product classification used here, "industrial supplies" includes pharmaceuticals, construction materials, paper products, fertilizers, floor coverings, glassware, metal containers, and other products that are not direct inputs into finished manufactured goods production.

⁷Differences in transport costs across products and similar factors could cause differences between world trade composition and world demand composition. However, these differences are unlikely to have caused the *change* in world trade composition to differ significantly from the *change* in world demand composition, the focus of the analysis above, during the 1978-89 period.

ments are particularly relevant to the change in share of industrial supplies and finished goods in U.S. trade since finished goods generally require a higher level of capital input per employee for their production than do industrial supplies. Unfortunately, reliable capital/labor ratio estimates are not available internationally for different industries within the manufacturing sector to illustrate this point.⁹ However, input/output measures showing the contributions of capital goods and value added (a measure of labor input) to production may be used to judge the amount of capital per employee in each industry. Based on the U.S. input/output table for 1983, a middle year in the period under consideration, the ratio of capital input to value added for the industrial supplies category was 0.07, or only about half of the 0.16 ratio for the finished goods category (Table 3).¹⁰

⁹U.S. capital stock data are available by industry. However, these data are distorted because they include some factories that are no longer in operation. Industries such as steel that have many closed factories included in their capital stock have unrealistically high capital/labor ratios since no labor is employed in these factories. Using input/output flow measures as a substitute for capital/labor stock measures does implicitly assume that the average life of capital is the same across all industries.

¹⁰These ratios reflect the composition of U.S. industrial supplies and finished goods output. They give relatively low weight to the consumer goods sector of finished goods production compared with the weight consumer goods would receive in a global input/output table. Consumer goods generally have a lower capital/labor ratio than other finished goods. Relying on a U.S. input/output table rather than a (nonexistent) global input/output table does not seriously affect the analysis because U.S. trade in the most labor-intensive consumer goods category, apparel, is conducted under the Multi-Fiber Arrangement. The impact of the Multi-Fiber Arrangement on U.S. trade composition is discussed later in the

Table 3

Capital/Labor Ratios by Industry

Industrial supplies	0.07
Metals	0.10
Finished goods†	0.16
Machinery and transport equipment (excluding automotive)	0.17
Automotive products	0.21
Other manufactured goods (primarily consumer goods)	0.09

Source: Annual input/output accounts of the U.S. economy, 1983, *Survey of Current Business*, Bureau of Economic Analysis, February 1989.

Notes: Capital goods input is measured as the sum of lines 43 to 63 in the input/output table, excluding line 53 (electronic components and accessories). Line 12 (repair and maintenance construction) is also included as a capital input.

†This ratio excludes capital goods that are inputs in their own industry's output.

During the 1977-87 period,¹¹ the U.S. investment performance was weak relative to that of the rest of the world. The net manufacturing sector capital/labor ratios of the major foreign industrialized countries grew on average about 1½ times as fast as the U.S. capital/labor ratio during these years (Table 4). Germany was the only major foreign industrialized country whose ratio grew more slowly than the U.S. ratio. Although available data do not permit easy comparisons of the U.S. ratio with the manufacturing sector capital/labor ratios of developing countries, rough estimates based on economy-wide investment flows and population growth suggest that here, too, the U.S. ratio generally grew more slowly than it did abroad. In fact, the average developing country ratio appears to have risen almost 1¾ times as much as the U.S. ratio. All told, with an adjustment for the rise in the developing country capital/labor ratio in manufacturing that would be consistent with economy-wide investment and population changes, the trade-weighted average foreign capital/labor ratio in manufacturing for both industrial and developing countries is likely to have risen about 40 percent since 1977, or about 1⅓ times faster than the 25 percent rise in the U.S. ratio.

How important has this difference in foreign and U.S. capital/labor ratio growth been to the composition of U.S. trade? The existence of a link between the relative size of capital/labor ratios and trade composition is a basic tenet of international trade theory. Unfortunately, however, there is no satisfactory means to gauge accurately the quantitative impact of a change in relative capital/labor ratios on the composition of trade flows.

One tool from the discipline of international economics that could provide some quantitative insight into this problem is the Rybczynski theorem.¹² The Rybczynski theorem links output growth rates across product sectors in a given country with the growth rates for that country's capital and labor supplies. However, the Rybczynski theorem relies on some very strong underlying assumptions—namely, that prices remain constant and that resources are fully employed—to establish its link. Consequently, estimated effects based on this theorem

Footnote 10 continued

text. Excluding clothing from the capital/labor ratio shown for other manufactured goods on Table 3 would raise this ratio to 0.12.

¹¹These calculations are for 1977-87 rather than 1978-89 to allow some time for investment to be put in place and for labor adjustment to occur before the effect on trade composition is measured. Using the other time frames shown on Table 5 does not significantly change the results.

¹²T.M. Rybczynski first laid out his findings in "Factor Endowment and Relative Commodity Prices," *Economica*, vol. 22, no. 84 (November 1955), pp. 336-41.

are at best illustrative of what changing relative capital/labor ratios might mean for U.S. trade composition.

A rough application of the Rybczynski theorem suggests that the 15 percentage point faster growth in foreign capital/labor ratios relative to growth in the U.S. capital/labor ratio could have led to growth in the ratio of foreign finished goods output to foreign industrial supplies output that would have been about 15 percentage points faster than growth in the ratio of U.S. finished goods output to U.S. industrial supplies output, if all other factors remained unchanged.¹³ This relative change in output ratios may be traced through to the changes it implies for the growth rates of U.S. finished goods imports and U.S. finished goods exports and,

¹³A detailed discussion of the Rybczynski theorem and the calculations presented above is not provided in this article because of the tenuous nature of the results. However, such a discussion is available in Susan Hickok, "Factors behind the Shifting Composition of U.S. Manufactured Goods Trade," Federal Reserve Bank of New York Research Paper no. 9036, December 1990. The research paper presents estimates based on the Rybczynski theorem that suggest that stronger foreign investment relative to U.S. investment has led to an increase of 2 percentage points to 4 percentage points in finished goods as a share of U.S. imports and a decrease of 2 percentage points to 4 percentage points in their share of U.S. exports. These estimates are judged to be fairly plausible, particularly because they are robust to moderate changes in the strict assumptions underlying the Rybczynski theorem.

subsequently, for changes in finished goods as a share of total U.S. manufactured imports and exports. The end result of these calculations would indicate that the more rapid growth observed in foreign capital/labor ratios compared with the U.S. ratio might have *raised* the share of finished goods in U.S. imports by roughly 3 percentage points. In contrast, the more rapid growth in foreign capital/labor ratios might have *lowered* the share of finished goods in U.S. exports by roughly 3 percentage points. Combining these figures suggests that roughly 6 percentage points of the 11 percentage point difference between the evolution of U.S. import composition and U.S. export composition—that is, the 11 percentage point gain in finished goods as a share of U.S. imports compared with the absence of any gain in finished goods as a share of U.S. exports—might be due to much stronger capital stock growth abroad relative to the United States.

Given the problems associated with use of the Rybczynski theorem, however, it is useful to examine other evidence suggesting that changes in relative capital/labor ratios played a significant role in shaping the divergent trends in U.S. import and U.S. export composition. This evidence comes from a comparison of capital/labor ratio developments and trade composition

Table 4

Relative Growth in Capital/Labor Ratios by Region

(Cumulative Percent Growth; Ratio to U.S. Growth in Parentheses)

	Manufacturing Capital/Labor Ratios for Industrial Economies						
	United States	Canada	Japan	Germany	France	United Kingdom	Foreign Trade-Weighted Average
1977-87	25	32	53	18	41	43	37 (1.48)
1975-85	21	37	45	19	39	43	37 (1.76)
1970-80	32	28	86	34	45	39	46 (1.44)
	Economy-wide Capital/Labor Ratios for Developing Economies					Foreign Trade-Weighted Average	
	United States	Asian NICs†	Other Asia	Latin America			
1977-87	151	400	250	152		259 (1.72)	
1975-85	163	400	336	222		355 (2.18)	
1970-80	153	815	302	296		469 (3.07)	

Sources: Organization for Economic Cooperation and Development, "Flows and Stocks of Fixed Capital, 1962-87," 1989; International Monetary Fund, *International Financial Statistics*, various issues.

Notes: Industrial country data are calculated from OECD estimates of real net capital stocks in manufacturing and the countries' own reported manufacturing employment levels. Developing country data and the comparable U.S. series are based on the assumption that capital has a ten-year life span. Capital growth is calculated as the sum of nominal gross fixed capital formation economy-wide for the period shown, divided by the sum of nominal gross fixed capital formation for the preceding ten-year period. The growth in each economy's population over the period shown is then subtracted from this estimated growth in the nominal economy-wide capital stock.

† Hong Kong, Singapore, South Korea, and Taiwan.

shifts on both a region-by-region basis and a product subcategory-by-subcategory basis within the finished goods and industrial supplies categories. If weak U.S. investment relative to that abroad was a substantial factor in the composition changes in U.S. trade over the last decade, regions with faster growing capital/labor ratios would be expected to have experienced larger gains in finished goods as a share of their sales to the United States than regions with slower growing capital/labor ratios during this period. Similarly, if the issue is investigated at a more disaggregated product level, the goods requiring a larger capital/labor ratio for their production would be expected to have gained more in U.S. import share since 1978 than the goods requiring a lower ratio.

If allowance is made for some outside factors, both of these expectations are, in fact, borne out. More specifically, if one allows for the impact of a sharp fall in U.S. nonferrous metals demand on the composition of U.S. imports from the Latin American and other Asian regions and for the impact of clothing import restrictions on U.S. imports from the Asian newly industrialized countries (NICs), the regions with the strongest investment performances did show the largest gains in finished goods as a share of their exports to the United States. Furthermore, if one allows for the impact of the special U.S.-Canadian automobile free trade zone on automobile trade and the impact of clothing import restrictions on consumer goods trade, composition changes within the finished goods and industrial supplies categories indicate a strong correlation between a product's capital-intensity and that product's gain in U.S. import share.¹⁴

There is, consequently, fairly clear evidence that the relatively weak U.S. investment performance of the 1970s and 1980s contributed to the diverse evolution of U.S. import and U.S. export composition since 1978. Although a reliable quantitative estimate is not available, both theory and observation suggest that the impact was probably substantial. In particular, region-by-region and product subcategory-by-subcategory matches between U.S. trade composition shifts and capital/labor ratio factors strongly suggest that relative capital/labor ratio developments explain, to a substantial degree, why finished goods claimed an increasing share of U.S. imports while stagnating as a share of exports.

Other supply developments

A third factor affecting the composition of trade consists of those developments in the cost of production inputs across industries that are not directly related to changes

in input supply. No available data suggest that the pattern of relative capital costs across U.S. industries has evolved substantially differently from the pattern of relative capital costs across foreign industries over the last decade.¹⁵ However, data suggest such a distinction on the labor cost side. This distinction is the product of the restructuring in the U.S. metals industry or, more specifically, a reduction in the wage premium earned by employees of U.S. steel firms resulting from the industry's financial problems in the last decade.¹⁶

Analysts have estimated that workers in the heavily unionized U.S. steel industry earned a substantial wage premium, on the order of 40 percent, in the 1970s.¹⁷ This premium was measured by comparing the ratio of U.S. steel wages to average U.S. manufacturing wages with the ratio of foreign steel wages to average foreign manufacturing wages. Although premium estimates are not available for the 1980s, a cross-country comparison of wage developments in the primary metals industry with wage developments in manufacturing in general suggests that the U.S. steel wage premium fell significantly during the 1979-89 period (Table 5). Neverthe-

¹⁵The impact of U.S. and foreign subsidies and industrial targeting is judged to be insignificant in Hickok, "Factors."

¹⁶A wage premium is generally associated with the U.S. automobile industry as well as the U.S. steel industry. However, U.S. automobile wages grew in line with average U.S. manufacturing wages between 1978 and 1989, suggesting that automobile wage developments had no significant independent effect on the evolution of U.S. trade composition.

¹⁷See Robert W. Crandall, *The U.S. Steel Industry in Recurrent Crisis* (Washington, D.C.: Brookings Institution, 1981); and the General Accounting Office, *Report to the Congress, New Strategy Required for Aiding the Distressed Steel Industry*, Washington, D.C., January 8, 1981.

Table 5

Primary Metals Compensation as a Percentage of Average Manufacturing Compensation

	1979	1988	Change from 1979 to 1988
United States	143	135	-8
Foreign average†	123	125	+2
Canada	128	134	+6
Japan	145	147	+2
France	116	119	+3
Germany	111	110	-1
Italy	116	122	+6
United Kingdom	119	117	-2

Source: Unpublished data provided by the U.S. Bureau of Labor Statistics.

† Simple average of foreign countries listed.

¹⁴A detailed discussion of the regional and product subcategory comparisons is provided in Hickok, "Factors."

less, the U.S. steel wage premium appears to have remained positive in 1989. Consequently, its fall would not in itself have caused labor to shift away from the metals sector, and any impact on the composition of U.S. trade would depend on the extent to which the reduction was passed on to U.S. steel prices.

It is convenient to analyze the effect on trade composition of the reduction in the U.S. steel wage premium by examining trade price movements. Once these movements are clearly identified, trade elasticities may be used to judge the impact on import and export composition. Although data on U.S. steel import and export prices do not go back to 1978, data on U.S. import and export prices for industrial supplies as a group are available for the entire 1978-89 period. Developments in the price indexes for industrial supplies may be traced fairly directly to developments in their steel price components.

U.S. export prices for all industrial supplies declined about 6 percent relative to U.S. import prices for all industrial supplies during the 1978-89 period (Chart 2). For finished goods products, in contrast, U.S. export prices on average rose relative to U.S. import prices over these years. The decline in the U.S. export price/import price ratio for industrial supplies of over 6 percent from the level it would have reached had it tracked the rising U.S. export price/import price ratio for finished goods matches fairly closely the difference in U.S. wage developments in these two sectors relative to wage developments abroad. Available data suggest that foreign wages in the finished goods sector in general (computed as the simple average of wage developments for eight major U.S. trade partners) rose about 40 percent relative to U.S. wages over the last decade (Table 6). Foreign wages in the industrial supplies sector, however, rose almost 50 percent relative to U.S. wages. The more rapid foreign wage increase in the industrial supplies sector was due entirely to an even sharper rise in foreign metals wages relative to U.S. metals wages. Foreign wages in other industrial supplies industries rose at just about the same rate relative to U.S. wages as did foreign wages in the finished goods sector. Taken together, these developments suggest that the fall in the U.S. steel wage premium was probably the ultimate source of the 6 percent decline in U.S. export prices for industrial supplies relative to U.S. import prices for industrial supplies during the 1978-89 period, a period when U.S. export prices were rising relative to U.S. import prices for most other products.

How have these wage and price developments affected the composition of U.S. trade? On the U.S. import side, the declining price of competing U.S. products has reduced the U.S. demand for industrial supplies purchases from abroad. A rough quantitative

estimate of this reduction may be made by assuming a price elasticity of demand for imports of -1 .¹⁸ This elasticity would imply that the declining relative price of competing U.S. industrial supplies cut the growth in demand for industrial supplies imports by over 6 percentage points from what it would have been if the prices of U.S. industrial supplies had risen at the same rate as the prices of U.S. finished goods. Given the initial share of industrial supplies in total U.S. manufactured goods imports, a cut in demand of slightly more than 6 percent would account for a fall of approximately 2 percentage points in the industrial supplies import share by the end of the 1978-89 period.

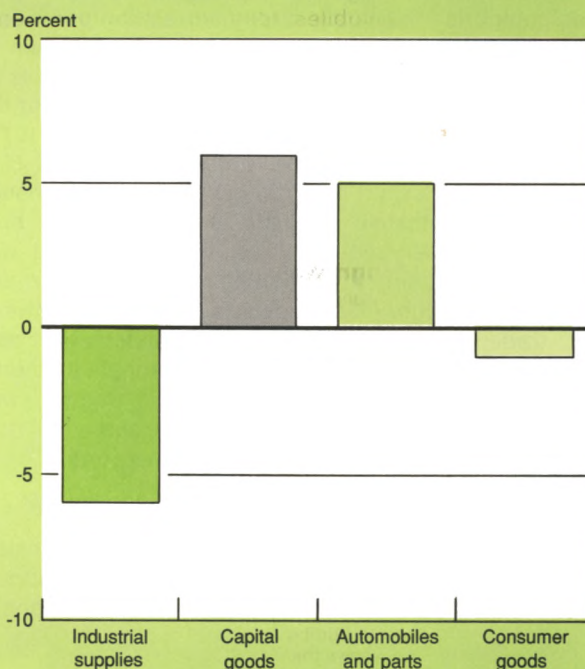
On the U.S. export side, the relative fall in U.S. industrial supplies price would increase the volume growth but reduce the price per unit of industrial supplies exports from what it otherwise would have been. If

¹⁸Estimates are not available for the individual price elasticities of demand for U.S. imports and exports of industrial supplies or finished goods. Overall U.S. trade price elasticity estimates are generally on the order of -1 . The assumption of any price elasticity from a reasonable range centered around -1 would result in a trade composition impact not significantly different from that derived above.

Chart 2

Change in U.S. Export Prices as a Percentage of U.S. Import Prices

Difference between 1978 and 1989



a price elasticity of -1 is assumed, the volume and price effects would cancel each other out, suggesting that the relative fall in U.S. industrial supplies export price did not have a significant impact on the composition of U.S. manufactured goods exports measured in nominal terms. That the fall in the U.S. steel wage premium differs in its impact on nominal and real exports is consistent with the observation that the difference in the evolution of U.S. import and export composition was greater in real than in nominal terms.

Overall, the fall in the U.S. steel wage premium appears to have had a measurable impact on the composition of U.S. imports over the 1978-89 period, reducing the share held by industrial supplies by about 2 percentage points. However, with no measurable impact on nominal export composition, this 2 percentage point import change alone explains only a small part of the divergence over the last decade in U.S. import and U.S. export composition trends.

Trade restrictions

U.S. and foreign trade restrictions are another factor likely to affect the composition of U.S. manufactured goods imports and exports. The most important U.S. trade restrictions in this regard are the voluntary export restraints on Japanese automobile shipments, the Multi-Fiber Arrangement restricting clothing imports, and the voluntary export restraints on foreign steel shipments to the United States. On the U.S. export side, important foreign trade restrictions have been placed on U.S. automobiles, telecommunications equipment, and wood products (particularly plywood).

The U.S. import restrictions have had surprisingly little measurable impact on U.S. import composition

over the 1978-89 period. Restrictions on Japanese automobile shipments to the United States were, in fact, not binding during the April 1989-March 1990 automobile agreement year (although this may to some extent be due to the transplantation of Japanese automobile production to the United States, itself in part a reaction to U.S. import restrictions). Moreover, the fact that Japanese automobile sales to the United States grew significantly faster than overall Japanese manufactured goods sales between 1978 and 1989 suggests that U.S. import restrictions probably did not substantially depress automobiles as a share of total Japanese sales. The rise in price and the quality upgrading of the automobile models that Japan did send to the United States in response to the restrictions may explain the strong nominal performance of Japanese automobile export sales.¹⁹

U.S. clothing restraints also do not appear to have led to a significant fall in the share of clothing in total U.S. manufactured goods import purchases between 1978 and 1989.²⁰ Clothing imports doubled (rising from 7 percent to 14 percent) as a share of U.S. clothing

¹⁹Fred Mannering and Clifford Winston estimate that for these reasons restrictions actually raised the nominal value of Japanese automobile shipments to the United States in 1984 by \$3 billion ("Economic Effects of Voluntary Export Restrictions," in Clifford Winston et al., *Blind Intersection? Policy and the Automobile Industry* [Washington, D.C.: Brookings Institution, 1987]).

²⁰Within the context of the Multi-Fiber Arrangement, the United States has negotiated agreements with the major world clothing producers limiting the growth rate of clothing imports into the United States. U.S. clothing restrictions have varied across trade partners, causing composition shifts in individual regions' trade flows. In particular, restrictions cut clothing sales from the Asian NICs, while the "other Asia" region benefited from the restricted NIC sales by sharply increasing its own clothing shipments to the United States.

Table 6

Change in Foreign Wage Rates Relative to U.S. Wage Rates: 1978-88

(Cumulative Percent Change)

	Western Europe	Canada	Japan	Asian NICs	Average
Finished goods	22	8	40	90	40
Capital equipment	23	6	32	109	43
Industrial supplies	27	14	44	115	49
Primary and fabricated metals	33	21	46	125	56

Notes: Figures are derived from unpublished data provided by the U.S. Bureau of Labor Statistics. The finished goods category is a weighted average of nonelectrical machinery, electric and electronic equipment, precision instruments, apparel and other textile products, and automotive products, based on 1978 U.S. import shares as a proxy for the relative size of each industry. Capital equipment includes the finished goods industries except apparel and other textile products and automotive products. The industrial supplies category is a weighted average of primary metals; fabricated metals; stone, clay, and glass products; chemicals and allied products; and paper products. The Western Europe column shows the simple average of changes in France, Germany, Italy, and the United Kingdom. The Asian NICs column shows the simple average of changes in Taiwan and South Korea. The average column at the right shows the simple average for the eight economies considered.

consumption over these years. Consumer goods imports in general also about doubled (rising from 6 percent to 10 percent) as a share of U.S. consumer goods consumption during the 1978-89 period. This similar change in import penetration ratios suggests that clothing import restrictions, although binding in both 1978 and 1989, did not cause a significant change in clothing's import share. In fact, the restrictions may have prevented clothing's import share from falling because they probably kept out a larger share of potential clothing imports in 1978 than in 1989. That is, if there had been no import restrictions, clothing may well have declined in import share over the course of the 1980s as foreign manufacturers moved increasingly toward more capital-intensive production. (Clothing production is one of the least capital-intensive manufacturing sectors.)

The third major U.S. restriction, limits on steel imports, had only a minor impact on U.S. import composition developments. U.S. restrictions on steel imports were not binding on many foreign suppliers in 1989. Only the European countries came within 5 percent of their maximum allowable market share in the United States. It is plausible that European steel sales to the United States would have been higher last year if there were no U.S. steel restraints. U.S. purchases of European steel grew more slowly than U.S. purchases of other European products. If European steel sales to the United States had grown as fast as overall European manufactured goods sales to the United States, industrial supplies as a share of U.S. manufactured goods imports from all sources would have been about 1 percentage point higher than they actually were in 1989.

Foreign restrictions on U.S. manufactured goods exports do not appear to have had any significant impact on the evolution of U.S. export composition. The automobile, telecommunication, and wood product purchases of the economies with significant trade restrictions against U.S. products would have accounted for too small a share of total U.S. manufactured goods exports to have had a measurable impact on U.S. export composition even if those purchases had substantially increased. In fact, major changes in Japanese telecommunications policy and Taiwanese and South Korean automobile policies increased U.S. sales of these products to these economies about eightfold during the 1978-89 period but did not raise the overall share of telecommunications equipment or automotive products in U.S. exports.

Overall, trade restrictions appear to have had a relatively small impact on shifts in the composition of U.S. trade. Only U.S. restrictions on European steel seem to show any significant effect, pushing U.S. imports slightly in the direction of finished goods.

The four factors together

Demand developments appear to have strongly favored a shift in both U.S. manufactured goods import and export flows toward finished goods and away from industrial supplies, although the impact on the import side was slightly greater. The shift in U.S. imports toward finished goods was also supported by a strong foreign investment performance relative to that of the United States. A declining U.S. steel wage premium and U.S. steel import restrictions restrained imports of this important industrial material and indirectly furthered the increase in finished goods import share. On the export side, the strong foreign investment performance appears to have cut significantly into finished goods as a share of U.S. export sales. In fact, since reductions in the U.S. steel wage premium and foreign trade restrictions seem to have had no discernible impact on nominal U.S. manufactured goods export composition, strong foreign investment appears to be the main reason that finished goods gained no share in U.S. manufactured goods exports during the 1978-89 period.²¹

Impact of shifts in trade composition on the U.S. trade outlook

The shifting composition of U.S. manufactured goods imports toward finished products, unaccompanied by a comparable shift in the composition of U.S. manufactured goods exports, is likely to have significant implications for the outlook for the U.S. trade balance. The apparent durability of the import shift, with finished goods imports maintaining over the last three years the sharp gain in share achieved earlier in the 1980s, suggests that U.S. demand for imports may grow at a faster rate in the future. The lack of a shift in U.S. export composition means that there would be no offsetting increase in foreign demand for U.S. exports, assuming other economic factors remain unchanged. This asymmetric situation arises because demand for finished goods generally increases faster than demand for industrial supplies as economies mature. Indeed, world demand for finished goods appears to have grown almost twice as fast as world demand for industrial supplies since 1979.

Put more formally, an economy's income elasticity of demand for imported finished goods is generally greater than its income elasticity of demand for imported indus-

²¹Hickok, "Factors," considers the possible impact on U.S. trade composition of scale economies in certain trade sectors, trade hysteresis resulting from large exchange rate movements in the 1980s, and shifts in U.S. trade flows between different trade partners. Only the last of these three factors appears to have played a role, and that role modest, in shaping the 1978-89 evolution of U.S. trade composition. Of course, shifting trade flows across trade partners could in part be a reaction to the demand, supply, and trade restriction developments discussed in this section.

trial supplies.²² Consequently, the shift in U.S. import composition in favor of finished goods is likely to have raised the aggregate U.S. income elasticity of demand for imports above what it otherwise would have been, leading to higher U.S. import purchases as the U.S. economy grows. With no apparent significant shift in the composition of U.S. exports, sales of U.S. exports would receive no comparable boost in response to economic growth abroad, again assuming other factors remain unchanged.

The increased sensitivity of U.S. import demand to income growth without a corresponding change on the export side implies that, in coming years, overall U.S. economic growth may have to be slower or U.S. prices lower relative to foreign prices than would otherwise be the case in order for the United States to maintain a given trade balance level. Trade adjustment through lower U.S. prices relative to foreign prices is, however, likely to be harder to achieve than in the past because of the change in U.S. import composition over the 1978-89 period. The demand for differentiated finished goods responds to significant nonprice factors and consequently tends to be less sensitive to relative price changes than does the demand for homogeneous industrial supplies. Therefore, the U.S. price elasticity of demand for imports may have decreased as U.S. import composition shifted toward finished goods and away from industrial supplies.

Several other characteristics of international trade suggest that recent U.S. trade composition developments could lead to market dynamics even more unfavorable to the U.S. trade outlook than these elasticity considerations alone suggest. Finished goods are typically differentiated products; brandname recognition and purchaser loyalty are important. For capital goods, moreover, design specification and compatibility with related equipment are also key considerations. For these reasons, foreign exporters who have moved more into finished goods have altered market dynamics in

their favor: they are likely not only to retain their increased market share but also perhaps to make further gains in that share. They have consequently affected the outlook for trade composition as well as the actual trade composition developments of the 1978-89 period.

A more conjectural dynamic impact of the U.S. trade composition shift that has occurred since 1978 is the likely effect it has had on perceptions of the quality of foreign products. As foreign producers, especially those in countries relatively new to the international trade arena, demonstrate that they can produce sophisticated finished goods, they enhance the perceived quality of all their products. An improved foreign quality reputation further increases U.S. demand for imports, particularly in the finished goods category where quality characteristics are important.

Conclusion

Finished goods climbed 11 percentage points as a share of U.S. manufactured goods imports between 1978 and 1989. They showed no increase as a share of U.S. manufactured goods exports during this period. Since finished goods have been growing more rapidly than industrial supplies in both U.S. and world demand, this 11 percentage point difference in U.S. import and U.S. export developments is not an encouraging sign for U.S. competitiveness. Weak U.S. investment relative to investment abroad appears to be the most important factor behind the difference. A reduction in the U.S. steel wage premium, U.S. restrictions on steel imports, and slight differences between foreign demand developments and those in the United States have also contributed, but these three factors together seem to account for at most only half of the 11 percentage point divergence. Changes in relative capital supplies probably account for the other half. In fact, only changes in relative capital supplies appear to explain adequately why the decline in U.S. competitiveness in the finished goods sector has been so widespread across trade partners.

As for developments affecting the future, investment abroad appears to continue to outpace investment in the United States. Western Europe, where investment was less buoyant than that of other regions through the mid 1980s, in particular appears to have increased its investment effort in recent years. Given the dynamics underlying the U.S. trade composition developments of the past decade, unless the pattern of relatively weak U.S. investment is reversed, the United States may well face a more challenging international trade environment in coming years.

²²Income elasticities of demand for imports are not available separately for the finished goods and industrial supplies categories within the manufactured goods sector. However, elasticities have been separately estimated for raw materials and for total manufactured goods. Morris Goldstein and Mohsin S. Khan present estimates of these elasticities drawn from eight different studies in "Income and Price Effects in Foreign Trade," *Handbook of International Economics*, vol. 2, chap. 20 (New York: Elsevier Science Publishers, 1984), p. 1086. The manufactured goods elasticity was higher than the raw materials elasticity in every study. The average of the estimated manufactured goods elasticities was 1.5; the average of the estimated raw materials elasticities, 0.8. It is reasonable to expect that the elasticity for the industrial supplies component of manufactured goods would be similar to the raw materials elasticity while the elasticity for finished goods would be higher than the overall manufactured goods elasticity.

Factors Affecting the Competitiveness of Internationally Active Financial Institutions

by Beverly Hirtle

Large internationally active banks and securities firms have responded to the opportunities and challenges of an increasingly competitive global market environment with a wide range of strategies and approaches. A variety of factors—including the development of global financial markets operating across national boundaries, the increased access of foreign competitors to domestic financial markets, and the expanding availability of traditional banking services from nontraditional sources—have acted to alter the competitive environment in which these financial institutions operate. These developments have both changed the character of markets for existing bank products and services and introduced new markets in which banks and securities firms must compete both domestically and internationally. Consequently, the factors that determine competitive success for large financial institutions now reflect the greater degree of international integration characterizing the various markets for bank products and services.

This article examines the factors that appear to affect the competitive position of large, internationally active banks and securities firms. It synthesizes the results of seven studies of bank product markets and a study assessing the competitive performance of banks and securities firms on the basis of conventional quantitative measures. These eight papers were prepared as one part of a Federal Reserve Bank of New York research project evaluating the international competitive position of U.S. financial institutions.¹

The first half of the article reviews the performance of major financial institutions in the seven separate product markets. Three of these markets—the Eurocredit, swaps, and foreign exchange markets—are essentially international in nature; product attributes and prices differ little across national trading centers. In contrast, the remaining four markets—commercial lending, retail banking, government bonds, and equities—are largely national in character. Analyzing the ability of foreign banks and securities firms to compete successfully in these national markets not only suggests how institutions are able to establish themselves in overseas markets but also provides a measure of the strength of local institutions' domestic franchise.

The review of the seven product markets offers a fairly comprehensive picture of the competitive strengths of banks and securities firms along national and institutional lines. While this approach provides insights about those banks and securities firms that tend to be successful competitors in particular markets, it does not establish a sense of the overall competitive position of institutions across all of their market activities. To meet this last objective, the article evaluates the performance of fifty-one large, internationally active financial institutions by measuring the institutions' return on equity and assets, capitalization, and asset size from the mid-to-late 1980s. This more quantitative approach sheds light on the competitiveness of banks and securities firms as integrated institutions. In addition, it highlights the strengths and weaknesses of the conventional measures of performance on which it relies.

The final section of the article draws on this examina-

¹The papers are available in Federal Reserve Bank of New York, *International Competitiveness of U.S. Financial Firms: Products, Markets and Conventional Performance Measures*, May 1991. They are cited individually in the footnotes that follow.

tion of consolidated competitive performance as well as the review of the seven product markets to identify the characteristics that appear to be associated with competitive success for banks and securities firms. The major finding of this section is the suggestion that banks and securities firms compete most successfully in international markets by building on traditional domestic market strengths. These traditional strengths include the existence of an established customer base, technical expertise and innovative ability resulting from specialization in particular domestic markets, and familiarity with home-country financial and currency markets. The ability of individual financial institutions to translate these attributes into success in the international arena is in turn affected by several conventional factors: the size of the institution may help to determine whether it can take advantage of economies of scale, particularly in information gathering and processing; capitalization may affect the institutions's credit standing; the cost of capital may influence a bank's ability to offer competitive prices for its products and services; and the existence of links across product markets may allow banks to exploit economies of scope in producing a variety of products and services.

The competitive performance of internationally active banks and securities firms

This section reviews competitive conditions in seven product markets to clarify which financial institutions are successful competitors on an international scale. The review primarily focuses on banks and securities firms grouped by national affiliation, but it also considers the competitive strategies taken by different firms in the various markets. The seven product markets discussed are not an exhaustive list of the activities in which internationally active financial institutions participate; rather, they are meant to provide general insights about the characteristics making for competitive success across various international banking markets. The final part of this section takes a more integrated view of these institutions by reviewing a range of conventional quantitative measures of competitive success.

International product markets

In each of the international product markets—the Eurocredit, swaps, and foreign exchange markets—market activities are highly integrated across national trading centers, resulting in little if any differentiation in product attributes or price along national lines. The national affiliation of financial institutions participating in these markets is thus potentially less important than other firm-specific characteristics. These markets come closest to constituting a “level playing field” for institutions from different countries and, as such, provide a

means of highlighting the factors associated with competitiveness in a truly international setting.

Eurocredit market²

At first glance, the Eurocredit market appears to be a leading example of a truly global financial market. Consisting of the markets for international loans and bonds originated and sold outside of the country of both the borrower and the currency of the issue, the Eurocredit market serves a diverse group of multinational customers conducting transactions in a wide variety of currencies. Borrowers can escape domestic market regulations, restrictions, and taxation; at the same time, international banking competitors can operate on a relatively level playing field. Financial intermediaries are generally free to help any borrower raise capital through bonds or loans denominated in any currency.

Despite the potential for banks and securities firms to participate equally in most sectors of the Eurocredit market, a high degree of segmentation is evident. Different financial institutions specialize in and dominate different sectors of the market, which are often related to their classification (for example, “bank” or “security firm”) and nationality.

Nationality appears to be an especially strong factor in the Eurobond sector of the market. In the nondollar bond sector, the nationality of the lead underwriter tends to be strongly correlated with the nationality of the currency, reflecting the importance of ties to home-country investors in placing nondollar issues. In the dollar-denominated bond sector, however, the nationality of the intermediary and that of the bond issuer are strongly correlated. The greater international acceptance of the dollar and the greater ease in placing dollar-denominated issues mean that borrower rather than investor relations are the key to competitiveness in this sector.

Nationality appears to be less important in the Euroloan sector, as reflected in the weaker association between the home-country of the currency and the nationality of both borrowers and lenders. This weaker correlation suggests that it may be easier for an intermediary to overcome national currency preferences among banks when forming an investor base in the Euroloan market. Nevertheless, existing customer relationships appear to play an important role in bringing new borrowers to the market and winning loan mandates. All these links together suggest that a firm can use the comparative advantage of its domestic customer base to gain market share.

In addition to the specialization in various sectors of

²The material in this section is based on John M. Balder, Jose A. Lopez, and Lawrence M. Sweet, “Competitiveness in the Eurocredit Market.”

the Eurocredit market associated with nationality, there is specialization along institutional lines. Commercial banks dominate the Euroloan market while investment banks and universal banks tend to dominate Eurobonds. This observed segmentation, in spite of the relative freedom of any intermediary to offer any financial service in the Eurocredit market, points to a tendency for firms to rely on their traditional domestic market strengths in the face of intense competition.

This competition has resulted in low profitability. Although little reliable data exist regarding the profitability of a firm's Eurocredit market operations, market withdrawals and reports of losses support the notion of a low-profit market. U.S. securities firms are among the most successful competitors in the Eurobond market, but the market share of U.S. intermediaries has declined since 1983, in part reflecting the decline in issues by U.S. borrowers. An increase in Japanese issues, particularly in the equity-warrant sector, has helped foster a significant increase in the market share of Japanese intermediaries. U.S. and Japanese banks also command the largest market shares in the Euroloan sector.

Swap market³

Like the Eurocredit market, the swap market has a strong international focus. The rapid growth of the market during the 1980s has been driven in large part by the expansion of international financial flows and a more volatile interest rate environment. Interest rate and currency swaps are important financial tools used by firms both to reduce the costs of borrowing in overseas and domestic capital markets and to manage the interest rate and currency risk exposures generated by international economic and financial market activity. As such, swaps are denominated in a wide variety of currencies to meet the financing needs of a diverse, multinational customer base.

Although the customer base and product attributes of the swap market underscore its international character, the segregation among swap dealers along both national and institutional lines is significant. The principal swap-dealing firms are commercial banks and securities firms. Institutional and regulatory structures—particularly in the United States, Japan, and, to a lesser extent, the United Kingdom—have traditionally induced securities firms and commercial banks to focus on businesses that give them natural strengths in different types of swaps. The underwriting activity of securities firms, for instance, tends to generate a natural flow of swaps related to bond market financings. In contrast,

the strength of commercial banks in the area of interest rate risk management tends to give those institutions an advantage in transactions relating to balance sheet management. As a counterpart to specialization along institutional lines, there is also a tendency for swap dealers to specialize in swaps denominated in their home-country currency, particularly in the nondollar sector. These trends together suggest that competitive success in the swap market continues to be influenced by domestic market factors.

Overall, the strongest competitors in the swap market are large global financial institutions, including U.S. money center banks, U.S. diversified securities firms, and European universal banks. Although virtually all major international commercial banks and securities firms participate in the swap market to some degree, the number that are important competitors is limited. Market share data and surveys of market participants suggest that major competitors number no more than twenty-five.

A study of these major competitors suggests that a variety of firm-specific factors influence competitive success in the swap market. For instance, the size and breadth of an institution's financial market activities appear to be important to the efficient management of risks associated with swap market transactions. Swap portfolio size is important, both because it can reduce the costs of managing interest rate and currency risks and because large market share can put firms in a position to gain superior knowledge of market order flow. Similarly, a presence in a variety of related markets gives dealers access to order flow information and lower transaction costs for instruments used in swap portfolio management. Finally, strong credit standing is essential in the swap market because both parties to a swap are exposed to credit risk.

Foreign exchange market⁴

The foreign exchange market is one of the most important international links between national financial markets. Consisting primarily of the buying and selling of demand deposits in different currencies, the foreign exchange market has grown rapidly and changed significantly during the past few decades. The growth in the market has been spurred by economic developments that have led to large trade imbalances among major economies and thus to significant increases in international capital flows. The impact of these economic developments has in turn been reinforced by advances in technology and the liberalization of financial markets,

³The material in this section is based on Robert Aderhold, Ethan Heisler, Ricardo Klainbaum, and Robert Mackintosh, "Competitiveness in the Global Swap Market."

⁴The material in this section is based on Peter S. Holmes, Paul DiLeo, Thaddeus Russell, John R. Dacey, and Kimberly Reynolds, "Competitiveness in the Global Market for Foreign Exchange."

forces that have led to tighter integration of national money and capital markets.

Financial institutions have pursued a variety of strategies in their approach to foreign exchange trading. A number of large dealers, primarily commercial banks, provide a diversified range of foreign exchange services and make markets in many currencies. In contrast, other foreign exchange dealers specialize in transactions involving particular currencies and instruments, offering a more limited range of services. This specialization frequently reflects the institution's overall market strengths, especially the information and experience acquired by participation in both domestic and overseas financial markets. In particular, many dealers are led by their familiarity with both domestic financial markets and the direction of domestic monetary policy to specialize in transactions involving their home-country currency.

Judged by the success of overseas branches and affiliates, U.S. institutions appear to hold a dominant, but perhaps diminishing, position in foreign exchange trading. The trading operations of U.S. multinational banks appear to be among the most profitable relative to other international institutions, both in terms of absolute foreign exchange income and in terms of the share of total operating income derived from foreign exchange activities. U.S. institutions are also rated highly in surveys assessing the global performance of foreign exchange market participants. The overall strong showing of U.S. institutions largely reflects the importance of the dollar as an international reserve currency. Among non-U.S. institutions, Swiss banks are strong performers in terms of the profitability and income derived from their foreign exchange operations, while U.K. institutions are rated highly in foreign exchange market surveys assessing the quality of foreign exchange services.

National product markets

The four national markets for banking products and services—commercial lending, retail banking, government bonds, and equities—are largely independent across national boundaries. Although markets in different countries may offer similar products and services, differences in regulatory structure, financial market sophistication, and traditions governing the relationship between banks and their customers may create significant national differences in the way that the markets function. These national differences can represent a barrier to foreign financial institutions wishing to become successful competitors in overseas financial markets.

The discussion that follows focuses primarily on national markets in the United States, Japan, Germany,

and the United Kingdom, although other national markets are also considered. Markets in these four countries reflect a range of market structures, regulatory environments, and customer affiliations that have resulted in domestic banking franchises of varying strengths. Evaluating the ability of foreign banks and securities firms to compete successfully in these markets thus not only helps identify factors that may enable institutions to establish themselves in overseas markets, but also provides a measure of the strength of local institutions' domestic franchise.

Commercial lending markets⁵

Commercial credit, consisting of credit extended by banks to nonfinancial business customers, has historically been the most important component of lending by commercial banks. Commercial credit is used for a variety of purposes, including the financing of working capital, new plant and equipment, and corporate restructurings such as mergers and acquisitions. In recent years, however, alternative sources of nonbank commercial credit such as public debt and credit extended by nonbank financial institutions have become increasingly important in commercial lending markets, particularly in the United States. The existence of these alternative credit sources has changed the competitive environment of several of the national commercial lending markets.

A number of factors affect the competitive position of banks in the U.S., U.K., German, and Japanese commercial lending markets. For instance, the ability of a bank to sustain competitive advantage in loan pricing is strongly influenced by its cost of capital, which includes the cost of debt and equity and takes into account tax effects. A bank with a lower cost of capital can price more aggressively while still earning an acceptable rate of return on the loans in its portfolio. The credit standing of a bank is also an important factor, largely because it affects the institution's ability to serve as a reliable source of standby liquidity. The ability of a bank to continue to extend credit during tight credit periods appears to figure prominently in firms' choice of lender.

In general, aggressive pricing and strong customer relationships seem to be the leading sources of competitive advantage in commercial lending, but their precise importance appears to vary with the national market. Aggressive pricing strategies have been most influential in the United States, where customers are more price sensitive and relationships between banks and corporations appear to be weaker. Customer relationships seem particularly important in the German and Jap-

⁵The material in this section is based on Jonathan T.B. Howe, George Budzeika, Gina G. Riel, and Paula Worthington, "Competitiveness in Commercial Lending Markets."

anese corporate lending markets, in part because of the traditional links between banking and commerce in these economies.

Foreign banks, particularly Japanese banks, have enjoyed considerable success in penetrating the U.S. commercial lending market. The large volume of trade with the United States and the growing presence of foreign-owned firms have provided ample opportunities and a strong customer base for foreign banks operating in the U.S. commercial lending market. In addition, Japanese banks in particular appear to have broad customer bases that include U.S. as well as foreign-affiliated borrowers. Foreign bank penetration in the U.K. commercial lending market is also fairly extensive. In the United Kingdom, the fairly significant degree of foreign penetration into the broader U.K. economy may partly explain the success of foreign banks.

Foreign banks have experienced much less success in the domestic commercial lending markets of Germany and Japan. In these countries, customer relationships with domestic firms are long-established and reinforced by interlocking directorships and mutual ownership. Furthermore, especially in the Japanese market, the presence of foreign-owned businesses is relatively small, limiting the ability of foreign banks to capitalize on home-country customer ties. In addition, with very few exceptions, foreign banks in both the Japanese and German markets have been unable to establish the branch networks that appear to provide domestic banks with lower cost sources of funding. All of these factors have tended to limit the extent to which foreign banks are able to be successful competitors in the German and Japanese commercial lending markets.

Retail banking markets⁶

Retail banking includes the deposit-taking and lending activities that commercial banks conduct for individuals and small businesses. In the retail banking markets of the United States, Japan, the United Kingdom, and Canada, the intensity of competition has increased during the 1980s, furthered by interest rate deregulation and the increased price sensitivity shown by consumers. Technological advances in data processing and electronic equipment have been associated with a continuing reorganization of the production of banking services. The ability of banks to process and deliver multiple retail services on increasingly larger scales appears to be driving this reorganization.

Despite the increased competition in retail banking markets, domestic banks dominate in each of the four countries because of the advantage that domestic

banks continue to have over foreign banks in providing retail services. For instance, a strong physical presence appears to be important for full-scale deposit-taking activities. Domestic institutions that have already invested in a substantial branch network thus have an advantage; the "bricks and mortar" costs of achieving such a presence present a significant barrier to new banks, including new foreign banks, seeking to enter a local retail market. In addition, in most markets, it appears that national preference continues to matter, with consumers preferring to transact their retail banking business with domestic institutions.

For foreign banks wishing to enter overseas retail banking markets, niche banking has emerged as a leading competitive strategy. As in other national banking markets, niche strategy in retail banking is frequently designed to capitalize on foreign institutions' domestic market strengths. For instance, some foreign banks pursue a "population niche" strategy and choose to meet the retail banking needs of an identified ethnic or regional customer base—most often, customers with ties to their home-country markets. Alternatively, foreign banks may use a "product niche" strategy by opting to specialize in a limited range of products or attempting to use a single product to create name recognition. The "product niche" strategy has been particularly common among U.S. banks, which have attempted to apply technological advances in the production of retail banking services in the U.S. market to overseas retail markets, with some limited success.

While a strong domestic retail franchise is evident in each of these four national markets, the degree to which domestic banks are able to dominate the local retail market may be weakest in the United States. Restrictive interstate banking rules have hindered U.S. banks from building the national, full-service franchises that have served as deterrents to foreign entry in other national markets. A second factor is the diversity and geographic dispersion of the U.S. population. The existence of immigrant populations yields entry opportunities for foreign banks in certain regional markets, particularly on the east and west coasts. Foreign banks, especially from the United Kingdom and Japan, appear to have identified and targeted certain customer bases and products and filled those niches profitably, although their share of the total U.S. retail banking market is fairly limited.

Government bond markets⁷

The government bond markets in the United States, Japan, and Germany are largely dominated by domestic

⁶The material in this section is based on M. Ellen Gaske, Michele S. Godfrey, Edward J. Rooney, Annaliese J. Schneider, and Paula R. Worthington, "Competitiveness in Retail Banking Markets."

⁷The material in this section is based on John J. Ruocco, Maureen LeBlanc, and Patrick Dignan, "Competitiveness in Government Bond Markets."

financial institutions. While the dominance of domestic firms may be somewhat less in the United States than in Germany and Japan, the strong position of domestic institutions in all three markets is in part an outgrowth of historical practices that limited participation in government bond underwriting to a specified group of domestic banks and securities firms. Although foreign firms currently face the same general regulatory requirements as domestic financial institutions, their penetration into most national government bond markets has been limited.

The limited role of foreign banks and securities firms in the U.S., Japanese, and German government bond markets primarily reflects the competitive advantages accruing to large, established domestic institutions. First, there appear to be significant advantages to operating on a large scale in government bond markets, particularly in gathering and processing information. A large customer base helps ensure that the dealer is active and receiving supply, demand, and price information from all sectors of the market, so that the traders and salespeople are both more knowledgeable and more effective. Even in the most liquid government bond markets, this type of information appears to be critical to success. Second, firms participating in a wide range of financial market activities also appear to have a competitive advantage in government bond markets. Information about financial market conditions and interest rate movements derived from transactions in other markets often can be applied to government bond market activities, generating economies of scope in information processing.

In addition to facing these information-related competitive disadvantages, foreign financial institutions must cope with the difficulties arising from their lack of a natural distribution network and local customer base for the securities. Many foreign firms have attempted to overcome this disadvantage by targeting as likely customers affiliates of firms from their home countries.

Foreign institutions also attempt to distribute government bonds to clients located in their home country and to those located in other foreign countries. The ability of foreign firms to market government securities internationally, however, may be constrained by investor reluctance to purchase foreign government securities. In this sense, then, foreign competitors wishing to enter the U.S. government bond market may face less of a competitive disadvantage than foreign competitors in other markets because of the wider acceptance of dollar-denominated securities outside of the United States.

To offset their inherent disadvantage in government securities distribution, foreign institutions often attempt to attract business by offering better services, a wider array of products, or more innovative products than their

domestic counterparts. In some markets, foreign firms may have an advantage in providing innovative products and implementing sophisticated trading strategies originally developed in their home-country government bond markets. The ability of foreign institutions to capitalize on a competitive advantage in these "leading edge" areas, however, is sometimes restrained by the character of the various domestic markets. For example, the absence of a repurchase agreement market or the lack of hedging vehicles and of the ability to sell securities short can hinder the efforts of foreign financial institutions to develop a niche in innovative product offerings.

Equity markets⁹

The national equity markets in the United States, Germany, Japan, and the United Kingdom have distinctive market structures that affect the competitive environment facing both foreign and domestic financial institutions. In the U.S. and U.K. markets, underwriting and brokerage fees are negotiated, leading to stiff competition and a sharp narrowing of intermediary profits in these activities in recent years. In contrast, the Japanese and German equity markets are still characterized by fixed brokerage commissions and strong relationships between customers and individual banks, features that have limited the ability of foreign institutions to gain significant market share.

In each of the four markets, demand for equity services is concentrated among domestic institutional investors, giving large and sophisticated domestic financial institutions a decisive competitive advantage. A study of these firms suggests that large financial institutions may benefit from economies of scale in providing "plain vanilla" equity trading and underwriting. In addition, institutions able to provide a range of sophisticated equity products and services may have an advantage because they can absorb the lack of profitability in "core" underwriting and brokerage areas by engaging in more profitable corollary activities such as derivative products and proprietary trading. As a consequence of these scale and scope economies, a handful of domestic firms dominate trading and underwriting in each of these four markets.

Faced with these circumstances, most foreign institutions attempting to enter local equity markets have pursued one of two alternative strategies, although typically with quite limited success. The first strategy involves establishing market share in a particular population or product niche, most often by trying to build on competitive strengths developed in home-country equity markets. For instance, foreign institutions may cap-

⁹The material in this section is based on Martin Mair, Michael Kaufman, and Steven Saegar, "Competitiveness in Equity Markets."

italize on their existing customer base by specializing in serving investors from their home-country. Alternatively, foreign banks and securities firms may build on technical expertise acquired in domestic markets by providing leading edge products such as derivatives, block and basket trading, trading in overseas markets, mergers and acquisitions, and fund management. For this product niche strategy to succeed, however, foreign entrants must be more expert in these leading edge techniques than domestic institutions, and, in addition, the legal/regulatory environment must permit firms to engage actively in these techniques. Foreign firms making the greatest competitive inroads using this strategy are largely from the United States, with U.K. firms also making a strong showing.

The second strategy used by foreign firms endeavoring to enter a local equity market is to purchase a domestic institution active in that market. This strategy enables foreign firms to buy market share by purchasing existing customer bases and to gain expertise in more sophisticated markets, such as the United States and United Kingdom, where domestic institutions are already using leading edge trading techniques.

Conventional competitive performance measures⁹

This section summarizes the results of a study that uses conventional quantitative performance measures to assess the performance of fifty-one large, internationally active banks and securities firms. The study augments the more descriptive review of the seven product markets by examining the performance of these large financial institutions on a consolidated basis, that is, across all the markets and activities in which they participate. This approach yields insights into the aggregate effects of the competitive strategies pursued by these institutions in individual banking markets.

The study focuses primarily on the performance of seven national groups of institutions across four broad categories: size, profitability, productivity, and capitalization.¹⁰ The study employs return on assets and return on equity as measures of profitability, the levels and growth rates of total assets and revenue as indicators of size, the shareholders' equity and price earnings ratios as measures of capitalization, and the ratio of total revenue to non-interest expense as a gauge of productivity. The data analyzed consist primarily of information from the financial statements of the sample

firms for the 1985-89 period. Table 1 lists the fifty-one firms arranged by country, and Table 2 presents a summary of the findings.

As Table 2 indicates, the Japanese bank group's performance appears formidable across most measures, notably those relating to size, growth, and productivity. The Swiss bank group also appears strong, especially in capitalization and profitability. The German bank group turned in a solid performance in many categories, showing strength in growth and profitability. These measures may actually understate the performance of German and Swiss banks, since unreported earnings and hidden reserves at these institutions tend to conceal additional underlying strength in profitability and capitalization. The U.K. banks also showed strength in a few criteria.

The performance of the sample of U.S. banks as a group was uneven, although a few of these firms showed considerable overall strength. By measures such as the shareholders' equity ratio, the U.S. banks performed relatively well, although their showing was only fair in terms of other criteria, including return on assets and return on equity. Large provisions against LDC loans in 1987 and 1989 weakened the performance of U.S. banks across most measures and help explain their mixed performance during the overall 1985-89 period. Although it must be recognized that losses on LDC loans are in fact real losses, the core profitability of U.S. institutions appears to be stronger than indicated by the published numbers for the period under study.

The sample U.S. securities firms as a group generally did not perform as well as their principal overseas counterparts, the "Big Four" Japanese securities houses. The four Japanese firms grew faster than the U.S. firms and also appeared more profitable and better capitalized, although no clear national pattern emerged with regard to size. Again, however, individual U.S. securities firms turned in results that by certain measures rivaled or surpassed those of the Japanese houses.

While this analysis gives a sense of the performance of internationally active banks and securities firms along national lines, any conclusions about the relative performance of national institutions should be drawn with caution. Differences in national accounting practices and standards limit the accuracy of performance comparisons based on reported data. The problem of cross-national comparability of data may be especially acute for German and Swiss banks, but it affects Japanese financial data also. Accounting conventions in some of these countries may have resulted in an understatement of the actual financial strength of financial institutions over the mid-to-late 1980s.

Even if we assume that the data are comparable,

⁹The material in this section is based on J. Andrew Spindler, Jonathan T.B. Howe, Amil K. Petrin, David F. Dedyo, and Brian J. Brown, "The Performance of Internationally Active Banks and Securities Firms Based on Conventional Measures of Competitiveness."

¹⁰The seven countries are Canada, France, Germany, Japan, Switzerland, the United Kingdom, and the United States.

additional difficulties arise in assessing the implications of the analysis for the overall competitive position of individual firms and national groups. The particular statistics chosen to represent the four aspects of competi-

tive performance—size, profitability, productivity, and capitalization—may not be accurate measures in some important respects. For instance, use of total assets as a measure of size ignores off-balance sheet activities,

Table 1

Banking Organizations and Securities Firms in Sample

Country	Banks	Total Assets Year-End 1989 (In Millions of Dollars)
Canada	1 Royal Bank of Canada	88,446
	2 Canadian Imperial Bank of Commerce	78,398
	3 Bank of Montreal	64,780
	4 Bank of Nova Scotia	62,251
France	1 Banque Nationale de Paris	231,463
	2 Credit Lyonnais	210,727
	3 Société Générale	175,787
	4 Banque Paribas	82,164
	5 Banque Indosuez	55,316
Germany	1 Deutsche Bank	198,254
	2 Dresdner Bank	143,866
	3 Commerzbank	111,277
Japan	1 Dai-ichi Kangyo Bank Ltd.	389,134
	2 Sumitomo Bank Ltd.	370,516
	3 Fuji Bank Ltd.	364,888
	4 Mitsubishi Bank Ltd.	362,256
	5 Sanwa Bank Ltd.	339,490
	6 Industrial Bank of Japan Ltd.	248,730
	7 Bank of Tokyo Ltd.	201,827
	8 Long-Term Credit Bank of Japan Ltd.	175,351
	9 Mitsubishi Trust and Banking Corp.	174,961
	10 Sumitomo Trust and Banking Co. Ltd.	152,330
	11 Mitsui Trust and Banking Co. Ltd.	142,097
Switzerland	1 Union Bank of Switzerland	112,503
	2 Swiss Bank Corp.	104,487
	3 Credit Suisse	75,885
United Kingdom	1 Barclays PLC	204,874
	2 National Westminster Bank PLC	186,529
	3 Midland Bank PLC	100,303
	4 Lloyds Bank PLC	92,378
	5 S.G. Warburg Group PLC	21,640
	6 Kleinwort Benson Group PLC	14,234
United States	1 Citicorp	230,643
	2 Chase Manhattan Corp.	107,369
	3 BankAmerica Corp.	98,764
	4 J.P. Morgan and Co. Inc.	88,964
	5 Security Pacific Corp.	83,943
	6 Chemical Banking Corp.	71,513
	7 Manufacturers Hanover Corp.	60,479
	8 Bankers Trust New York Corp.	55,659
	9 First Chicago Corp.	47,907
	Securities firms	
Japan	1 Daiwa Securities Co., Ltd.	44,924
	2 Nomura Securities Co., Ltd.	38,989
	3 Nikko Securities Co., Ltd.	29,674
	4 Yamaichi Securities Co., Ltd.	29,547
United States	1 Salomon Brothers Inc.	118,250
	2 Merrill Lynch	63,942
	3 Shearson Lehman	63,548
	4 Goldman Sachs and Co.	61,298
	5 Morgan Stanley and Co.	53,276
	6 First Boston Corp.	46,313

Note: Assets of Canadian firms are as of October 31, 1989, and assets of Japanese firms are as of March 31, 1990.

which are an important component of the activities of large financial institutions. More importantly, performance in the four categories selected may not tell the full story about firm-level competitiveness. Factors such as technological sophistication and innovative capacity, potentially critical to a firm's future success, have not been taken into account in this analysis because they generally cannot be quantified using standard measures. Failing to consider such "human capital" elements may understate the competitive standing of some firms, particularly those whose competitive strategies are formed around providing technically sophisticated products and services. In addition, the balance sheet data used in the study are for the most part retrospective. In many cases, the past performance of these institutions may not be a good indicator of future success.

Determinants of competitive success among internationally active banks and securities firms

This section draws on the examination of the consolidated performance of the fifty-one internationally active financial institutions and the review of the seven product markets to identify the characteristics of banks and securities firms that appear to be associated with competitive success. As a point of departure, the experience of U.S. financial institutions over the mid-to-late 1980s will illustrate the ways that success in individual

product markets translates into overall profitability. The factors common to effective competitors in these individual markets can then be identified, providing insight into some of the important qualities that appear to influence competitive success on an international scale.¹¹

The performance of U.S. financial institutions

To some extent, the fairly weak performance of U.S. banks and securities firms as gauged by the conventional quantitative measures conflicts with the impression left by the review of the seven product markets. That review suggested that U.S. banks and securities firms are among the most prominent competitors in international markets such as foreign exchange, Eurocredit, and swaps, and among the most successful entrants in overseas national markets such as government bonds and equities. At first glance, this evidence seems hard to reconcile with the reported performance of U.S. banks and securities firms as aggregate financial institutions.

Closer consideration of the product market review

¹¹Many of these same issues are addressed—with a somewhat different focus—in "International Competitiveness of U.S. Financial Firms: The Dynamics of Change in the Financial Services Industry," a forthcoming Federal Reserve Bank of New York study. This study examines the dynamic forces influencing key sectors and services in financial markets and gives particular attention to economic and technological change.

Table 2

Performance Summary of Sample Banks and Securities Firms by Country Group (1985-89)

Performance Measure	Banks							Securities Firms	
	United States	Canada	France	Germany	Japan	Switzerland	United Kingdom	United States	Japan
Size									
Total assets [†]	1 of top 10	0 of top 10	2 of top 10	0 of top 10	6 of top 10	0 of top 10	1 of top 10	Comparable	
Real asset growth [‡]	2.2 (6)	0.5 (7)	3.1 (4)	5.5 (2)	12.6 (1)	3.1 (5)	3.6 (3)	7.0	37.1
Total revenue [§]	3 of top 10	0 of top 10	2 of top 10	1 of top 10	0 of top 10	0 of top 10	4 of top 10	Comparable	
Real revenue growth [‡]	4.3 (7)	6.1 (2)	4.3 (6)	5.6 (4)	16.0 (1)	4.9 (5)	5.7 (3)	11.7	22.1
Profitability									
Real return on assets [‡]	0.08 (7)	0.17 (6)	0.21 (4)	0.24 (3)	0.27 (2)	0.32 (1)	0.20 (5)	0.33	1.83
Real return on equity [‡]	1.6 (7)	3.5 (6)	9.7 (2)	6.8 (3)	11.5 (1)	5.3 (4)	4.2 (5)	9.7	19.6
Productivity									
Total revenue/ Non-interest expense	1.51 (4)	1.74 (2)	1.46 (5)	1.44 (6)	2.06 (1)	1.36 (7)	1.52 (3)	1.12	2.16
Capitalization									
Shareholders' equity ratio [‡]	4.8 (4)	4.9 (3)	2.2 (7)	3.6 (5)	2.5 (6)	6.2 (1)	5.1 (2)	3.4	9.6
Price-earnings multiple	8 [¶] (4)	8 [¶] (5)	No data	19 (3)	74 (1)	21 (2)	6 [¶] (6)	9	21

Notes: Except where noted, all figures are country group averages for the period 1985-89. Ordinal ranking among the seven national groupings of banks appears in parentheses where appropriate.

[†]Figures are based on ranking of individual banks by total assets at fiscal year-end 1989.

[‡]In percent.

[§]Figures are based on ranking of individual banks by average revenue, 1985-89.

[¶]Average price-earnings multiples of the U.S., Canadian, and U.K. bank groups are calculated from their 1985 and 1986 results only.

provides some insight into the aggregate performance of U.S. banks and securities firms, however. Although U.S. institutions are strong competitors in a number of markets, their strength is most evident in the three international markets—swaps, foreign exchange, and Eurocredit. Each of these markets is characterized by a high degree of competition, particularly in the core product activities such as basic interest rate and currency swaps, spot currency transactions, and basic Eurocredit facilities, all of which have taken on a commodity-like aspect. The low profitability resulting from this intense competition has led participants in these markets to rely on innovation and product niches in specialized or technically complex instruments.

This strategy has become increasingly difficult to pursue, however. The very intensity of competition that has compelled participants in these markets to adopt a product niche strategy has also resulted in increasingly shorter periods during which any particular bank can realize the gains of an innovative or specialized product. These intense competitive conditions have made it difficult for financial institutions to participate profitably in these markets. Thus, even for those institutions that remain, sizable market share in these activities does not necessarily translate into a high degree of profitability.

This conclusion suggests that the ability of financial institutions to establish and maintain profitability on an aggregate basis may depend in large part on their performance in home-country financial markets. The effectiveness of both foreign banks and securities firms and domestic nonbank competitors in a number of U.S. national banking markets is consistent with the somewhat lackluster consolidated performance of U.S. institutions as gauged by conventional competitiveness measures. The product market review suggests that the domestic franchise of U.S. commercial banks is perhaps the weakest among the national groups considered, an assessment that is borne out by the significant foreign bank presence in U.S. national markets, particularly commercial lending. For a variety of reasons, U.S. bank customers appear to be more price sensitive and less dependent on established banking relationships than customers in many other countries. Thus U.S. commercial banks have been open to competition from nonbank financial institutions as well as foreign banks and securities firms. At the same time, the greater international acceptance of dollar-denominated securities provides foreign financial institutions with a natural customer base, both inside and outside the United States, for activities in U.S. financial markets. Overall, then, U.S. banks and securities firms appear to have a less reliable source of profitability from participation in domestic banking markets than do many institutions from other countries. The relative weakness of the

domestic franchise of U.S. institutions may therefore underlie their uneven performance as gauged by conventional quantitative measures of competitiveness.

Building on traditional institutional strengths

The factors that appear to affect the strength of the domestic banking franchise for U.S. commercial banks demonstrate how conditions in home-country national banking markets can shape the international competitive standing of financial institutions. The review of the individual product markets suggests that banks and securities firms compete successfully in international and overseas domestic markets primarily by building on traditional strengths developed in their home-country domestic banking markets. These strengths include particular knowledge of home-country capital and currency markets; specialization in certain categories of financial products and techniques, sometimes as a result of regulation limiting participation in domestic markets to certain types of institutions; and, perhaps most important, the existence of an established customer base, which can both provide access to new markets and serve as a deterrent to competitors wishing to enter existing markets.

Specialization based on domestic market activities

Perhaps the most common means of exploiting a domestic market strength to gain competitive advantage in international and overseas markets is through specialization in international products that are closely related to domestic market activities. For instance, among U.S. financial institutions, participation in the swap market is heavily segmented by institution type: U.S. commercial banks have specialized in swaps related to balance sheet management because of their existing expertise in interest rate risk management, while U.S. investment banks have been more prevalent in the market for swaps related to new security issues. This segmentation clearly mirrors the areas of domestic market specialization that have resulted from regulatory restrictions on financial market participation. Similarly, product specialization in the Eurocredit market has occurred along institutional lines, with commercial banks tending to be the strongest competitors in the Euroloan sector and securities firms tending to be dominant in the Eurobond sector.

There is also a broader sense in which financial institutions have sought competitive advantage in overseas and international markets through product specialization that mirrors strength in domestic markets. Financial institutions from certain countries, most notably the United States and the United Kingdom, have developed a high degree of technical expertise in constructing, managing, and marketing complex financial

products and services. This expertise involves both the development of physical capital—primarily computer systems and software—and the development of trained professionals and support staff with both technical and market knowledge.

Banks and securities firms from the United States and the United Kingdom have frequently attempted to exploit these domestic market strengths when entering international and overseas national markets. The technical ability to introduce and develop complex derivative products has given these institutions profitable product niches in markets such as swaps and foreign exchange, where competition in core products and services has greatly reduced profitability. Specialization in complex financial products has also provided a potential entry niche into overseas banking markets such as those in Germany and Japan, where domestic institutions have not traditionally focused on products and services requiring significant technical innovation. Successful utilization of domestic technical strength in overseas markets has been dependent, however, on the ability to develop both customer demand and regulatory approval for complex products and services.

Specialization based on knowledge of home-country markets

The ability to derive a competitive advantage in international markets from knowledge of home-country markets and conditions is perhaps most evident in the foreign exchange and swap markets. Institutions participating in both of these markets show a clear tendency to specialize along home-country currency lines, most likely because of more intimate knowledge of domestic capital markets and economic conditions. This knowledge may give domestic financial institutions an advantage in assessing the factors affecting home-country currency movements and interest rates and thereby create profit opportunities through dealings with customers. Alternatively, specialization in currency by national affiliation may simply arise because customers associate financial institutions with their home-country currencies and turn to those institutions to meet their needs to transact in various currencies.

In either case, specialization along home-currency lines is an effective competitive strategy only to the extent that there is a significant market for transactions in an institution's home currency. Banks and securities firms from a nation whose currency has wider international acceptance may therefore have greater potential to exploit this strategy.

For U.S. banks and securities firms, the status of the dollar as an international reserve currency is thus a source of competitive strength, although closer examination suggests that it may also be a possible cause of

weakness. On the one hand, the strong demand for transactions in the dollar and dollar-denominated instruments creates a natural advantage for U.S. financial institutions possessing a presumably greater knowledge of the factors affecting dollar movements and interest rate fluctuations. U.S. institutions have used this advantage to establish strong competitive positions in international markets such as swaps, foreign exchange, and Eurocredit.

On the other hand, the same conditions that give U.S. financial institutions an advantage in international markets may create a relative disadvantage in domestic markets. The wide acceptance of dollar-denominated securities outside of the United States means that foreign institutions wishing to enter U.S. securities markets such as government bonds and equities have a relatively extensive natural distribution base in the form of existing overseas customers. The existence of this distribution base may make it easier for foreign financial institutions to establish themselves in U.S. national markets. To some extent, then, the status of the dollar in international markets may have resulted in a weakening of the domestic franchise of U.S. financial institutions.

Building on an existing customer base

The existence of an established customer base can be an extremely important competitive advantage for financial institutions in both international and overseas domestic markets. On the one hand, strong customer ties can provide a natural clientele for a bank or security firm wishing to enter new markets, enabling the institution to establish a market presence through transactions with existing customers from other markets. On the other hand, an established and secure customer base can also serve to deter potential competitors, both foreign and domestic, from entering existing bank markets. From many perspectives, then, the existence of strong customer ties is a crucial determinant of competitive success.

Banks and securities firms trying to enter both international and overseas national bank markets have looked to their established customers as a ready-made client base for their new activities, with some degree of success. For instance, in the Eurobond market the strong segmentation along national lines results fairly directly from financial institutions' use of existing customer ties to establish a competitive position. In the nondollar sector of the market, banks and securities firms appear to have extended customer ties in home-country markets to form distribution bases for Eurobond issues denominated in their national currencies. In the dollar sector, by contrast, it appears that ties between bond issuers and financial institutions may be key; since dollar-denominated securities have a greater

acceptance outside of the United States, the insight and experience gained by banks and securities firms in dealing with borrowers from their home countries seem to be more pivotal than the ability to distribute the bonds. In both cases, however, it is clear that links to existing customers are important determinants of the ability to compete in the Eurobond market.

The importance of ties between financial institutions and their customers is equally clear in the Euroloan market. The history of the Euroloan market during the 1980s indicates that two discrete waves of borrowers have dominated the market—sovereign borrowers in the early 1980s, followed by corporate borrowers seeking merger and acquisition funding in the late 1980s. These developments suggest that the Euroloan market is in some sense a residual credit market, because the ability of intermediaries to “bring” customers to this market appears to be an important determinant of the level of borrowing. In this sense, the association between banks and their borrowing customers is vital, and the ability of a bank to transform existing domestic customers into potential Euroloan borrowers is key to its becoming a successful competitor in this market.

Relationships with domestic customers have also shaped the strategies used by foreign banks and securities firms seeking to enter overseas national markets. In one common approach, institutions adopt a population niche strategy to establish an initial market presence. Frequently, they will target the overseas affiliates of businesses and organizations from their home countries as potential customers. In this situation, strong ties with domestic customers can carry over, giving foreign banks and securities firms a natural, if necessarily limited, clientele in overseas markets.

In a somewhat different sense, a secure customer base can also affect the competitive strategy of banks and securities firms by serving as a deterrent to potential competitors, both foreign and domestic. As noted earlier, when the ties between domestic customers and financial institutions are particularly strong, it can be extremely difficult for competitors to establish a presence in the market. Foreign firms in such an environment face the additional problem of attracting customers who, in the face of custom or through lack of familiarity, may be reluctant to deal with foreign institutions. In this situation, foreign banks and securities firms may be limited, at least in the short run, to dealing exclusively with customers who are themselves affiliated with the financial institution's home country.

A comparison of the commercial lending markets in the United States and the United Kingdom with those in Germany and Japan dramatically illustrates how strong customer ties can affect the ability of foreign financial institutions to establish themselves in overseas national

markets. In the U.S. and U.K. markets, the wide range of alternative borrowing sources has left ties between domestic borrowers and lenders relatively weak. Borrowers in these markets appear to be significantly more price sensitive than borrowers in many other national markets. In this environment, foreign banks have had a great deal of success in establishing themselves as significant competitors to domestic institutions.

In the German and Japanese markets, on the other hand, ties between borrowers and lenders are much stronger. Domestic corporate customers and banks typically have extensive and extremely stable financial relationships in which lending plays a central role. The strong customer ties that characterize these relationships have made it very difficult for foreign banks to gain a significant share of commercial lending activity in the Japanese and German markets.

As these examples indicate, a strong and diversified domestic customer base can be a key competitive advantage in both national and international banking markets. Just as financial institutions tend to compete successfully by specializing in particular products based on traditional strengths developed in domestic banking markets, they also appear to compete successfully by cultivating particular domestic customer clienteles. The ability of institutions to parlay the experience and relationships gained in domestic banking markets into a significant presence in overseas and international markets thus appears to be an important criterion for competitive success in the international arena.

Institution-specific characteristics and competitive success

The domestic market strengths that banks and securities firms attempt to exploit in forming competitive strategies are often common to different institutions within the same country. In addition to such national characteristics, however, a variety of institution-specific factors appear to be associated with competitive success. Specifically, the ability of financial institutions to build on domestic market attributes appears to be most strongly associated with factors such as institution size, capitalization, and the cost of capital. The ability to develop and exploit links across product markets also appears to be associated with competitive success for at least some banks and securities firms.

Scale of market operations

In many banking markets, the scale on which financial institutions operate appears to be an important competitive factor. Specifically, in many national and international product markets, banks and securities firms operating on a large scale may be able to produce more efficiently than smaller institutions, particularly in the

management of large portfolios of financial instruments and in the gathering and processing of information. Although smaller firms may operate profitably in particular niches of the various bank product markets, these scale economies tend to result in banking markets that are dominated by a relatively few large competitors.

Large-scale operations can contribute to the efficiency of information management in different ways. On a technological level, the fixed costs of maintaining computer systems and developing specialized software and data management techniques will be distributed across a wider base. While such scale economies in "back office" operations may be important, scale economies in information gathering that result from specific market activities, particularly trading and underwriting of various financial instruments, appear to have a more direct link to profitable participation in various banking markets. In markets such as equities, government bonds, Eurocredit, swaps, and foreign exchange, institutions with a large market presence and a broad customer base may be able to assemble information about market conditions more efficiently because they are exposed to a wider range of proposed transactions. Institutions with a smaller market presence, by contrast, may not be able to manage their market activities as profitably because they must invest more time and effort in obtaining this information. Such size-related efficiencies may represent an important strategic advantage, particularly in highly competitive banking markets in which profitability in core activities is minimal.

Capitalization

A second institution-specific element that appears to affect the ability of banks and securities firms to compete in national and international banking markets is capitalization. More strongly capitalized banks may have an advantage because they are viewed as being better able to withstand financial adversity. The credit standing of a financial institution affects its ability to compete in markets for financial products and services primarily by affecting the willingness of potential customers to accept the institution as a counterparty. This effect is particularly prevalent in the swap market, where participants are exposed to large amounts of credit risk. Banks and securities firms that lack strong credit ratings can find it difficult to participate fully in this market because other financial institutions may be reluctant to accept them as counterparties in swaps transactions. This is particularly true for long-dated swaps, where the credit exposure is more significant because of its much longer duration. Thus, strongly capitalized banks and securities firms with high credit ratings have a competitive advantage over those institutions with a less secure capital standing.

Capitalization may also affect the ability of financial institutions to compete in markets where continuity of service is important. For instance, corporate borrowers appear to prefer to borrow from strongly capitalized banks because these institutions are more likely to have continued access to funding sources and thus to be able to lend during tight credit periods. In addition, a relatively weak credit rating can be a substantial disadvantage in competing for large corporate customers, particularly if these customers have higher credit ratings than the banks themselves. In this situation, commercial banks may not be able to offer better assurance of continued funding than the corporate customer can obtain on its own. Strongly capitalized financial institutions thus appear to have a competitive advantage in commercial lending markets, particularly during periods when tight credit conditions are widely anticipated.

Cost of capital

The ability of banks and securities firms to be effective competitors is affected not only by the amount of capital held by specific institutions, but also by the cost of obtaining that capital. In some sense, of course, the two factors are related: individual institutions that are perceived to be more risky will tend to face higher costs of acquiring capital. At a more fundamental level, however, the cost of capital reflects macroeconomic factors such as household savings behavior, the stability of the macroeconomy, the pattern of relationships among banks, corporations, and government, and to some extent, the corporate tax structure.¹² These macroeconomic factors are in general beyond the control of specific institutions or groups of institutions within a national economy. Thus, to a large extent, the cost of capital facing individual financial institutions is a competitive attribute that reflects conditions in their home-country markets.

The cost of capital affects the ability of financial institutions to offer competitive prices on their products and services. The spreads that banks and securities firms earn on their banking activities must be sufficient to generate the required rate of return on the capital used to support those activities. Institutions with high capital costs are therefore at a competitive disadvantage, particularly in markets where acting as a low cost provider of core products and services is an important competitive strategy. The importance of this effect is especially evident in markets such as the U.S. commercial lending market. Japanese financial institutions have been able to penetrate this market and to obtain a

¹²See Steven A. Zimmer and Robert N. McCauley, "Bank Cost of Capital and International Competition," Federal Reserve Bank of New York *Quarterly Review*, vol. 15, no. 3-4 (Winter 1991), pp. 33-59. for a full discussion of the determinants of the cost of capital for banks in six major industrial economies.

significant market share largely because their low capital costs have enabled them to extend credit at lower rates than many U.S. commercial banks facing a significantly higher cost of capital. A cost of capital advantage is thus an important factor in the ability of financial institutions to maintain a continuing presence in highly competitive global and national product markets.

Links across product markets

Banks and securities firms that participate in a range of financial markets may sometimes have a competitive advantage over those institutions that operate in a more limited set of markets. Much of this potential advantage stems from greater efficiency in obtaining and processing information. In much the same way that operation on a large scale within a single market appears to allow banks and securities firms to realize economies of scale in information handling, participation in a range of product markets may enhance the ability of some financial institutions to manage large and diverse portfolios of financial instruments efficiently.

For instance, the profitability of transactions in the swap and Eurocredit markets is determined, at least in part, by accurate knowledge of conditions and movements in a variety of other markets such as foreign exchange and the various national money and credit markets. To the extent that a financial institution is actively involved in these various markets—because of internal foreign exchange operations or through participation in overseas government and corporate bond markets—it may have greater access to the information necessary to price transactions correctly in the swap and Eurocredit markets. Similar advantages may accrue when portfolio positions taken from participation in one market offset positions derived from activities in another market, possibly reducing the expense of hedging the overall position of the institution.

Conclusion

The principal finding of the study is that financial institutions compete internationally primarily by building on the strengths developed in their domestic banking markets. In large measure, banks and securities firms appear to succeed in international and overseas national

markets by capitalizing on advantages that reflect the inherent characteristics of their domestic markets.

The characteristics of an institution's home-country market thus appear to be a critical determinant of its overall competitive success. The strength of the domestic banking franchise not only shapes the competitive strategies adopted by banks and securities firms in international and overseas markets, but also appears to anchor the overall financial performance of these institutions. Financial institutions from countries with a strong domestic banking franchise may benefit from a stable source of profitability that appears to sustain their aggregate financial position.

The importance of the domestic franchise is clearly illustrated in the experience of U.S. financial institutions. Although U.S. banks and securities firms have had a great deal of success in obtaining market share in international and overseas financial markets, conventional quantitative measures of aggregate performance show these institutions to be only moderately successful competitors. These two somewhat conflicting assessments can be reconciled by noting that both nonbank firms and foreign banking institutions have made significant inroads in a number of U.S. national financial markets, a development that points to the weakness of the U.S. domestic banking franchise relative to that in other countries. This weakness may in turn underlie the uneven performance of U.S. financial institutions as aggregate entities.

The finding that home-country market conditions continue to play a critical role in the competitive success of large, internationally active financial institutions suggests that the true internationalization of financial and banking markets is incomplete. This impression is even more strongly reinforced by the continued domination of national banking markets by a few large domestic competitors, despite the fact that, in most cases, there is little regulatory or legal differentiation between domestic and foreign financial institutions. Although international markets in particular present many opportunities for competition on a "level playing field," segregation along national and institutional boundaries remains an important force in the competitive environment.

Monetary Policy and Open Market Operations during 1990

Overview

During 1990, the Federal Open Market Committee responded to signs of weakening economic activity and financial market fragility by shifting toward a more accommodative policy. The Committee relaxed reserve pressures several times in the second half of the year to alleviate financial market strains and, in the final months, to counter contractionary influences on the economy.

Over the first half of the year, policy was essentially on hold following a move to ease reserve pressures in mid-December 1989. The risks of inflation and of economic weakness were seen as being about evenly balanced; higher food and fuel costs helped lift prices early in the year while the economy experienced only slow growth. In mid-July, the Federal Open Market Committee (FOMC) acted to ease reserve conditions to offset a degree of credit restraint on the part of lending institutions that was deemed "greater than anticipated or appropriate." Policy then held steady in the immediate aftermath of the Iraqi invasion of Kuwait in August.

Surging petroleum prices threatened simultaneously to worsen inflation and to plunge an already sluggish economy into a downturn, and a period of some turmoil ensued in many financial markets. In late October the FOMC eased reserve pressures amid growing evidence of softening economic activity and after the conclusion of a budget agreement involving a large reduction in the federal deficit over the next several years. Over the final months of 1990, the economy weakened considerably, concerns about the condition of the financial system increased, the monetary aggregates expanded anemically, and underlying inflation pressures appeared to ebb. The Committee responded by stepping up the pace of accommodation through three more easing moves. Prompted by similar concerns, the Board of Governors of the Federal Reserve System approved a reduction in the discount rate in December. The Board also eliminated reserve requirements on nontransactions deposits, in part to counter the contractionary effects of banks' tightening credit standards and lending terms.

The onset of the recession in the second half of the year ended eight years of economic growth, the longest recorded peacetime expansion in U.S. history. With GNP declining in the final quarter, the economy expanded a mere 0.5 percent (fourth quarter over fourth quarter) over the year as a whole, and most major spending components of GNP either slowed in growth or fell. The downturn was at least exacerbated, and perhaps brought on, by the Persian Gulf crisis. Meanwhile, rising energy costs generated by developments in the Middle East helped lift most broad inflation mea-

Adapted from a report submitted to the Federal Open Market Committee by Peter D. Sternlight, Executive Vice President of the Bank and Manager for Domestic Operations of the System Open Market Account. Cheryl Edwards, Senior Economist, Open Market Analysis Division, and R. Spence Hilton, Senior Economist, Open Market Analysis Division, were primarily responsible for the preparation of this report under the guidance of Ann-Marie Meulendyke, Manager, Open Market Department. Other members of the Open Market Analysis Division assisting in the preparation were Robert Van Wicklen, Theodore Tulpan, John Krafcheck, and John Phelan. Judy Cohen, from the Domestic Research Department, also assisted.

tures to their highest levels since the early 1980s. For the year as a whole, consumer price inflation excluding the volatile food and fuel components edged up on balance, although by other measures, underlying inflation and labor cost pressures did not intensify.

Yields on investment grade fixed-income securities responded to changes in the outlook for economic growth and inflation and to prospective and actual monetary policy developments. Through the first four months of the year, yields trended up because of rising food and energy costs, an apparent pickup in economic activity, higher interest rates abroad, and prospects of much heavier Treasury borrowing. Most rates changed direction and moved lower over the next few months in response to accumulating evidence of economic weakness and speculation that the System would ease monetary policy. At the onset of the Persian Gulf crisis in August, longer term yields jumped and rates on shorter dated instruments posted lesser increases as skyrocketing energy prices fanned inflation fears. During the final months of the year, most yields moved steadily lower as oil prices eased off their highs, a federal budget accord was reached, and the Federal Reserve took a series of measures intended to help revive the faltering economy. On balance, the yield curve for Treasury securities steepened over the course of the year.

A slumping economy coming atop a high level of financial indebtedness contributed to growing strains in many financial markets in 1990. Borrowing became more difficult for less than top-rated borrowers. Some degree of dislocation was evident at times in many financial markets, especially during the second half of the year. The market for below-investment-grade securities, which had already been buffeted by a series of developments late in 1989, deteriorated dramatically in 1990. Meanwhile, the financial position of many bank holding companies deteriorated, posing potentially serious consequences for the financial system as a whole. The profitability of a large number of banks suffered as the value of their loan portfolios declined, especially for real estate-related activities. During the year, the outstanding debt of many banking institutions was downgraded, and market yields on much of this debt soared. At the same time, there were growing indications that banks were cutting back on the availability of credit, even for creditworthy customers, although the magnitude of this credit squeeze remained uncertain. Monetary policy moves during the latter half of the year were intended in part to relieve the effects of the credit restrictions.

Growth of the broader monetary aggregates in 1990 fell below the previous year's pace. M2 advanced 3.9 percent (fourth quarter over fourth quarter), while M3

rose just 1.7 percent.¹ Both measures expanded much more slowly in the second half of the year and finished well down in their respective growth cones. A soft economy, retrenchment in bank lending, and a quickened pace of thrift resolutions all helped to restrain the growth of these aggregates. Nonfinancial debt also increased more slowly in 1990; it rose 6.8 percent and finished well within its monitoring range. Meanwhile, growth in M1 rebounded in 1990 after posting a meager gain in the previous year; boosted by rapid growth in currency (much of which apparently went overseas), M1 advanced 4.2 percent.

Implementation of monetary policy continued to be complicated by the strong reluctance of many depository institutions to borrow from the discount window under the adjustment credit program. The Desk's formal operating procedures continued to make use of an assumption for borrowing that presumes a reasonably stable relationship between the amount of borrowing and the spread between the federal funds and discount rates. Instances of unusual reluctance to use the discount window, which have hampered the Desk's operations for several years, multiplied in 1990; many depository institutions feared that their presence at the window might be misconstrued as a symptom of fundamental financial difficulty. On occasions when borrowing had to rise to make up a shortfall in nonborrowed reserves, the funds rate often increased to exceptionally high levels. In light of the continued imprecision in the borrowing relationship, the Desk pursued its borrowing objectives flexibly. When formulating its program for daily operations, it often emphasized current trading conditions in the federal funds market over estimated reserve needs associated with the borrowing allowance.

Extraordinary year-end funding pressures and reductions to reserve requirements had a significant impact on money markets and the Desk's operations in December. In an atmosphere of heightened financial fragility, and in keeping with ongoing efforts to improve capital positions, many banks strove to rein in the volume of lending that would be on their books on the end-of-year reporting date. At the same time, demands for funds spanning the turn of the year were high. Dislocations occasionally emerged in the money markets as many institutions refrained from their customary arbitrage activities. Short-term interest rates, including the federal funds rate, were prone to considerable volatility. The reserve requirement reduction indirectly

¹Money and debt growth rates cited in this report are based on data available on April 4, 1991. The money data incorporate the February 1991 benchmark and seasonal revisions, as well as subsequent revisions. The benchmark revisions raised the growth rates of each of the three monetary aggregates by 0.2 percentage point over the four quarters of 1990.

added to this volatility. Many banks, unaccustomed to working with such low reserve balances at the Fed, tended to manage their reserve positions very cautiously so as to reduce the risk of incurring overnight overdrafts or having to bid aggressively for funds late in the day. Demands for excess reserves in this climate ran high, although banks would sometimes seek to unload their reserve holdings in late-day trading once they felt confident of meeting their clearing needs. The volatility of the funds rate, resulting both from more cautious reserve management and from year-end funding needs, made it very difficult to gauge the underlying demands for reserves. Toward the end of the year, the Desk sought to alleviate these pressures in the federal funds market by exceptionally aggressive provisions of reserves through open market operations.

The economy and interest rates

The pace of economic activity slowed dramatically in 1990, as a modest rebound in the rate of expansion early in the year gave way first to a period of generally sluggish growth and then to an economic contraction. Over the four quarters of the year, real GNP expanded just 0.5 percent, down from 1.8 percent in 1989 (Table 1). Growth in most sectors of the economy weakened to some degree during the year, while manufacturing and construction activity declined. Meanwhile, rapidly rising petroleum prices helped to lift overall inflation to levels not seen since 1981. Inflation excluding food and energy prices, or "core" inflation, was somewhat higher at the consumer level, but some other measures of underlying price and labor cost pressures showed no acceleration or decelerated over the year. Yields on investment-grade securities responded to the changing outlook for economic growth and inflation and the accompanying prospects for monetary policy. Interest rates rose and then fell over the first half of 1990 as early indications of strengthening economic growth and heightened inflation gave way to signs of sluggish growth and more moderate price pressures. Surging energy prices pushed yields back up in late summer, especially for longer dated issues, but rates subsequently fell in the face of growing signs of a significant economic downturn and several steps to ease monetary policy. On balance, yields on Treasury coupon securities ended mixed, with shorter yields down as much as 70 basis points and the long bond yield about 25 basis points higher. Meanwhile, key bill rates ended the year about 100 basis points lower (Charts 1 and 2).

Sluggish growth and inflation worries—January through July

Early in 1990, the ongoing economic expansion, then entering its eighth year, appeared to be resilient. Fueled

by a modest rebound in final goods demand and boosted by a weather-related spurt in construction activity, real GNP in the first quarter rose 1.7 percent (annual rate), up from the sluggish 0.3 percent pace in the preceding quarter. At the same time, inflation was accelerating, although much of this pressure was expected to be short-lived because it resulted from the severe winter weather in December 1989 that pushed up the cost of fuel and some foods. As measured by the fixed-weight price deflator, the inflation rate jumped to 6.6 percent in the first quarter from 3.8 percent in the previous quarter.

Signs that economic activity was picking up while inflation was gaining some momentum helped push yields on many long-term Treasury issues to levels just over 9 percent by the end of April, up more than 100 basis points since the start of the year. Bill rates rose by lesser amounts to their highest levels for the year. Unexpectedly strong nonfarm payroll employment statistics were released in February and March, and other economic reports pointed to somewhat greater strength

Table 1

Changes in Key Economic Statistics (Percent, Unless Otherwise Indicated)

Fourth quarter to fourth quarter	1990	1989
Real GNP	0.5	1.8
Final demand	1.5	1.6
Disposable personal income	-0.4	1.7
Consumer expenditures	0.1	1.2
Business fixed investment	2.2	4.5
Residential construction	-10.2	-7.1
Government purchases	3.4	0.6
Nonfarm inventories (billions of dollars)	-43.8	-11.9
Net exports (billions of dollars)	39.1	27.8
Fixed-weight GNP deflator	4.8	4.0
December to December		
Consumer price index, total	6.2	4.7
Consumer price index, excluding food and fuel	5.2	4.4
Producer price index, total	5.7	4.9
Producer price index, excluding food and fuel	3.5	4.2
Employment cost index	4.9	5.0
Average hourly earnings	3.7	4.1
Industrial production	-1.3	1.1
Nonfarm payroll employment, total	0.6	2.2
Employment, manufacturing	-3.1	-1.0

Notes: GNP components and personal income are measured in constant dollar terms. Final demand and government purchases are net of Commodity Credit Corporation purchases, which are treated as akin to changes in farm inventories.

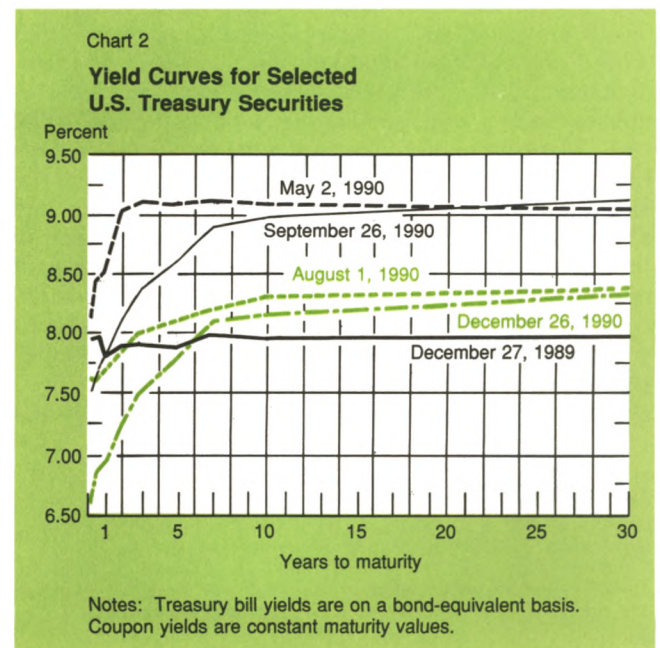
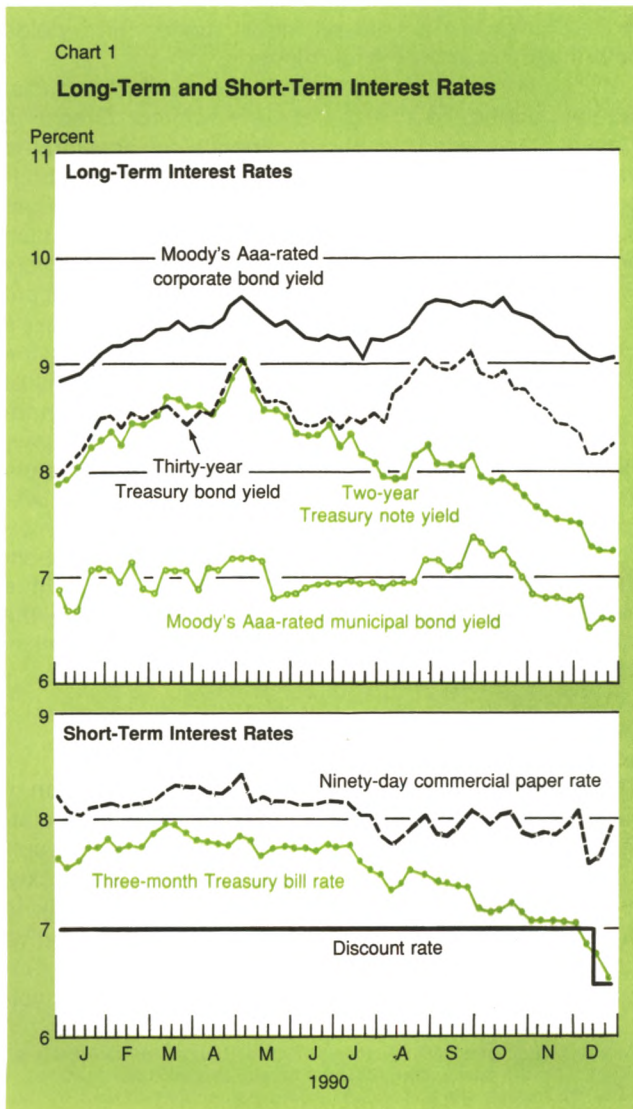
in the manufacturing sector than had previously been perceived.² Meanwhile, investors became more concerned about inflation prospects as price data began to reflect rising food and fuel costs and as the core component of the consumer price index (CPI) crept up. These statistics helped to dispel expectations that the System would soon follow its December move with another easing step. This perception was reinforced in late January by Chairman Greenspan, who expressed the view

²Employment data during the year were distorted by the temporary hiring of census workers. Characterizations of the job data in this report are net of the impact of these workers.

in congressional testimony that the current inflation rate was unacceptably high and that the recent slowdown in economic activity appeared to be only a "temporary hesitation." With the release in mid-April of the March CPI, which showed a disturbingly large jump in the index's core component, investor psychology shifted further and yields surged.

Rising interest rates abroad, particularly in Japan and Germany, added to the upward pressure on domestic yields early in 1990 by substantially narrowing the differential between foreign and domestic rates and by curbing the foreign appetite for U.S. securities. Higher yields abroad were largely the product of foreign countries' deteriorating inflation outlooks and tighter monetary policies, which, in the case of West Germany, were linked in part to the potential inflationary consequences of union with East Germany. Sharp declines in Japanese equity prices early in the year also helped to push U.S. interest rates higher as foreign investors reportedly sold U.S. securities to mitigate their losses; however, some "flight-to-quality" demand for domestic securities was seen at times when foreign equity markets came under strong downward pressure.

Increased borrowing by the Treasury and sharply higher estimates of its future funding needs added to a negative market sentiment early in the year. A progressive deterioration in official deficit forecasts occurred throughout the year, in large measure reflecting a scaling back of projected economic growth and revised



estimates of the costs of the savings and loan bailout.³ Official projections of the final costs of the thrift bailout escalated to a range of \$90 billion to \$130 billion (in present value terms), well above the \$50 billion originally allocated by the Congress for this task. Estimates of the "working capital" needs of the Resolution Trust Corporation (RTC), the agency charged with disposing of failed thrifts, also grew, and in February the agency began to raise funds by borrowing from the Federal Financing Bank, a move that resulted in increased Treasury borrowing from the public. In a related development, the Resolution Funding Corporation (REFCORP), the borrowing agency authorized to raise a total of \$30 billion to pay for thrift losses, borrowed \$8½ billion in auctions of forty-year bonds in January and in April, and both auctions fared poorly. (Later auctions of thirty-year REFCORP bonds were better received.)

During the middle of the year, economic growth was uneven, but slower on balance than in the early months of 1990. The real economy expanded at about a 1 percent annual rate during the middle two quarters, with somewhat slower growth coming in the second quarter. Inflation moderated in the spring and early summer as food and fuel cost pressures eased, and there was little evidence that the upsurge in these costs earlier in the year was having an impact on core inflation.

Accumulating evidence of lower growth and slower inflation put interest rates on a declining trend, and by the end of July many longer term rates were just a bit above, and shorter term rates somewhat below, the levels prevailing at the start of the year. Yields had moved sharply lower following the release of an unexpectedly weak jobs report in early May, and smaller than expected changes in the producer price index (PPI) reported soon afterwards alleviated inflation worries. Subsequent economic reports confirmed that a slowdown was underway and virtually eliminated any speculation that monetary policy would be tightened in the near future. Another weak employment report released in June encouraged talk of a possible recession, stirred expectations of a Fed easing, and pushed yields even lower; however, later economic reports provided a more mixed assessment of the pace of the expansion, and the core inflation rates in the PPI and

CPI reports released in June were seen as too high to permit an easing move.⁴

Accordingly, many investors were surprised when Chairman Greenspan intimated in congressional testimony on July 12 that the Fed would relax reserve pressures, a step that was implemented by the Desk on the following day. Some were unconvinced by the reason given for the move—to help offset a recent modest tightening of credit availability. Chairman Greenspan's Humphrey-Hawkins testimony, delivered the following week on the same morning that an unexpectedly big jump in the CPI was announced, did not dispel these doubts and left many participants concerned that monetary policy was moving toward further ease just when inflation appeared to be gaining momentum. Consequently, while rates on many shorter maturity issues moved lower on the easing move, longer term yields held steady or moved a bit higher.

Budgetary developments continued to affect financial markets during the spring and early summer. Growth in Treasury borrowing, in part to finance an accelerated pace of RTC activity, underscored a deteriorating budget outlook. Formal negotiations for a multiyear budget package began in mid-May, and in June President Bush announced that tax hikes would be part of any credible budget package. Hopes were raised that significant deficit cuts could be realized, lowering the Treasury's prospective borrowing needs and possibly paving the way for an easing move by the Fed to offset fiscal restraint. Chairman Greenspan directly linked a monetary policy move to a budget pact in his July Humphrey-Hawkins testimony when he indicated that the System might reduce reserve pressures if "major, substantive, credible cuts in the budget deficit" were achieved. Interest rates, especially those on short-term Treasury securities, eased on these developments; however, little progress was made in budget negotiations before the summer recess, and most investors remained skeptical of the prospects for significant deficit reductions.

Persian Gulf crisis and declining economic activity—August through December

The surge in oil prices that followed the Iraqi invasion of Kuwait in August raised the prospect of rapidly escalating inflation and generally clouded the economic outlook. Yields on longer term securities shot up quickly, and the Treasury yield curve steepened dramatically, in part because many participants sought the relative safety of shorter term securities. Moreover, in the aftermath of the invasion, trading conditions were quite vol-

³The ultimate implications of growing deficits for interest rates are complex. Extra Treasury borrowing brought on by slowing economic growth normally is accompanied by reduced credit demands from other sources. Moreover, if funds borrowed to pay for deposit insurance losses and the Resolution Trust Corporation's working capital needs are recirculated in financial markets, as is generally assumed, then the funds available to other borrowers would not be reduced and there would be little impact on interest rates apart from dislocations brought on by new funding patterns.

⁴Several payroll employment reports, including some released in the spring and summer, showed large revisions to previously released data. These revisions sometimes altered perceptions formed by the initial release.

atile, with prices for oil and long-term securities often moving sharply on rumors or reported developments relating to the Persian Gulf crisis. This volatility, and the close association between movements in oil prices and long-term rates, eventually moderated but remained a feature of trading for the rest of the year. Petroleum prices peaked in October around \$40 per barrel for some grades of oil, but prices soon fell back as fears of an immediate outbreak of hostilities abated and as investors became assured that the shortfall left by the embargo on Iraqi and Kuwaiti oil would be filled by higher output elsewhere (Chart 3).

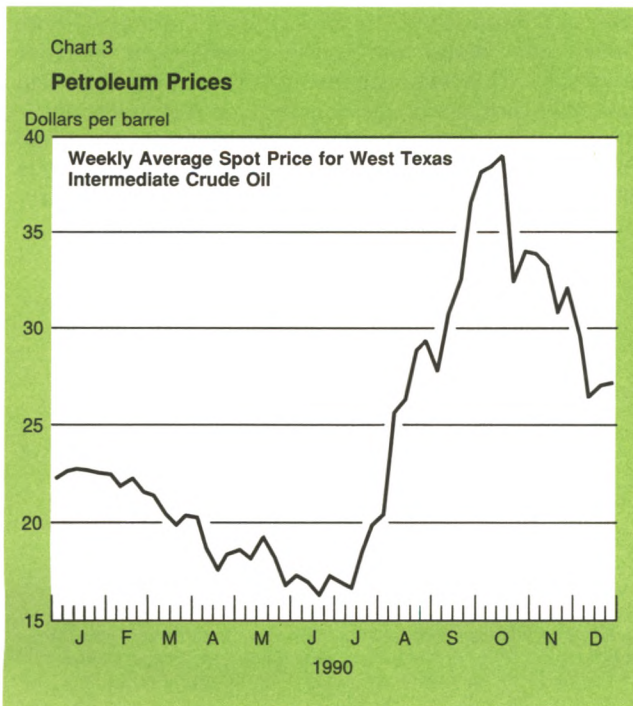
In the weeks following the invasion, financial market participants were uncertain about the course of monetary policy. Accumulating evidence that economic activity was slowing and concerns over the impact of a sustained rise in oil prices on consumer spending and business investment generated speculation that an easing of policy could occur in the not too distant future. This perception helped limit the upward movement in rates on shorter term instruments. At the same time, however, the System was seen as being constrained by the rapid run-up in oil prices and as preferring to wait until the turmoil in financial markets abated before making any policy move. Other price data available in August and September added modestly to a deteriorating inflation outlook, and in September, a stronger than expected employment report largely dispelled the view

that policy would soon be eased to spur growth.

Investors monitored the course of budget talks in late summer and early fall, and interest rates often moved inversely with the degree of optimism about the course of negotiations. In early September, President Bush reiterated his goal of achieving significant cuts in a multiyear package and Chairman Greenspan again tied a possible easing in policy in part to the adoption of a credible and enforceable agreement, but hopes for achieving such an agreement dimmed as budget negotiations dragged on. On September 30, budget negotiators reached an accord on a plan to cut future deficits by a cumulative \$500 billion over five years and to provide several new enforcement mechanisms, and the plan was termed "credible" by Chairman Greenspan. On October 4, however, the House of Representatives rejected the proposal. A reformulated accord, which was similar in many respects to the earlier agreement, was reached on October 27. It was soon ratified by the Congress and followed by an easing move by the Fed.

The economy began to turn down in the second half of the year, a contraction brought on to an indeterminate degree by the rise in oil prices and the uncertainty over the future course of events in the Middle East. Real GNP in the final quarter dropped 1.6 percent (annual rate). The manufacturing sector—particularly auto production—was hard hit, but many service industries weakened as well. Businesses, however, were keeping their inventories trim (final demand actually posted a slight gain in the final quarter). Exports also remained a bright spot. Pressures on core prices showed some tendency toward moderation in the fourth quarter, but total inflation remained elevated because of higher energy prices.

Interest rates moved steadily lower during the final two months of the year as investors increasingly accepted the view that the U.S. economy had entered into a recession and as the System took several steps to spur growth. Many long-term yields again fell to levels not far above those prevailing at the start of 1990, while shorter term yields dropped to their lows for the year. A weak employment report in early November was soon followed by a move to ease policy. Yields fell dramatically on December 7 on news of huge job losses in the previous month and big downward revisions to October's employment levels, and the Fed eased later that day. Meanwhile, evidence of some moderation of core inflation was seen in the monthly PPI and CPI reports released in November. Actions by the Board of Governors in December to eliminate some reserve requirements and to lower the discount rate, as well as another easing move by the FOMC, added momentum to the downward move in rates and convinced most investors that the System was prepared to act aggres-



sively to support a faltering economy.

Debt issuance

The Treasury's financing needs continued to grow in the latter part of the year. The size of its regular weekly bill auctions rose steadily to a record \$20 billion in the final quarter—a rise that was only briefly interrupted in October when the Treasury exhausted its remaining borrowing authority under a temporary debt ceiling. The size of the midquarter refunding also reached a record level of \$34 billion in November. For the year as a whole, the Treasury issued a net \$232 billion in new marketable debt (including over \$50 billion to raise RTC “working capital”), compared with \$123 billion in 1989.⁵ Meanwhile, REFCORP borrowed \$18½ billion during the year, exhausting all but \$7 billion of its remaining borrowing authority (which it used up in January 1991).

In other markets, public debt offered by U.S. corporations in the domestic bond market rose 3.6 percent, reversing a three-year decline, as a large jump in asset-backed issuance helped offset the virtual disappearance of new speculative grade offerings.⁶ With many municipalities struggling to cover budget gaps brought on by a slowing economy, borrowing by state and local governments picked up 5.9 percent. Borrowing in both the corporate and tax-exempt markets was concentrated in the middle and the end of the year, when interest rates were at their lowest. Yields on top-rated corporate and tax-exempt offerings generally moved in line with those on comparable Treasury securities, although often with some lag.

Financial market strains

Monetary policy in 1990 was conducted amid a heightened sense of financial fragility. A worsening economic climate and higher energy costs directly undermined the financial health of many companies, but in the view of many analysts, a root cause of the financial difficulties that surfaced or intensified in 1990 was the buildup in debt over the past decade that had left firms increasingly vulnerable to an economic downturn.⁷ One of the clearest overall indications of mounting pressures during the year was the sharply increased number of companies whose debt was downgraded. According to

Moody's Investor Service, total corporate downgrades outnumbered upgrades by nearly 4.5 to 1, up from a ratio of 2.5 to 1 in 1989.⁸ (In 1982, during the last recession, this ratio was 2.8 to 1). The “quality spread,” or difference in yields paid by the highest and lowest rated investment grade corporate issuers, also trended up (Chart 4). Hardest hit were financial institutions; downgrades in this sector by Moody's outnumbered upgrades by more than 8 to 1 in 1990.⁹ The savings and loan industry continued to shrink as a result of problems that had come to light years earlier; during 1990 over 400 thrifts closed or merged. Meanwhile, difficulties emerged elsewhere in the financial system, particularly among bank holding companies.

Developments in the market for speculative debt

The problems that in 1989 beset the market for below-investment-grade securities, sometimes called “high-yield” or “junk” bonds, intensified in 1990. As the year began, this market was already under pressure from a sluggish economy that aggravated the interest payment burden of many highly leveraged issuers of junk debt. Pressures grew in late January when Allied Stores and Federated Department Stores, two subsidiaries of Campeau Corporation whose difficulties had sparked a general sell-off in the high-yield market in September 1989, filed for bankruptcy protection. That same month, ratings were lowered on almost \$20 billion of outstanding high-yield debt issued by RJR Nabisco, a company whose debt had been viewed relatively favorably.¹⁰ Then, in February, the Drexel Burnham Lambert Group, a major underwriter and holder of junk debt, filed for bankruptcy. This action came after the firm began to face difficulties attracting funding for its operations.¹¹ Although rumors of Drexel's impending demise had been circulating for some time, many junk bond yields still rose upon the announcement. Investors were con-

⁵These figures are for calendar years. The federal government's budget deficit in fiscal year 1990 was \$220 billion, up from \$153 billion in the previous year and just shy of the record \$221 billion deficit in fiscal year 1986.

⁶Data on corporate and municipal debt issuance were supplied by the Board of Governors of the Federal Reserve System.

⁷Between 1979 and 1989, the ratio of outstanding debt of all domestic nonfinancial sectors to the level of GNP rose from 1.35 to 1.82.

⁸The totals include ratings changes for industrial and financial companies and for investor-owned public utilities. Total downgrades numbered nearly 450 in 1990, up from nearly 350 in the previous year.

⁹The financial sector includes banks, thrifts, insurance companies, and other financial institutions. There were about 150 downgrades by Moody's in 1990 and under 20 upgrades.

¹⁰This move by Moody's followed a similar step taken by Standard and Poor's the previous July.

¹¹The Federal Reserve Bank of New York was heavily involved in coordinating an orderly winding down of the operations of Drexel's government securities subsidiary, a primary dealer. Additional information on the System's response to the collapse of Drexel is contained in the testimony of Chairman Greenspan before the Subcommittee on Economic and Commercial Law of the House Committee on the Judiciary on March 1, 1990, reprinted in the *Federal Reserve Bulletin*, May 1990.

cerned not only about the impact of disposing of Drexel's considerable holdings of junk bonds but also about the functioning of the market for high-yield debt following the collapse of its biggest market-maker. The prospect of large divestitures of junk bond holdings by thrifts attempting to restructure and by the RTC, which acquired its holdings from seized thrifts, also weighed on the market over the first half of the year.

Despite these developments, a number of factors helped to calm the market for junk bonds over the next

several months. New issuance was nil. Several companies announced plans to recapitalize or restructure their outstanding high-yield debt through corporate "buy-backs," further alleviating supply pressures and generally helping to restore investor confidence. Furthermore, the RTC reassured investors that it would pursue an orderly, long-term liquidation of its high-yield holdings. Finally, the growing popularity of collateralized bond obligations—in this case, securities derived from pools of junk bonds that diversify risk—added liquidity to the

Chart 4
Yield Spreads



* Provided by Donaldson, Lufkin and Jenrette.

market. According to one measure, the spread between yields on junk bonds and those on Treasury securities widened modestly in February but, on balance, was about unchanged during the first half of the year (Chart 4).¹²

The market for high-yield debt deteriorated dramatically following the Iraqi invasion of Kuwait. Rising fuel costs were expected to depress earnings of transportation-related companies, especially airlines, many of which had large amounts of junk bonds outstanding. Growing concerns over an economic downturn pushed yields sharply higher on bonds issued by firms in cyclically sensitive sectors of the economy, notably some retailers and casino operators. Some of the biggest jumps in junk bond yields came amid eroding equity prices and extremely illiquid trading conditions. A number of affected companies filed for bankruptcy during the last few months of the year, and more saw their outstanding debt downgraded. The spread between the index of yields on junk bonds and corresponding Treasury securities about doubled over the year, after having doubled in 1989. According to the Bond Investors Association, eighty-nine issuers defaulted on about \$25 billion of speculative debt in 1990; in the previous year, fifty-seven issuers defaulted on about \$12 billion, and in 1988 thirty-seven issuers defaulted on under \$5 billion.

Credit developments in the banking system

The financial position of many bank holding companies deteriorated markedly in 1990 as a soft economy jeopardized the value of assets carried on the balance sheets of their bank subsidiaries. In particular, a depressed real estate market in parts of the country placed tremendous strains on the many banks that had aggressively extended credit for construction activity and related commercial projects over the past several years. Loans granted to companies that were highly leveraged with below-investment-grade debt also came under pressure as junk bond prices plummeted. These developments compounded the difficulties of some banking institutions burdened with problem loans extended years earlier to less developed countries.

As 1990 began, the problems of bank holding companies were most apparent in the Northeast, particularly in New England, a region that had seen some of the most spectacular growth in property prices in the 1980s but was now experiencing a depressed real estate market. Several of the larger regional banks in the area reported sizable losses and additions to loan-loss reserves, for the most part stemming from soured construction-related loans. The credit ratings on the debt of

many bank holding companies in the region were downgraded during the year, and yield spreads on their outstanding debt widened significantly, in some cases reaching "distressed" levels. In January, one of the most seriously affected, and largest, banks in the region, Bank of New England, began to borrow from the discount window. After it became clear that the bank's difficulties would not be quickly resolved, its borrowing was classified under the extended credit program. Soon afterwards, federal regulators issued orders requiring the holding company's main banking subsidiary to improve its capital position, and the bank embarked on a major effort to shed a sizable portion of its asset holdings.¹³

Problems confronting banks throughout the country worsened as the year progressed, most visibly for many of the nation's money center banks. Banks' profitability during the year suffered from deteriorating loan portfolios. Partly as a result, ratings on the outstanding debt of many bank holding companies were lowered. The downgradings mostly affected longer term debt, but ratings on some commercial paper and other short-term liabilities were lowered as well. Yield spreads on much of this debt widened considerably in expectation of or soon after these moves. Bank stock prices were on a downward course during most of the year.¹⁴

Negative sentiment toward the banking sector intensified in late summer. In September, two government agencies issued reports highlighting the fragility of the banking system. About the same time, Chase Manhattan Corporation encountered a much higher than expected rate on the auction repricing of some of its outstanding notes. Shortly thereafter, Chase announced far-reaching cost-cutting efforts, a reduction in the stock dividend, and a sizable addition to the bank's loan-loss reserves. These events were seen as symptomatic of industry-wide difficulties, and in fact they were soon repeated at several other large holding companies. In this environment, yields on much bank holding company debt soared—with spreads over comparable Treasury issues widening as much as 200 basis points in a matter of days for some of the most affected institutions. Demand for Treasury bills as a safe haven materialized when concerns over the health of the banking system were greatest. The pressures on many banks moderated a bit towards the end of the year, but investors remained uncertain about the financial position of many banks. Consequently, some banks report-

¹³The bank's extended credit borrowing ended in June. The bank was eventually seized by the Federal Deposit Insurance Corporation in January 1991.

¹⁴The unweighted average of stock price changes for thirteen of the nation's largest bank holding companies fell 40 percent for all of 1990.

¹²The spread is based on indexes provided by Donaldson, Lufkin and Jenrette.

edly had greater difficulty attracting deposits.

Banks responded to the increased financial strains they faced with some retrenchment in their loan activity. The volume of lending typically slows when an economy turns down because the demand for credit dries up and banks become more cautious in lending to borrowers whose ability to repay has fallen. However, in 1990, indications gradually accumulated suggesting that many banks had cut back on the availability of credit even to creditworthy borrowers, a development that was popularly characterized as a "credit crunch."¹⁵ To some degree this retrenchment was evidenced by commercial banks' reluctance to assume all the lending activity left by a shrinking savings and loan industry. Although the extent to which banks had deliberately reduced their willingness to supply credit remained unclear, the possible impact of such a cutback on the economy was a growing consideration in the Federal Reserve's formulation of monetary policy during the year.

Early in the year, evidence that banks had become more cautious in extending or renewing credit was mostly anecdotal. Highly leveraged borrowers and non-residential real estate developers in areas with significant inventories of unsold properties were said to be particularly affected. Also mentioned were many small- and medium-sized businesses—most of which lacked direct access to credit markets. Banks reportedly were responding to the growing uncertainties associated with lending for certain types of activities and to what they perceived as a greater stringency on the part of banking examiners in the evaluation of loan portfolios. Furthermore, many banks felt constrained in granting new loans by the scheduled application of tighter capital standards, especially at a time when problems with their existing loan portfolios were spreading. In this environment, many banks reportedly discouraged all but their most creditworthy customers from borrowing, either by directly limiting access to funds or by charging higher rates. The higher funding costs that banks themselves faced as the year progressed exacerbated this trend. Although direct evidence of a squeeze on credit remained fragmentary, from midsummer through the rest of the year the pervasive sluggishness in the monetary aggregates and the results of various lending surveys increasingly suggested that banks had become more reluctant to lend. Partly because of a reduced desire to extend new credit, as well as concerns about their year-end balance sheets, banks held off lowering their prime lending rates—despite generally declining market yields—until early 1991.

¹⁵The term "credit crunch" has often been used to describe a situation in which binding interest rate ceilings on deposits reduce banks' ability to attract funds and thus their capacity to lend, a situation which did not exist in 1990.

The money markets and year-end

In an atmosphere of increased credit concern, many borrowers encountered growing difficulties obtaining short-term financing in the commercial paper market. The downgrading of Chrysler Financial Corporation's commercial paper in June—to A3 by Standard and Poor's and to P3 by Moody's—served as a catalyst in focusing investor attention on the credit risks in this market in a slowing economy. Many financial companies found it more difficult to place their paper as their financial problems received increased attention. The exposure of money market mutual funds as major holders of commercial paper came under some scrutiny during the year, and the Securities and Exchange Commission put forth a proposal to limit these funds' holdings of less than top-rated paper.¹⁶ In this environment, quality spreads—yield differences between issues with different ratings—widened, and some borrowers were forced to seek alternative, sometimes more costly, sources of short-term financing.

The funding pressures that typically arise in money markets towards the year-end as institutions adjust their balance sheets for that important reporting date were aggravated in 1990 by these financial market strains. Corporate borrowers, cut off from alternative sources of short-term financing, increasingly turned to their committed credit facilities at banks. At the same time, however, many of these banks were discouraging new borrowing as they sought to improve their capital positions before the year-end statement date by constraining their balance sheets. In addition, with credit concerns rising, many lenders were pulling back on their credit lines to certain borrowers, including credit lines to many domestic banks; and some institutions were refraining from their customary arbitrage activities, creating some dislocation in the money market. Meanwhile, many banks were wary of borrowing at the discount window even for routine adjustment credit lest their borrowing somehow become known to the public and be misinterpreted as a sign of fundamental problems. Thus, adjustment credit borrowing from the discount window lost some of its value as a safety valve when pressures intensified.

The high demands of many branches and agencies of Japanese banks operating in the United States added to the year-end distortions. Like their U.S. counterparts, many Japanese banks faced growing strains in 1990 as plummeting equity prices and a sagging real estate market at home depressed their asset holdings just as they were struggling to comply with tighter capital

¹⁶This proposal was adopted with some modifications in February 1991, but most money funds had begun to adjust their portfolios to conform to its provisions before then.

standards. During the year, credit ratings of many Japanese banks were reduced by the U.S. ratings agencies. Larger Japanese banks that traditionally provided credit to regional Japanese banks cut back on this lending, forcing some borrowers out of the yen-denominated market in search of alternative funding for the year-end. At the same time, credit-sensitive U.S. lenders, particularly regional institutions that were less familiar with Japanese institutions, cut their own credit lines to these borrowers. Other lenders often declined to fill this funding gap, despite the profitable opportunities that occasionally emerged, because they wished to keep their balance sheets from expanding or to avoid carrying Japanese names on their books over the year-end.

In these circumstances, demand for funds covering the year-end emerged sooner than usual. Japanese institutions in particular were early, active borrowers of both term monies and forward two-day Eurodollars and federal funds. The dislocation in normal funding patterns also contributed to an upsurge in volatility of the federal funds rate, which swung from elevated levels to extreme lows on some days.¹⁷ The Desk acted aggressively to alleviate these pressures—particularly in late December—by providing reserves through open market operations. Relative calm returned to the money markets with the passing of the year-end, but many of the elements that contributed to these extraordinary funding pressures remained.

The monetary aggregates

Growth of the broader monetary aggregates, M2 and M3, decelerated in 1990 (Chart 5). Early in the year, M2 and M3 continued to advance in line with growth in the latter half of 1989. In the spring, however, a pervasive weakness emerged that was to last for the remainder of the year, except for a spurt of growth in late summer. Overall, M2 and M3 increased 3.9 percent and 1.7 percent, respectively, from the fourth quarter of 1989 to the final quarter of 1990. These rates of expansion left both aggregates in the lowest quarter of the FOMC's annual target growth cones at the end of the year. Growth of total domestic nonfinancial debt in 1990 was somewhat below the previous year's pace. Total debt expanded fairly steadily throughout the year, supported by a high rate of expansion in federal government borrowing. It rose 6.8 percent overall and finished slightly below the midpoint of its monitoring range. Meanwhile, after growing anemically in 1989, M1 grew a modest 4.2 percent in 1990. Boosted by exceptionally strong currency growth, M1 growth was in line with the pace of

expansion set in the second half of 1989.

The ongoing restructuring of the savings and loan industry depressed growth of the broader aggregates, and especially M3, to a greater extent than had been anticipated at the start of the year because of the unexpectedly strong pace of the RTC's restructuring activity. Much of this activity came in the late spring and early autumn. The downsizing of the savings and loan industry resulted primarily in a switching of deposits—out of thrifts and into other depositories—which by itself has no impact on the aggregates; however, some of the deposits of dissolved thrifts, especially managed liabilities, were reinvested in instruments not included in the monetary aggregates.

At the same time, commercial banks' funding requirements fell as their lending diminished. A slumping economy and more cautious lending behavior on the part of banks whose financial positions had deteriorated contributed to this decline in lending activity. The resulting weakening of the broader aggregates was viewed by the Committee with increasing concern. As banks cut back on their asset expansion, the gap between market interest rates and yields on banks' retail deposits widened beyond the average that had prevailed in the mid-to-late 1980s. The slowdown in M3 was more pronounced than that for M2 because many banks substituted cheaper and more stable retail deposits, which are included in M2, for more expensive and volatile time deposits and other managed liabilities found in M3. The strength of noncompetitive tenders at Treasury auctions during the year suggested that some of the funds leaving both banks and thrifts found their way into the government securities market.

In February, the FOMC reaffirmed the 1990 target range for M2 that had been tentatively established the previous July and that called for growth of 3 percent to 7 percent—the same range that had been set for 1989. The Committee lowered the target range for M3 to allow for the anticipated shrinkage of the thrift industry. The new range encompassed growth of 2½ percent to 6½ percent for M3 in 1990, compared with the tentative range established the previous July (and the 1989 range) of 3½ percent to 7½ percent. The 1990 ranges were considered consistent with sustained economic growth and the FOMC's continued commitment to price stability. The Committee maintained the width of its ranges for M2 and M3 at 4 percentage points, as it had done since 1988, because the rate of monetary growth associated with an acceptable economic performance remained subject to considerable uncertainty. In addition, the behavior of M3, and to a lesser degree M2, was rendered less predictable because of the uncertainty about the effects of thrift restructurings. These ranges were also expected to provide the Committee with

¹⁷The cut in reserve requirements made late in the year also contributed to an increase in the volatility of the federal funds rate. (See the discussion of the Desk's December operations below.)

Chart 5A

M2: Levels and Target Ranges

Cones and Tunnels

Billions of dollars

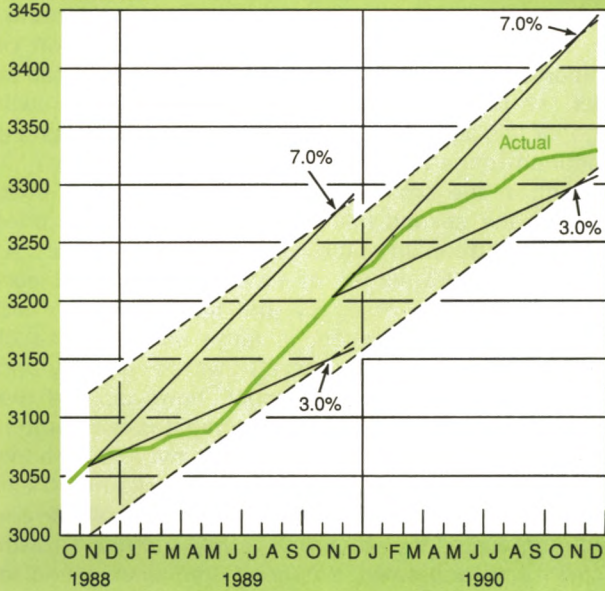


Chart 5B

M3: Levels and Target Ranges

Cones and Tunnels

Billions of dollars

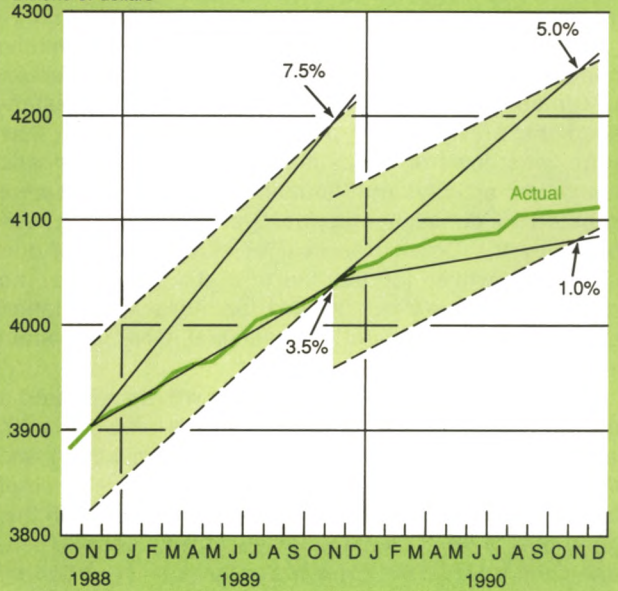


Chart 5C

Total Domestic Nonfinancial Debt: Levels and Monitoring Ranges

Cones and Tunnels

Billions of dollars

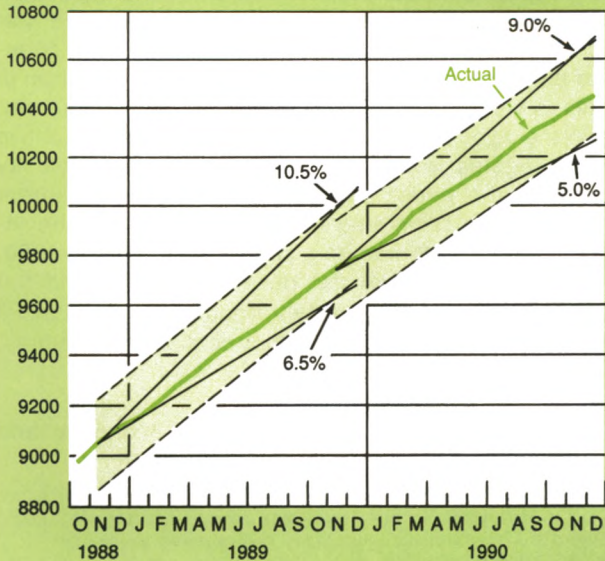
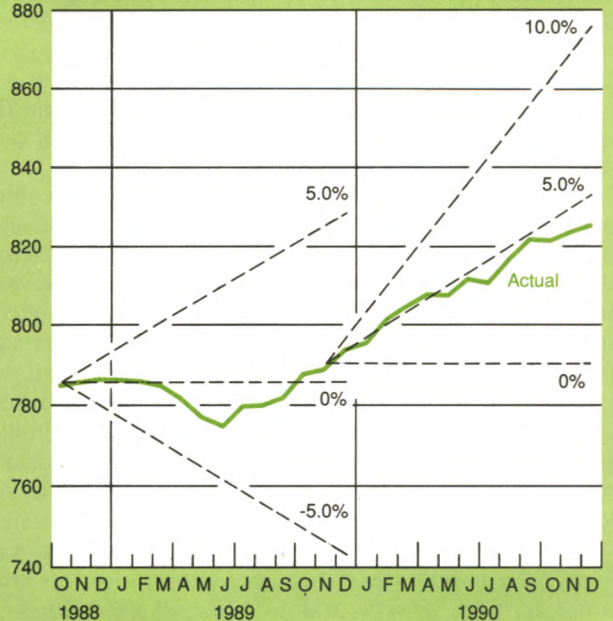


Chart 5D

M1: Levels and Growth Rates

Billions of dollars



ample leeway to pursue a more aggressive policy to restrain inflation should price pressures intensify. The Committee continued to evaluate money growth in light of progress towards price stability, movements in velocity, and developments in the economy and financial markets.

The FOMC set a monitoring range for total domestic financial debt growth of 5 percent to 9 percent, below the tentative 6½ percent to 10½ percent range established the previous July and the range for 1989. The range was lowered because corporate merger and acquisition activity and household debt growth were expected to diminish—prospective developments welcomed by the Committee in light of existing debt burdens. Meanwhile, for the fourth consecutive year no growth range was set for M1 because the relation between that aggregate and nominal GNP remained very uncertain.

During the first half of 1990, M2 growth decelerated a bit from the pace maintained late in the previous year. Early in the year, however, strength in transaction and other liquid accounts and a surge in currency—much of it apparently destined to go overseas—helped push this aggregate close to the top of its growth cone. Then, during the spring, M2 growth was gradually curbed by the rising opportunity costs of holding M2 balances, particularly money market mutual funds (MMMFs). A steeper yield curve reduced the attractiveness of rates on these funds compared with yields on competing Treasury securities of somewhat longer maturity. (Weakness in MMMFs may also have been a reaction to a rallying stock market, as evidenced by strong flows into equity mutual funds.) Rates on retail deposits, particularly certificates of deposit (CDs), were unusually slow to respond to the rise in market interest rates through April, further depressing M2 in the first half of the year. Still, M2 advanced at an average rate of 5.1 percent over the first two quarters.

Growth in M3 over the first half of the year came solely from M2; its non-M2 component fell dramatically. Declines were most evident in large time deposits. The fall in thrift time deposits had been expected; however, the declines seen at commercial banks were unanticipated because banks had been expected to pick up enough of the thrifts' loan business to have sought additional financing through large time deposit issuance. The weakness at commercial banks was attributed to the slackening pace of economic expansion and, increasingly, to banks' growing reluctance to lend. M3 expanded at a 2.1 percent annual rate over the first two quarters of 1990. Meanwhile, M1 grew at a 4.8 percent pace during this time, partly as a result of the strong currency growth; and debt rose at a 6.8 percent rate, buoyed by growing Treasury borrowing, some of

which was used to fund the RTC's activities.¹⁸

At its midyear review of the growth ranges for the broader monetary aggregates and debt, the FOMC set a new, lower range for M3 in 1990 of 1 percent to 5 percent. This move reflected the weakness in M3 to date, as well as expectations of continuing thrift resolution activity by the RTC and moderate expansion of commercial bank credit. These factors were expected to affect M2 to a much lesser degree, and the growth range for this aggregate was retained in July, as was the monitoring range for debt.

Growth in the broader aggregates tapered off even further in the second half of the year, despite a brief jump in the aftermath of the Iraqi invasion of Kuwait. At that time, MMMFs surged as investors fled the uncertainty and volatility of equity and bond markets, and currency sharply increased, in large part because of demands from the Middle East. Growth in currency and MMMFs decelerated by November, however, and the earlier weakness in the broader aggregates reemerged. The accelerated slippage in the economy, and perhaps to some degree, growing difficulties of banks in attracting funds as anxieties about their financial health deepened, aggravated the weakness in M2 and M3. Growth in small time and savings deposits remained sluggish late in the year despite declines in the opportunity costs of holding these deposits. The weakness in M2 was fairly broad-based, and the managed liability component of M3 shrank. Meanwhile, M1 growth remained robust in the second half of the year as a result of the late summer surge in currency growth.

The drop in deposit liabilities associated with the restructuring of the thrift industry and with banks' restrained lending behavior contributed to a significant 2.7 percent advance in the income velocity of M3 that extended the recent pattern of increases but ran counter to the declining long-run trend (Chart 6). The drop in liabilities also helped bring about a lesser, 0.6 percent, rise in the velocity of M2. Both increases were well above the aggregates' respective average rates of velocity growth for the period 1982-90 but not much different from the gains registered in 1989. Meanwhile, the income velocity of M1 was up a scant 0.3 percent in 1990, an increase well below the previous year's rapid 5.0 percent advance. The velocity for domestic nonfinancial debt fell 2.1 percent, in line with recent yearly declines.

The course of policy

During 1990, the FOMC responded to economic and

¹⁸Growth rates of M1 and M2 in the first half of the year were revised upward modestly by the benchmark and seasonal factor revisions. For the second half of the year, these revisions led to minimal changes in the growth rates of both aggregates, but M3 growth was raised modestly.

Chart 6A

M2 Velocity Growth

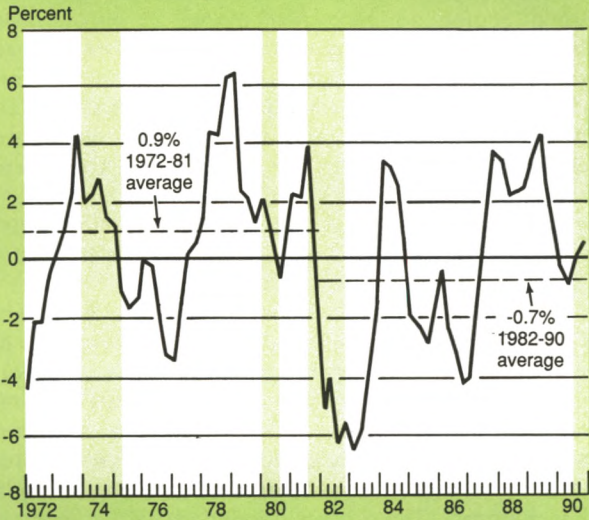


Chart 6B

M3 Velocity Growth

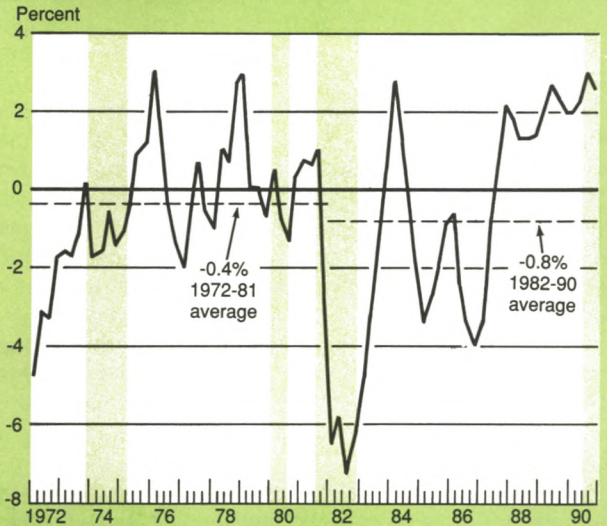


Chart 6C

Total Domestic Nonfinancial Debt Velocity Growth

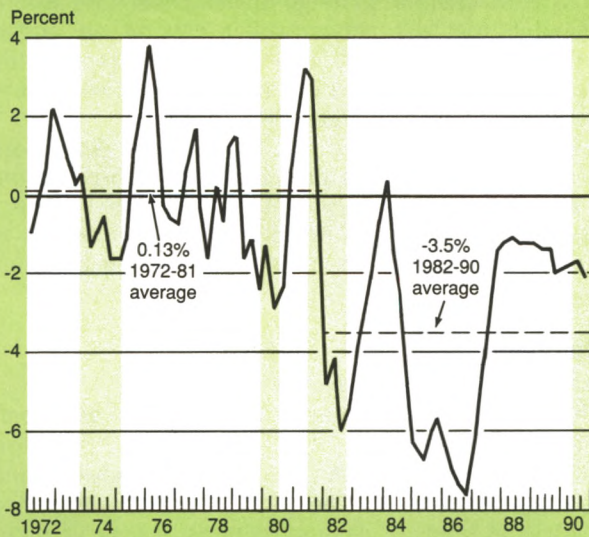
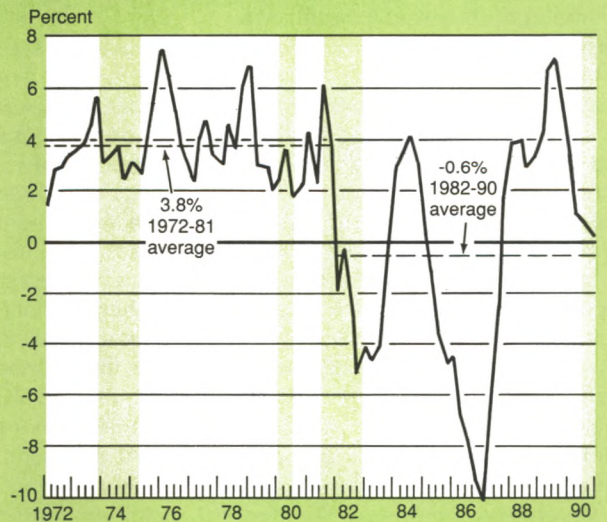


Chart 6D

M1 Velocity Growth



Notes: Velocity growth is measured from four quarters earlier. Shaded areas represent periods of recession as defined by the National Bureau of Economic Research.

financial developments by continuing the gradual easing of reserve pressures it had initiated in mid-1989. Following a move to ease reserve pressures in mid-December of 1989, the Committee's policy stance remained unchanged for nearly seven months because the risks of inflation and an economic softening were seen as about evenly balanced.

By mid-July, however, the risks appeared to be weighted in the direction of weakness in economic activity. Although the trend rate of inflation had shown no signs of improvement, progress toward reducing this rate was anticipated because the monetary aggregates had grown at moderate rates for an extended period and economic expansion was expected to continue at a pace below its potential. Meanwhile, indications such as a marked slowing in monetary growth in the second quarter suggested that credit conditions had become tighter than appropriate. To offset this unintended degree of restraint, reserve pressures were eased slightly on July 13.

The outlook for the economy and prices was not much changed just prior to the Iraqi invasion of Kuwait; however, the invasion and subsequent surge in oil prices introduced considerable uncertainty into the longer term prospects for both economic activity and inflation. In these circumstances, the Committee felt that it could best contribute to the nation's economic goals by fostering a stable policy environment. It therefore left reserve pressures unchanged following its August meeting, but it remained disposed toward ease.

The Committee took its second accommodative step in late October. When it met early in the month, evidence pointed to a significant risk of a much weaker economy, and protracted federal budget negotiations had recently produced a tentative accord that incorporated a significant degree of fiscal restraint. Chairman Greenspan was on record as declaring the agreement "credible," an assessment he had identified as a precondition to easing policy. In view of widespread market expectations that an easing would follow a budget pact, Committee members thought that an immediate easing could give rise to expectations of a further move once the package was enacted. Consequently, the FOMC decided to delay implementing its accommodative move until the budget agreement was approved. At that point, the enactment of a budget was thought to be imminent; however, the Congress rejected the original budget agreement. The easing did not occur until October 29, after a somewhat revised package was passed.

The Committee stepped up its pace of accommodation in November and December, easing its policy stance three times. Evidence received during this period indicated that a downturn in economic activity had begun and that financial conditions remained frag-

ile. While the contraction was expected to be mild and brief, the uncertain condition of many financial institutions and a curtailed supply of credit to many borrowers contributed to a risk that the downturn might be more severe or prolonged. Moreover, money growth slowed further, and underlying inflation pressures were expected to moderate somewhat. In these circumstances, the Committee eased reserve pressures following its November meeting and carefully monitored the incoming information for signs that additional accommodation would be appropriate. Data received in early December confirmed that additional easing steps were called for, and the Committee acted at that time and again following its December meeting.

In December, the accommodative moves were not confined to reserve pressures but were extended to other policy tools. On December 4, the Board of Governors announced that it would eliminate reserve requirements on nonpersonal time deposits and on Eurocurrency liabilities by cutting the reserve requirement ratios on these deposits in two steps beginning in mid-December.¹⁹ The timing coincided with a normal seasonal rise in reserve needs and therefore limited the size of the open market operations called for to absorb the reserves released by the cuts. Lower requirements were expected to reduce costs for depository institutions holding more reserves to meet requirements than necessary for clearing purposes, because institutions do not earn interest on reserve balances. The Board anticipated that the action would provide an added incentive for these institutions to lend to creditworthy borrowers and thus would counter, to some extent, the observed tightening in credit terms.

Soon after, on December 18, the Board of Governors approved a cut in the discount rate to 6½ percent from the 7 percent rate that had prevailed since February 1989. It took the step in response to the weakness in the economy, constraints on credit, and anemic money growth.

Policy implementation

Behavior of discount window borrowing

Implementation of open market policy in 1990 was complicated by the continued deterioration of the relationship between discount window borrowing and the federal funds rate. The FOMC specifies its policy objectives in terms of desired degrees of reserve pressure, a concept associated with attaining a specified

¹⁹The Board reduced the reserve requirement ratio for nonpersonal time deposits with an original maturity of less than eighteen months to 1½ percent, from 3 percent, for the reserve maintenance period running from December 13 to December 26 and then eliminated the requirement in the following maintenance period. Time deposits maturing in eighteen months or more have been exempt from reserve requirements since 1983.

mix of nonborrowed and borrowed reserves.²⁰ By managing nonborrowed reserves, the Desk seeks to achieve a chosen level of borrowed reserves, which are supplied by the discount window under the adjustment and seasonal programs.²¹ The portion of required reserves not

provided as nonborrowed reserves must be borrowed from the discount window if reserve deficiencies are to be avoided. As long as there is a predictable degree of reluctance to borrow, a specified level of borrowing is expected to be consistent with a particular degree of money market pressure, as measured by the spread between the federal funds rate and the discount rate. In recent years, however, depository institutions have become less willing to borrow from the discount window; thus, a larger spread between the federal funds

²⁰See Ann-Marie Meulendyke, *U.S. Monetary Policy and Financial Markets* (Federal Reserve Bank of New York, 1990), chap. 6, for a complete discussion of the borrowed reserve operating procedure.

²¹Reserves can also be borrowed under the extended credit program. This facility is used by depository institutions in financial difficulty. Institutions borrowing under this program are expected to concentrate on resolving their basic problems instead of seeking funds to repay the loan; thus, their borrowing is more likely to be for extended periods than for the short intervals of adjustment

Footnote 21 continued

borrowing. Institutions borrowing under the extended credit program may be charged an above-market rate that exceeds the basic discount rate.

Table 2

Specifications from Directives of the Federal Open Market Committee and Related Information

Date of Meeting	Specified Short-Term Growth Rates		Borrowing Assumption for Deriving NBR Path (Millions of Dollars)	Associated Federal Funds Rate† (Percent)	Committee Preference for Degree of Reserve Pressure	Prospective Reserve Restraint Modifications				
	M2	M3				Guidelines for Modifying Reserve Pressure	Factors to Consider for Modifications (In Order Listed)			
							1	2	3	4
12/18 to 12/19/89	November to March 8½	5½	150 on 12/20‡	8.50 on 12/20	Decrease slightly	A slightly greater or slightly lesser degree would be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
2/6 to 2/7/90	December to March 7	3½	125 on 2/8§	8.25	Maintain	A slightly greater or slightly lesser degree would be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
3/27/90	March to June 6	4	150 on 4/26§ 200 on 5/3§	8.25	Maintain	A slightly greater or slightly lesser degree would be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
5/15/90	March to June 4	3	300 on 5/17§ 400 on 6/14§ 450 on 6/28§	8.25	Maintain	A slightly greater or slightly lesser degree would be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
7/2 to 7/3/90	June to September 3	1	450 on 7/13‡ 450 on 7/26§ 500 on 8/2§	8.25 on 7/13	Maintain	A slightly greater degree might be acceptable. A slightly lesser degree would be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets

†The middle of the federal funds rate trading area that is expected to be consistent with the borrowing assumption. The discount rate remained at 7 percent from the beginning of the year until December 19, when it was reduced to 6.50 percent.

‡Change in borrowing assumption reflects change in reserve pressures.

§Change in borrowing assumption reflects technical adjustment.

rate and the discount rate has been needed to induce institutions (in the aggregate) to borrow the amount assumed by the Committee. (Notes on the FOMC directives, the expected degree of money market firmness, and the borrowing assumptions used to construct the reserve paths are in Table 2.)

During 1990, the reluctance to borrow from the discount window became even more pronounced. Against the backdrop of the savings and loan associations' ongoing difficulties, developments in leveraged buyout and real estate lending raised public concerns about the financial health of depository institutions. The Bank of New England was a focus of attention early in the year. Then, between September and year-end, con-

cerns about a number of large banks intensified as a result of reports of large losses, dividend reductions, and mounting evidence of an economic downturn. Moreover, throughout this period there was heavy media coverage of those institutions considered to be under earnings stress.

This intense scrutiny by the press tended to reinforce the perception that depository institutions borrowing from the discount window were in financial straits.²²

²²Attention has focused on adjustment borrowing. Seasonal borrowing, used primarily by small agricultural banks during the growing season when their loan demand is seasonally strong, has not been affected.

The Federal Reserve does not release data on individual bank

Table 2

Specifications from Directives of the Federal Open Market Committee and Related Information
(Continued)

Date of Meeting	Specified Short-Term Growth Rates		Borrowing Assumption for Deriving NBR Path (Millions of Dollars)	Associated Federal Funds Rate [†] (Percent)	Committee Preference for Degree of Reserve Pressure	Guidelines for Modifying Reserve Pressure	Prospective Reserve Restraint Modifications			
	M2	M3					Factors to Consider for Modifications (In Order Listed)			
	(Percent)						1	2	3	4
8/21/90	June to September 4	M3 2½	500	8.00	Maintain	A slightly greater degree <i>might</i> be acceptable. A somewhat lesser degree <i>would</i> be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
10/2/90	September to December 4	2	500 450 on 10/4 [‡] 400 on 10/18 [§] 350 on 10/29 300 on 11/8 [¶]	8.00 7.75 on 10/29	Maintain	A slightly greater degree <i>might</i> be acceptable. A somewhat lesser degree <i>would</i> be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
11/13/90	September to December 1-2	1-2	300 225 on 11/14 200 on 11/23 [§] 150 on 12/6 [¶] 125 on 12/7 [‡] 100 on 12/13 [¶]	7.75 7.50 on 11/14 7.25 on 12/7	Decrease slightly	A slightly greater degree <i>might</i> be acceptable. A somewhat lesser degree <i>would</i> be acceptable	Progress toward price stability	Strength of the business expansion	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets
12/18/90	November to March 4	1	100 125 on 12/19 ^{††}	7.25 7.00 on 12/19	Decrease slightly	A slightly greater degree <i>might</i> be acceptable. A somewhat lesser degree <i>would</i> be acceptable	Progress toward price stability	Trends in economic activity	Behavior of the monetary aggregates	Developments in foreign exchange and domestic financial markets

[†]The middle of the federal funds rate trading area that is expected to be consistent with the borrowing assumption. The discount rate remained at 7 percent from the beginning of the year until December 19, when it was reduced to 6.50 percent.

[‡]Change in borrowing assumption reflects change in reserve pressures.

[§]Change in borrowing assumption reflects technical adjustment.

^{||}Change in borrowing assumption reflects technical adjustment and a change in reserve pressures.

^{††}The borrowing assumption was increased so that only part of the accommodation from the cut in the discount rate would show through to the market.

This perception is, in fact, not consistent with long-standing practices or with the periodic needs of the banking system. From time to time, healthy institutions find themselves unexpectedly short of reserves late in the day, perhaps because reserve position managers were not informed of a large deposit outpayment or because an expected inflow of funds did not materialize. In such circumstances, the institutions generally turn first to the federal funds market and other money markets, but they may not be able to obtain enough funds at reasonable rates to meet their needs if reserves are

Footnote 22 continued

borrowing. However, it may occasionally be possible for other banks to infer the probable identity of a borrower from their observation of the institution's behavior in the funds market or from the district-by-district Federal Reserve data published for Wednesdays.

scarce for the banking system as a whole. Previously, when such systemwide shortages prevailed, banks would bid for funds in the market until rates rose to a level sufficiently high above the discount rate to induce institutions short of reserves to come to the window for adjustment credit.²³ The additional reserves thus introduced would relieve the institutions' own reserve deficiencies and, with them, the systemwide shortage. Recently, with the heightened reluctance on the part of many institutions to borrow, banks have been bidding the funds rate to very high levels as they seek to avoid borrowing. Nonetheless, when the entire system is

²³The Federal Reserve extends such credit for a limited time period, usually one day to two weeks, depending on the size and nature of the institution involved.

Table 3

1990 Reserve Levels

(Millions of Dollars, Not Seasonally Adjusted)

Period Ended	Required Reserves (Current)	Required Reserves (First Published)	Excess Reserves (Current)	Excess Reserves (First Published)	Total Reserves	Adjustment and Seasonal Borrowed Reserves	Nonborrowed Reserves plus Extended Credit Borrowed Reserves (Current)	Nonborrowed Reserves plus Extended Credit Borrowed Reserves (First Published)	Nonborrowed Reserves Interim Objective [†]	Extended Credit Borrowed Reserves
Jan. 10	63,844	63,962	1,117	1,020	64,961	320	64,641	64,661	65,042	19
24	61,627	61,668	841	958	62,468	273 [‡]	62,195	62,355	62,520	27
Feb. 7	59,735	59,774	1,220	1,217	60,955	832 [§]	60,123	60,159	60,573	33
21	59,585	59,599	968	992	60,553	1,348	59,205	59,245	60,430	133
Mar. 7	59,633	59,643	797	816	60,430	126	60,304	60,333	60,443	1,841
21	59,997	60,020	737	832	60,734	184	60,551	60,669	60,820	1,995
Apr. 4	59,633	59,640	1,078	1,120	60,711	192	60,519	60,568	60,440	1,965
18	62,675	62,600	665	782	63,341	206	63,135	63,176	63,448	1,676
May 2	61,040	61,081	1,105	1,138	62,145	257	61,889	61,963	61,844	899
16	59,657	59,865	927	862	60,584	303	60,281	60,423	60,514	673
30	58,526	58,603	1,011	1,014	59,537	625	58,912	58,992	59,220	1,098
June 13	60,709	60,801	479	348	61,188	732	60,456	60,417	61,432	559
27	60,046	60,042	1,020	1,072	61,066	383	60,683	60,731	60,574	183
July 11	60,944	60,957	898	841	61,842	399	61,443	61,399	61,522	182
25	59,609	59,611	875	837	60,484	534	59,950	59,914	60,172	298
Aug. 8	59,599	59,617	764	709	60,363	489	59,874	59,836	60,024	419
22	60,367	60,292	910	1,019	61,277	1,086	60,192	60,225	60,790	38
Sept. 5	59,304	59,365	893	848	60,197	631	59,566	59,582	59,688	8
19	61,546	61,577	746	733	62,292	701	61,591	61,610	62,027	5
Oct. 3	59,832	59,739	1,122	1,243	60,954	507	60,447	60,474	60,115	9
17	61,021	61,099	984	956	62,004	388	61,616	61,668	61,658	13
31	59,471	59,534	650	635	60,121	372	59,749	59,798	60,145	26
Nov. 14	61,132	61,249	982	915	62,114	257	61,857	61,907	61,947	25
28	61,006	61,034	966	1,055	61,972	169	61,804	61,921	61,785	25
Dec. 12	61,513	61,618	561	497	62,073	106	61,968	62,010	62,431	25
26	56,113	56,017	1,922	2,111	58,034	482	57,552	57,646	57,569	22

Note: The allowance for excess reserves generally was \$950 million. In the period ended January 10, it was \$1.2 billion. In the period ended December 26, it was set at \$1.5 billion initially and then raised to \$1.7 billion to reflect both year-end demands and increased demands during the phase-in of the reserve requirement cut.

[†]As of the final Wednesday of the reserve period.

[‡]Includes \$111 million of special situation adjustment borrowing, which was treated as nonborrowed reserves.

[§]Includes \$665 million of special situation adjustment borrowing.

^{||}Includes \$1,096 million of special situation adjustment borrowing.

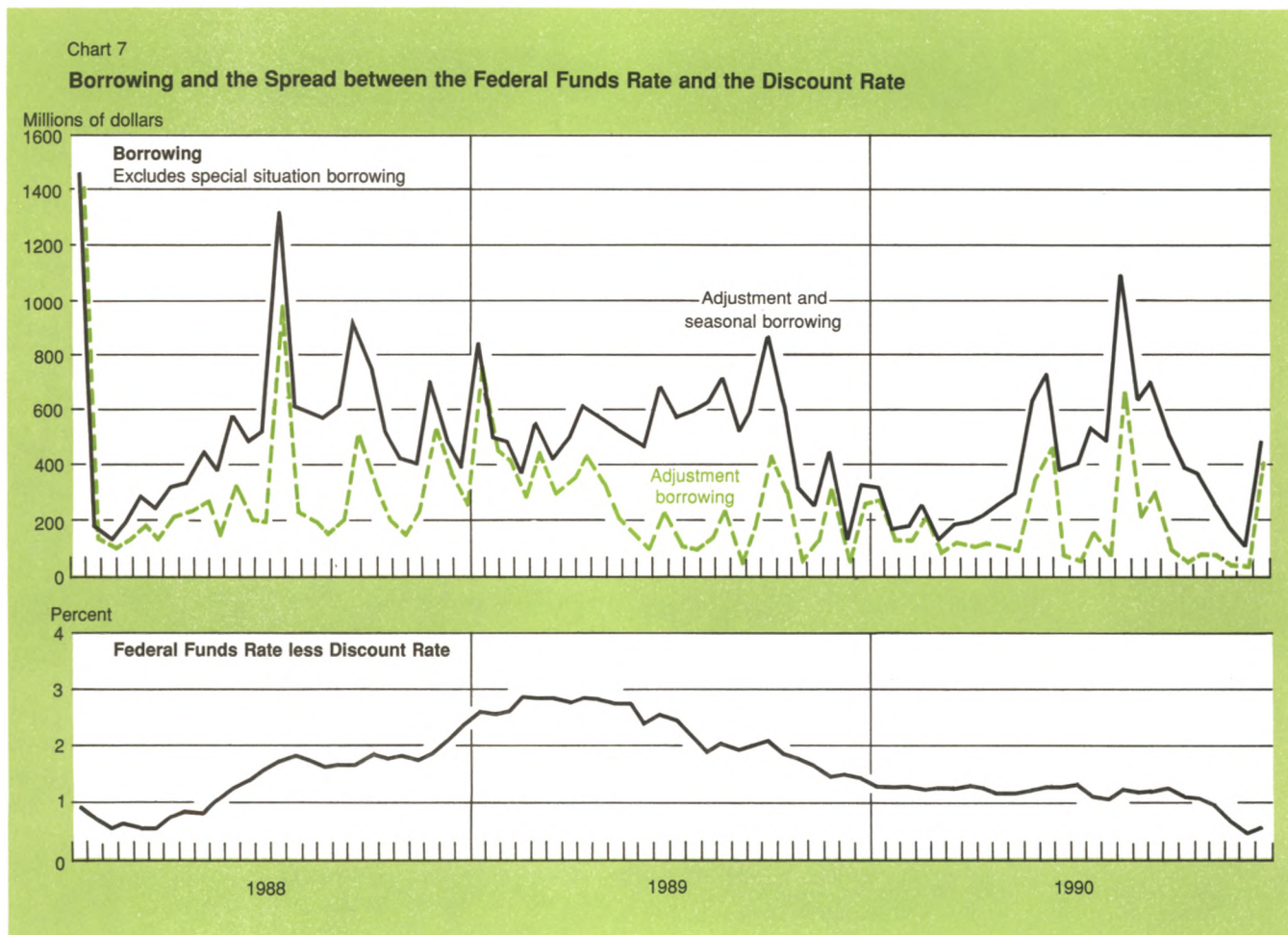
short of reserves, the borrowing must occur because there is no other way for the banking system as a whole to obtain reserves late in the day.

In part reflecting the reluctance to borrow, adjustment borrowing was typically very light in 1990, as it had been in the latter half of 1989. (Actual reserve levels appear in Table 3.) Contributing to the light borrowing were the generally narrower spreads of the funds rate over the discount rate. Narrower spreads emerged as policy became more accommodative and the discount rate was held at 7 percent for most of the year. During many maintenance periods, adjustment credit was very low until the final day, when borrowing sometimes rose in the face of settlement day pressures. The low point for adjustment borrowing in 1990 occurred in the December 12 maintenance period, when borrowing averaged a minimal \$19 million at a time when the average funds rate exceeded the discount rate by 43 basis points (Chart 7). This average for adjustment

borrowing was the lowest since July 1980, a period when the funds rate was considerably lower than the discount rate.

For the year, adjustment credit averaged \$231 million, while the spread between the funds rate and the discount rate averaged 112 basis points. Early in the year, however, the Bank of New England borrowed steadily for about a month under the adjustment credit program. This special situation borrowing was treated as akin to extended credit borrowing, and the Desk disregarded it in assessing how adjustment borrowing was behaving. Later borrowing by the institution was formally classified as extended credit borrowing. Excluding the special situation borrowing, average adjustment credit was \$159 million. Comparable figures for 1989 and 1988 were \$243 million and \$293 million per day, while spreads averaged 228 basis points and 137 basis points, respectively.

Seasonal borrowing followed its typical pattern of

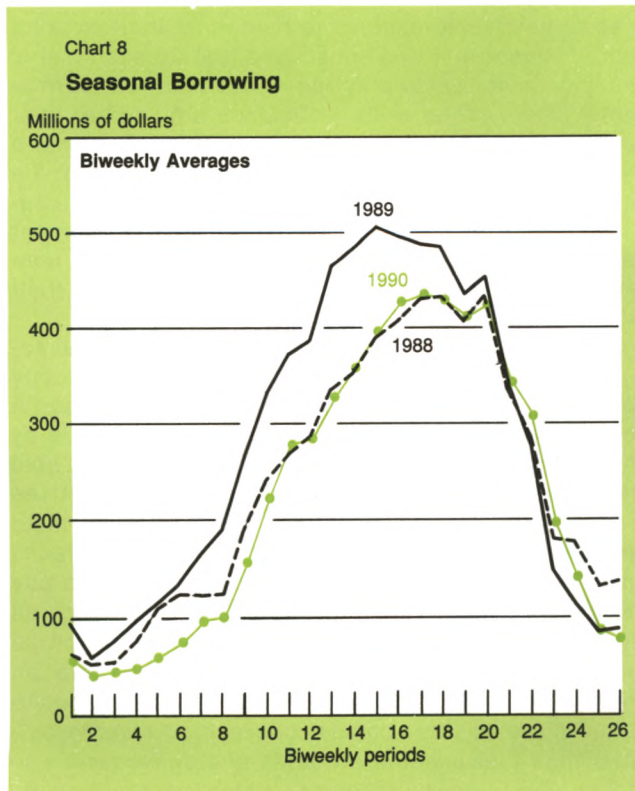


rising in the spring and declining in the fall (Chart 8). The rise in seasonal borrowing was accommodated through eight increases in the borrowing allowance from February through August, while its decline was reflected in six reductions in the allowance from October through the year-end. On two occasions, October 29 and November 14, reductions were made both to reflect routine decreases in seasonal borrowing and to reduce reserve pressures. Seasonal borrowing peaked in the August 22 maintenance period at an average \$432 million per day.²⁴ For the year as a whole, seasonal borrowing averaged \$223 million, compared with \$274 million in 1989 and \$235 million in 1988.

Operating procedures

The Committee formally followed a borrowed reserve operating procedure in 1990; however, it took account of the uncertain relationship between borrowing and the federal funds rate, as it had in the previous two years. The Desk treated the intended levels of borrowing flexibly in order to achieve the desired policy stance, designed so that federal funds generally traded in a

²⁴Peak period averages in 1989 and 1988, respectively, were \$509 million (July 26 period) and \$433 million (October 5 period).



narrow range around the Committee's expected rate. The Desk continued to evaluate estimated needs to add or drain reserves when planning the nature and size of its daily operations, but it was also guided by the funds rate prevailing before its typical market entry time, around 11:30 a.m. to 11:40 a.m., when determining whether to perform an operation. Market participants focused on the federal funds rate as an indicator of the Federal Reserve's policy stance, even though the Federal Reserve does not have complete control over this rate.

One complication of paying greater heed to the funds rate was that federal funds at times traded at rates that were not consistent with reserve projections made by the staffs of the New York Reserve Bank and the Board of Governors. Such inconsistencies often occurred when market participants expected an imminent shift in the Federal Reserve's policy setting. At these times, the funds rate sometimes reflected the expected policy move instead of the current reserve picture. In these circumstances, the Desk usually deferred addressing the reserve situation rather than risk misleading market participants about the stance of policy. Indeed, after the experience of late November 1989, the Trading Desk sought to signal policy moves more clearly in 1990 in an effort to minimize the possibility of misunderstanding.²⁵

Open market operations and reserve management

In 1990, the System's portfolio of securities grew by \$12 billion, somewhat below the average annual increase of \$14.3 billion registered over the 1981-88 period. In the first eleven months of the year, the portfolio showed an increase of \$18.7 billion, the bulk of which was in Treasury bills. In December, however, the Desk reduced the portfolio by \$6.7 billion to absorb part of the reserves released by the cuts in reserve requirement ratios. This contraction was accomplished through sales of Treasury securities to foreign accounts and redemptions of bills at auctions.

As usual, the primary motivation for growth in the portfolio during the year was to offset reserve drains from currency issuance. Currency rose at an exceptionally rapid pace, primarily because of a dramatic surge in shipments to foreign countries. The \$26.1 billion growth in currency was the largest ever and about twice that recorded in the previous year. Other factors that can affect the supply of reserves were mostly trendless in 1990, although holdings of foreign currency and special drawing rights increased reserve levels modestly over the year. In contrast, foreign currency acquisitions added considerably to reserve levels in

²⁵See "Monetary Policy and Open Market Operations during 1989," Federal Reserve Bank of New York *Quarterly Review*, vol. 15, no. 1 (Spring 1990), p. 63.

1989 and led the Desk to reduce its portfolio of U.S. Treasury securities.

Weakness in total reserve demand restrained somewhat the need to expand the portfolio over the first eleven months of the year. Required reserves fell by \$2.3 billion between the reserve maintenance period ended January 10 (which included year-end 1989) and that ended December 12 because reservable deposit growth was slow and deposits were at their seasonal peak at the start of the year. Required reserves then declined by \$10 billion in the next two reserve maintenance periods—less than the \$13½ billion released by the reserve ratio reduction because of the seasonal increase in transactions deposits. Meanwhile, the drop in reserve demand related to the cut in requirements was partially offset by elevated excess reserve demands (described below).

Desk operations: January through November

The Desk made outright purchases of Treasury bills in the market on five occasions when reserve projections suggested large, sustained needs to add reserves.²⁶ (The appendix gives details of portfolio changes.) The pattern of purchases in 1990, as in most years, generally reflected seasonal variation in currency growth and Treasury balances. A purchase on October 31 was in part necessitated by the reserve drain created from the unwinding of a warehousing transaction involving deutsche marks. Later, a transaction on November 28 was smaller than usual in anticipation of the cut in reserve requirements announced six days later.

In April, the Desk usually adds to the System portfolio because required reserves rise as taxpayers build transactions deposit balances to handle tax payments and because high tax receipts swell the Treasury's balance at the Federal Reserve. In April 1990, the Desk expanded the portfolio by nearly \$6 billion, somewhat less than the average increase of recent years because the Treasury balance was far below its usual late April levels. In 1990, an unusually large \$38 billion of cash management bills matured soon after the tax payment date. Paying off these bills depressed the Treasury's balance at the Federal Reserve relative to its typical late April levels. Furthermore, tax receipts were lower than normal.

Desk operations: December

The reserve requirement cut had a profound impact on the reserve management strategies of depository institutions and the Trading Desk. Total required reserves on nontransactions deposits had been met by about \$11¾

billion of deposits at the Federal Reserve and about \$1¾ billion of vault cash. The reduction in requirements enabled additional institutions to meet their reserve requirements entirely with vault cash, while others found that the level of balances that they were required to hold at the Federal Reserve fell sharply. At the same time, many depository institutions found that they needed to hold reserves for clearing purposes in excess of their new lower requirements. Depository institutions' reserve accounts are used to process hundreds, or perhaps even thousands, of transactions each day, and their reserve balances swing sharply during the course of the day. Institutions can project these swings to some extent but also face late day surprise inflows and outflows. As a result, they try to hold positive balances in their accounts to guard against being inadvertently overdrawn at the end of the day. In many cases, the balances needed to avoid such overdrafts are close to or exceed those needed to meet requirements.

The Trading Desk recognized that, following the cut in reserve requirements, demands for excess reserves would probably far exceed typical levels, but it could not quantify with any precision how much depository institutions would want to hold and for what length of time. The cut in requirements was expected to lift permanently the banking system's demand for excess reserves because many depository institutions would need to hold such reserves to help meet their clearing needs. Moreover, it was anticipated that excess reserve demand would temporarily run above this new, permanently higher range while institutions adjusted to their new levels of requirements. Past experience was not a good guide in helping to determine either the size or the persistence of the elevated demands because the magnitude of the reductions for Federal Reserve member banks was unprecedented and because neither non-member nor foreign institutions had ever had their requirements reduced.

Gauging excess reserve demands in future maintenance periods was also complicated by uncertainty about the volume of required clearing balances. A depository institution can establish such a balance by specifying an average level of reserves that it will hold on deposit at the Federal Reserve for clearing purposes in addition to any balances that it must hold to meet reserve requirements. In exchange, it receives credits on its required clearing balance that it can use to pay for priced services from the Federal Reserve, such as check processing. Thus it earns implicit interest on its required clearing balances. These balances are an attractive way for institutions that use priced services to obtain some cushion against unexpected reserve outflows from their reserve accounts and consequently to reduce their excess reserves, which by law pay no

²⁶The Desk sold bills in the market on one occasion early in the year when required reserves and currency were declining seasonally.

interest. The Desk knows required clearing balances for a given maintenance period at the beginning of that period, but not those for future periods. Thus, the Desk anticipated that future demands for excess reserves would be relieved to some extent by the opening of required clearing balances, but it could only make rough estimates about the extent to which depository institutions would choose such balances.²⁷

The reserve requirement reductions made it necessary to drain reserves to avoid leaving the banking system with excess reserve levels far more massive than it could want; however, the magnitudes of the reserve drains were highly tentative because the extent of the increase in excess reserve demand was uncertain. Consequently, the Desk drained reserves cautiously because it did not want to withdraw too many reserves and thus create undesired firmness in the money market, especially around the year-end when demands for liquidity were high. The Desk therefore eschewed an outright market transaction in December. Instead, it opted to reduce the portfolio gradually by running off \$1 billion of maturing bills at the Treasury bill auctions each week for four weeks and by selling about \$2.7 billion of securities to foreign accounts.

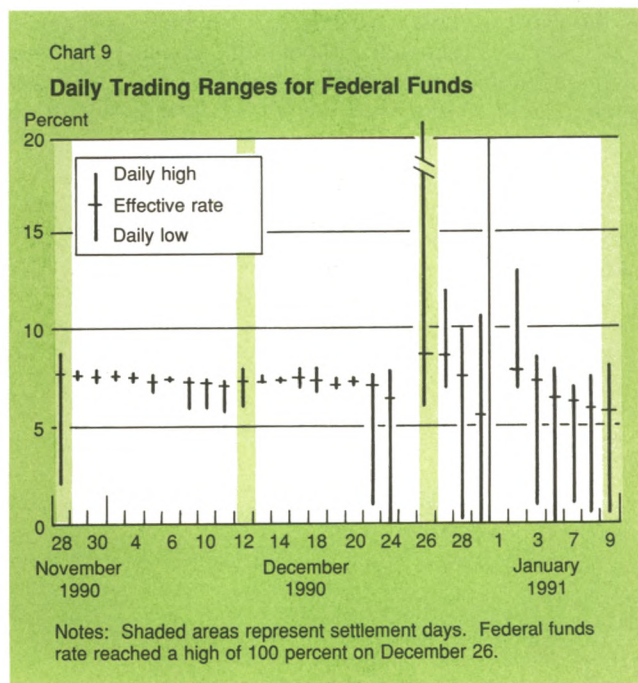
Unusually high demands for year-end funding complicated the Desk's ability to drain reserves in late 1990. Year-end funding demands were greatest in late November and again in mid-to-late December. Japanese banks, in particular, were early aggressive borrowers of both term monies and forward two-day funding for December 31 and January 1.

Depository institutions managed their reserve positions cautiously during the December 26 maintenance period, which contained the first phasedown of requirements. The funds rate was often firm in the morning, especially in the second week. The Desk responded with what it estimated were generous reserve provisions, so that a sizable cushion of excess reserves had been built up by the settlement day. Indeed, funds trading touched a low of $\frac{1}{16}$ of 1 percent late on December 24. On the December 26 settlement day, the Desk refrained from market action to affect reserves because federal funds were trading on the soft side, projections suggested that reserve supplies were ample, and the cushion of excess reserves was sizable. But an unexpected shortfall in reserve supplies, a maldistribution of reserves, and sharply higher than anticipated demands for excess reserves all contributed to a late day spike in the federal funds rate, which reached a record high of 100 percent before closing at a lofty 80 percent.

Reserve market pressures were aggravated that day by demands from foreign and regional banks, some of which apparently had little or no collateral on deposit with the Federal Reserve to pledge against a loan from the discount window. In the end, a number of institutions borrowed; adjustment and seasonal borrowing soared to nearly \$5 billion, while excess reserves, which had averaged about \$900 million in the first twenty-five maintenance periods of the year, rose to \$1.9 billion.

The true extent of the demand for excess reserves was especially difficult to measure during the following maintenance period, which ended January 9, 1991. The demand for excess reserves is generally high around the year-end because depository institutions face uncertain reserve flows in view of the massive shifting of funds that occurs as entities dress up their balance sheets. In 1990, excess reserve demand was expected to be sharply above even this elevated level because of the cut in requirements. On December 27, the first day of the period, a firm funds rate reflected nervousness about funding over the year-end, in part because of the tight market at the close on the previous day. The Desk sought to assure market participants that it was prepared to provide ample liquidity; it entered the market early to arrange a sizable round of overnight System repurchase agreements (RPs) for that day (\$6 billion), and it took the unprecedented step of making commitments for a two-day System RP on Monday, December

²⁷Required clearing balances rose from \$1.8 billion in the maintenance period ended December 12 to nearly \$2 billion in the period ended January 9, 1991. They continued to rise in early 1991.



31, that would span the New Year's Day holiday. It arranged \$15.7 billion of System RPs on this basis—one of the largest volumes ever arranged—out of requests for nearly \$34 billion. Nonetheless, depository institutions bid up the funds rate in early trading on Friday and Monday, December 28 and 31, despite large cushions of accumulated excess. The Desk again entered the market early on Friday and arranged \$11 billion of over-the-weekend System RPs. On Monday, it added another \$2.7 billion of reserves with a two-day operation, supplementing the substantial volume of pre-arranged transactions. The reserve additions wound up exceeding demand; funds closed at zero at one broker on that day.

The Desk's generous reserve provision in the face of large demands from the banking system created roughly \$10 billion of excess reserves during the first week of the period. Once the year-end passed, depository institutions sought to pare their excess reserve holdings. In order to do so, they had to hold reserve balances that were likely to be insufficient for clearing purposes. Since their reserve needs for clearing purposes were uncertain until late on most days, they held onto their reserves for much of the day, thus keeping the funds rate on the firm side. Then, late in the day, they released the reserves into the federal funds market, and the funds rate plunged. Consequently, the funds rate showed unusually large intraday swings (Chart 9).

Forecasting reserves and operating factors

As the Desk formulated a strategy for meeting reserve needs, it took account of potential revisions to the estimated demand for and supply of reserves. On the demand side, these revisions could take the form of

changes in estimated required reserve levels or in the banking system's desired excess reserve balances. On the supply side, revisions to operating factors could change the reserve outlook. In both cases, revisions late in the maintenance period were especially difficult to deal with since they could necessitate very large reserve operations.

Staff forecasts of reserve levels in 1990 were about as accurate as those in 1989. Forecasts of required reserves and excess reserves improved modestly, on average, while forecasts of operating factors were comparable in accuracy to those made in the previous year. As usual, forecasts of both the demand for and the supply of reserves improved as the maintenance period progressed because additional information became available. Mean absolute forecast errors were cut roughly in half by midperiod and reduced substantially by the final day of the period. (See appendix for details.)

The two operating factors that proved hardest to forecast in 1990 were the Treasury's balance at the Federal Reserve and currency growth. Large forecast errors for the Treasury balance were made in April and September, two months with major tax dates. In April, tax flows fell below expectations and differed substantially from typical historical patterns. In late September, tax receipts exceeded initial forecast levels, while expenditures were lower than expected. Meantime, forecasts of currency generally fell short of actual levels over the first three quarters of the year. The underpredictions were especially large following the Iraqi invasion of Kuwait, when shipments of U.S. currency abroad surged. In the fourth quarter, when the strong growth of currency abated somewhat, forecasts generally overestimated currency growth.

Appendix: Reserve Management and the System Open Market Account

This appendix summarizes outright and temporary transactions conducted by the Trading Desk in 1990 and the factors that prompted them. A final section reviews the accuracy of staff estimates of the supply of and demand for reserves, estimates that help to determine the Desk's reserve management strategy.

Outright changes in the System portfolio

Total System holdings of U.S. government securities rose \$12.0 billion in 1990 to end the year at \$247.6 billion (Table A1).[†] This rise contrasted sharply with the record \$10.2 billion decline in 1989, but it was somewhat below the average increase recorded over the 1985-88 period. In the first eleven months of 1990, when the full increase for the year occurred, the \$18.7 billion net expansion exceeded the pace set over the corresponding period in 1988, when the portfolio expanded by \$13.1 billion. The pre-December expansion in 1990 offset reserve drains from operating factors.[‡] In December, however, the portfolio was reduced by \$6.7 billion in response to the cuts in reserve requirement ratios. For the entire year, the System portfolio grew at less than half the pace of total

[†]This level is reported on a so-called commitment basis. It reflects the commitment made on December 28 to sell \$20 million of Treasury bills to foreign accounts for delivery on January 2, 1991, and the commitment, made on the final business day of 1990, to redeem \$1 billion of Treasury bills on January 3, 1991. It excludes the temporary changes in the portfolio from the execution and repayment of MSP transactions with foreign accounts because the sales include commitments to repurchase the securities. It also excludes RP operations because they are temporary in nature and are arranged for the Federal Reserve Bank of New York account rather than the System account.

[‡]Operating factors are sources and uses of nonborrowed reserves other than Desk-initiated open market operations in government securities. Operating factors include the Treasury's Federal Reserve balance and the System's foreign currency assets.

Table A1

System Portfolio: Summary of Holdings (Billions of Dollars)

	Year-End 1990 Holdings	Change from:		
		Year-End 1989 to Year-End 1990	Year-End 1988 to Year-End 1989	Year-End 1987 to Year-End 1988
Total holdings	247.6	12.0	-10.2	14.5
Bills	118.7	11.8	-11.1	5.4
Coupons	122.6	0.4	1.3	9.7
Agency issues	6.3	-0.2	-0.4	-0.6

Notes: Holdings are reported on a commitment basis. Totals may not add because of rounding.

marketable Treasury debt, and the System's share of such debt fell nearly 1 percentage point to 11.1 percent.

Composition of the System portfolio

The increase in the System portfolio was almost all in Treasury bills. The System's bill holdings expanded slightly more than they had shrunk in 1989. Coupon holdings rose modestly in 1990. Meanwhile, Federal agency holdings edged down about \$200 million because all but a small part of such holdings were rolled over at maturity. With the preference for bills, the weighted average maturity of the portfolio fell by 2.2 months, to 40.5 months.

Bank reserve behavior

The expansion of the System portfolio over the year was prompted by the reserve drains from currency issuance. Currency issuance drained over \$26 billion of reserves between the reserve maintenance period ended January 10, 1990, and that ended January 9, 1991 (Table A2). Currency growth in 1990 was boosted by a dramatic surge in currency shipments to foreign countries.

Operating factors other than domestic currency, on net, added about \$2½ billion to reserve levels over the year, compared with the substantial \$26 billion injected in 1989. The difference is largely explained by the behavior of foreign currency holdings. In 1989, foreign currency accounted for a \$22 billion increase in reserve levels, primarily reflecting dollar sales in foreign exchange markets and the Treasury's warehousing of foreign currency with the Federal Reserve System. This substantial volume of reserves more than covered the reserve drain from domestic currency growth and prompted the Desk to reduce the System's portfolio of U.S. government securities. In contrast, foreign currency added only about \$1¼ billion to reserve levels over 1990, in part because net warehousing activity reduced foreign currency holdings and intervention was only modest.[§] Meanwhile, interest earnings lifted foreign currency holdings by over \$2½ billion. The net depreciation of the dollar provided reserves because it raised the dollar value of the System's foreign currency portfolio.

Total reserve demand contracted in 1990, reflecting a drop in required reserves. Required reserves fell \$2.3 billion between the maintenance period ended January 10 and that ended December 12, largely because of weak

[§]In order to complete one "de-warehousing" transaction, the Federal Reserve monetized \$1½ billion of special drawing rights for the Exchange Stabilization Fund, a move that added to reserves. The Exchange Stabilization Fund used the proceeds to repurchase a portion of its warehoused foreign currency.

Appendix: Reserve Management and the System Open Market Account (Continued)

growth in reservable deposits. In the next two maintenance periods, required reserves fell about \$10 billion. This drop was less than the \$13½ billion released by the reserve requirement cut because transactions deposits rose to their seasonal highs. Excess reserves were sharply higher in these two maintenance periods, reflecting adjustments by depository institutions to the new requirements and year-end funding pressures.

The supply of total reserves fell markedly during the

year. When required reserves fell, nonborrowed reserves also declined, although to a lesser extent, while borrowing fell modestly and excess reserves rose. The decline in borrowing was concentrated in the adjustment credit component. Borrowings under both the seasonal and the extended credit programs were roughly unchanged, on balance, over the year.

Table A2

Bank Reserves (Millions of Dollars)

	Maintenance Period Ended 1/9/91	Change from:	
		Period Ended 1/10/90 to Period Ended 1/9/91	Period Ended 1/11/89 to Period Ended 1/10/90
Nonborrowed reserves			
Excluding extended credit	54779	-9844	1245
Including extended credit	54800	-9841	57
Extended credit borrowing	22	3	-1189
Borrowed reserves			
Including extended credit	295	-44	-1709
Adjustment plus seasonal†	274	-47	-521
Adjustment†	233	-30	-485
Seasonal	41	-17	-36
Required reserves‡	51481	-12363	-412
Excess reserves	3592	2475	-52

System portfolio and operating factors (Billions of dollars)

System portfolio	247.6	12.0	-10.2
Operating factors:			
Foreign currency§	33.0	1.7	22.1
U.S. currency	286.5	-26.7	-13.0
Treasury balance	7.4	-1.6	1.5
Float	2.7	1.5	-0.3
SDRs	10.0	1.5	3.5
Gold deposits	11.1	—	—
Foreign deposits	0.3	0.1	-0.1
Applied vault cash	28.9	0.6	1.7
Other items	15.7	0.3	-2.4
Foreign RP pool¶	6.7	-1.2	-0.2

Notes: Figures may not add because of rounding. Signs on changes in System portfolio and operating factors indicate impact on bank reserves.

†Adjustment borrowing includes \$85 million of special situation borrowing in the period ended January 9, 1991.

‡Not adjusted for changes in required reserve ratios.

§Market value.

¶Includes customer-related repurchase agreements.

Outright transactions

The Desk conducted outright operations when reserve projections suggested large, sustained needs to add or drain reserves. The total volume of outright activity was \$38.4 billion, somewhat smaller than in 1989, although much larger than in 1988. Virtually all of the Desk's outright activity took place in Treasury bills. Purchases totaled \$25.2 billion. Sales and redemptions, which made up the balance of outright activity, were larger than those in most other reserve-adding years, mainly because of the need to drain reserves in December.

Roughly half of the Desk's outright activity was conducted in the market and about one-third was carried out with foreign accounts. Redemptions of maturing securities, which totaled \$5.6 billion, accounted for the remainder. The Desk entered the market on six occasions to conduct outright transactions, all of which were in Treasury bills. It sold \$3 billion on January 31. It then bought \$4.4 billion on April 4, \$3.2 billion on May 30, \$2.8 billion on August 29, \$3.3 billion on October 31, and \$2.9 billion on November 28. Net purchases from foreign accounts were \$3.9 billion.

Temporary transactions

The Desk also met reserve needs through self-reversing transactions—RPs to add reserves and MSP transactions in the market to drain reserves. Such transactions help to smooth the uneven pattern of reserve availability that arises from the daily movements in operating factors. MSP transactions are also arranged each day with foreign official accounts to meet their demand for an overnight investment facility.[¶] On occasions when the Desk desires to make a reserve injection, some of these orders can be arranged in the market, as customer-related RPs. These RPs routinely mature on the next business day because participation in the foreign investment pool varies daily.

System RPs accounted for about two-thirds of the total volume of temporary reserve additions, with the remainder provided by customer-related RPs. The Desk arranged sixty-three System RP operations for a total of

[¶]See Meulendyke, *U.S. Monetary Policy and Financial Markets*, p. 146, for a complete discussion of the reserve impact of the overnight investment facility.

Appendix: Reserve Management and the System Open Market Account (Continued)

\$262 billion, and sixty-seven customer RP operations for \$128 billion. The Desk entered the market before its normal intervention time on two occasions in 1990 to combat unusually strong year-end funding pressures. It also conducted its first forward RP, as described in the text. The highest balance of outstanding RPs was \$18.3 billion on December 31.

Thirty-four of the System RP operations had terms exceeding one business day. Most of these operations allowed early withdrawals, an option that appeals to dealers but can complicate the Desk's planning by leaving the amount of added reserves uncertain. To facilitate the planning of open market operations when multiday System RPs are outstanding, the Desk on June 14 changed the deadline for withdrawing collateral for such RPs from 1:00 p.m. to 11:00 a.m. The earlier deadline ensured that the Desk knew the magnitude of withdrawals before conducting its operations.

Roughly 10 percent of the temporary transactions arranged in the market drained reserves. Most of these MSP transactions were executed early in the year, when currency and required reserves fell seasonally. The Desk also drained reserves temporarily in December and early January 1991 following the cut in reserve requirements, but it was predominantly adding reserves on a temporary basis at this time to counter year-end funding demands. Over the year, the Desk arranged twenty-one rounds of MSP transactions in the market for a total of \$48 billion.

Ten of these rounds spanned more than one business day.

Forecasting reserves and operating factors

When the Desk formulated a strategy for meeting reserve needs, it took account of potential revisions to the estimated demand for and supply of reserves. Large revisions late in the maintenance period were especially troublesome because they could necessitate very large reserve operations. In 1990, staff forecasts of reserve demand improved modestly, while the accuracy of forecasts of operating factors was similar to that of the preceding year's forecasts (Table A3).^{††}

The accuracy of required reserve forecasts at the beginning of reserve periods was slightly better in 1990 than in 1989, while the mid- and late period estimates were of similar accuracy in the two years. The improvement in beginning-of-period forecasts was accomplished despite a \$150 million increase in the mean absolute period-to-period change in required reserves. When preparing these forecasts, the staff faced some challenges, including dealing with uncertainty about deposit levels following large tax payment dates and deciphering distor-

^{††}The Trading Desk uses forecasts of required reserves, excess reserves, and operating factors made by staffs at the Federal Reserve Bank of New York and the Board of Governors. The Desk also considers a forecast of the Treasury's Federal Reserve balance, an operating factor, made by Treasury staff.

Table A3

Approximate Mean Absolute Forecast Errors for Various Reserves and Operating Factors (Millions of Dollars)

	1990			1989		
	First Day	Midperiod	Final Day	First Day	Midperiod	Final Day
Reserves						
Required	300-320	195	70	330	195-215	70-90
Excess [†]	125-150	115-135	—	135-150	130	—
Factors						
Treasury	1010-1030	530-570	70-95	890-1080	440-460	70-90
Currency	630-670	380-430	45	730-810	390-420	40
Float	500	210-280	30	350-390	160-200	25
Pool	190-225	140-170	35-40	200-230	130-175	30-40
	260	120	10	275	110	10

Note: Forecast errors are expressed as a range to indicate the varying degrees of success achieved by the staffs of the Federal Reserve Bank of New York and the Board of Governors.

[†]The reported forecast errors overstate the degree of uncertainty about excess reserves. The Desk supplements beginning-of-period and midperiod forecasts with informal adjustments that are based on the observed pattern of estimated excess reserve holdings as each maintenance period unfolds. Federal Reserve staffs make no formal model forecasts of excess reserves on the final day of the maintenance period.

Appendix: Reserve Management and the System Open Market Account (Continued)

tions in deposit flows during the power failure in New York in mid-August. As maintenance periods progressed, forecasts became more accurate as additional deposit information became available. The mean absolute prediction error was over one-third smaller at midperiod and was sharply lower on the final day.

The excess reserve forecasting performance also improved slightly in 1990, despite the uncertainties about excess reserve demand in the December 26 maintenance period. The mean absolute period-to-period change in excess reserves was about the same as in 1989. Until the December 26 period, the largest prediction errors occurred at times when large banks ran sizable deficiencies in order to make use of their large carryovers. Actual excess reserves, which were relatively low during these periods, were at first substantially overpredicted.^{**}

The accuracy of the forecasts of operating factors in 1990 was roughly in line with that in 1989. As usual, the forecast errors shrank as the maintenance period progressed. Overall, there was a tendency to overestimate the supply of reserves from operating factors. This tendency was especially apparent over the last six periods of the year, when forecasts made on the final day of the period overpredicted the supply of reserves by an average \$100 million to \$135 million (on a period-average basis), errors equivalent to final day misses of about \$1.4 billion to \$1.9 billion. These misses at times aggravated settlement day pressures in the funds market.

The forecast errors for the Treasury's balance at the Federal Reserve were slightly smaller than in 1989. The largest error occurred in the period ended May 2. Individual income tax receipts, which were forecast to be quite large, were expected to fill the Treasury's accounts in the banking system to capacity, thus causing large

remittances that would swell the Fed balance.⁵⁵ However, tax receipts fell short of projections. Sizable errors began to appear in mid-April, but they were first attributed to timing problems. Later in the year, large forecast errors in the October 3 period drained reserves when taxes came in higher, and spending came in lower, than expected. For the year as a whole, the Treasury's Fed balance was less volatile than in previous years. Capacity limitations drove the balance above the \$5 billion target level on only about fifteen business days, compared with about fifty-five business days in 1989.

An additional feature that contributed to forecast errors in 1990 was a change in tax remittance regulations. Previously, employers remitted all withheld taxes to the Treasury according to fixed schedules. Beginning in August, employers were required to remit these taxes as soon as withholdings reached \$100,000. For large firms, this change resulted in a considerable speedup in tax remittances. For a time, it became more difficult to predict daily flows to the Treasury because the historical patterns used by the forecast staffs were based on the earlier withholding schedules. After several months of observing the data flows, the staffs discerned a new tax remittance pattern; by year-end, major forecast misses due to the change were largely eliminated.

Forecasting U.S. currency in circulation proved to be more demanding than usual in 1990, while the forecasting performance for other reserve factors was similar to that in previous years. Growth in currency was unusually strong throughout the first three quarters of 1990, and initial estimates fairly consistently underpredicted this strength. In the fourth quarter, after the volume of currency shipped abroad subsided somewhat, initial forecasts of currency in circulation tended to overpredict currency growth.

**The carryover privilege permits depository institutions to apply a limited amount of their excess or deficient reserve position in one period to their requirements in the following period. Large banks monitor their reserve balances closely. Before the cut in reserve requirements in December, they were reasonably successful in keeping non-interest-bearing excess reserves within the carryover allowances, so that their average holdings of excess reserves over a year typically were close to zero. Carryovers therefore tended to produce a sawtooth pattern of excess reserve holdings at large banks. This pattern at times showed through to aggregate excess reserve holdings. The Desk does not receive much information about "carry ins" until midperiod.

⁵⁵Depository institutions must fully collateralize and pay interest on funds held with them in so-called Treasury tax and loan (TT&L) accounts. The amount of funds that the institutions will accept depends on their ability to use the funds profitably and on the availability of collateral. An institution that receives funds in excess of its collateral limit remits the excess to the Treasury's Federal Reserve balance. (The excess funds come either from the taxes collected by the institution on behalf of the Treasury or from investments made directly by the Treasury.) Large remittances typically occur around major tax dates, when the volume of funds flowing into TT&L accounts substantially exceeds capacity.

In Brief

Economic Capsules

Japanese Banks' Customers in the United States

by Rama Seth and Alicia Quijano

Some recent studies attribute the growth of foreign banks in the United States to the increase in foreign direct investment in this country. Foreign banks are said to specialize in providing services to multinational firms from their home countries.¹ This interpretation of the importance of foreign bank lending is applied in particular to Japanese banks, which accounted for over 16 percent of U.S. commercial and industrial loans in 1989, well over half of such loans made by foreign banks.

Available data on Japanese banks, however, provide little support for the view that foreign bank lending growth essentially reflects increased foreign investment in the United States. While Japanese banks' branch and agency lending in the United States increased more than sixfold in the period between 1984 and 1989, borrowing by U.S. nonbank affiliates of Japanese firms less than quadrupled during the same period.² As a result, loans to Japanese-owned firms may have accounted for more than three-quarters of Japanese branch lending in this country in 1984, but no more than two-fifths in 1989. Japanese banks may initially have set up shop to service Japanese customers, but in the later 1980s the banks significantly expanded their strictly U.S. market share.

¹See, for example, George Bentson, "U.S. Banking in an Increasingly Competitive World Economy," *Journal of Financial Services Research*, vol. 4 (1990), pp. 311-39; and Charles W. Hultman and L. Randolph McGee, "Factors Affecting the Foreign Banking Presence in the U.S.," *Journal of Banking and Finance*, vol. 13 (1989), pp. 383-96.

²A U.S. affiliate is a U.S. firm in which a foreign investor owns or controls 10 percent or more of the voting securities of the firm.

Inferences from data on liabilities and loans

We calculate the share of Japanese bank lending to U.S. nonbank affiliates of Japanese companies by comparing data on affiliate liabilities and data on loans by U.S. branches and agencies of Japanese banks. (See the appendix for a discussion of data sources and details of the methodology.) Our estimates of the share of borrowing by Japanese firms are based on the extreme assumption that all of the bank debt of Japanese multinationals in the United States was owed to Japanese banks' branches and agencies. To the extent that such affiliates borrowed from non-Japanese banks, claims of Japanese branches and agencies on firms without Japanese ownership would be even higher.³

Our findings, presented in the chart, show the decreased relative importance of Japanese firms in branch and agency lending in the United States. Loans to these firms in all sectors taken together accounted for at most two-fifths of Japanese lending in this country by 1989, as opposed to more than three-fourths of the lending in 1984. Although only data for 1984 and 1989 are actually plotted in the chart, the intervening years

³The overstatement of the affiliate share may be offset by any underreporting by U.S. affiliates of Japanese firms that is attributable in part to the rapid growth in direct foreign investment. The degree of offset, however, cannot be measured. Some bias is also introduced in the estimates because the data sources are not fully synchronized: the bank data are reported on a calendar-year basis, while affiliate data are reported on a fiscal-year basis. The direction of the bias introduced by this inconsistency is not clear since the fiscal year varies across affiliates. This difference in reporting may not be of much consequence, however, since the fiscal year matches the calendar year for roughly three-quarters of affiliates from all countries.

confirm the pattern of decline.⁴ A breakdown of loans by category, moreover, underscores the decreasing share of lending to affiliates in the fastest growing categories of loans.

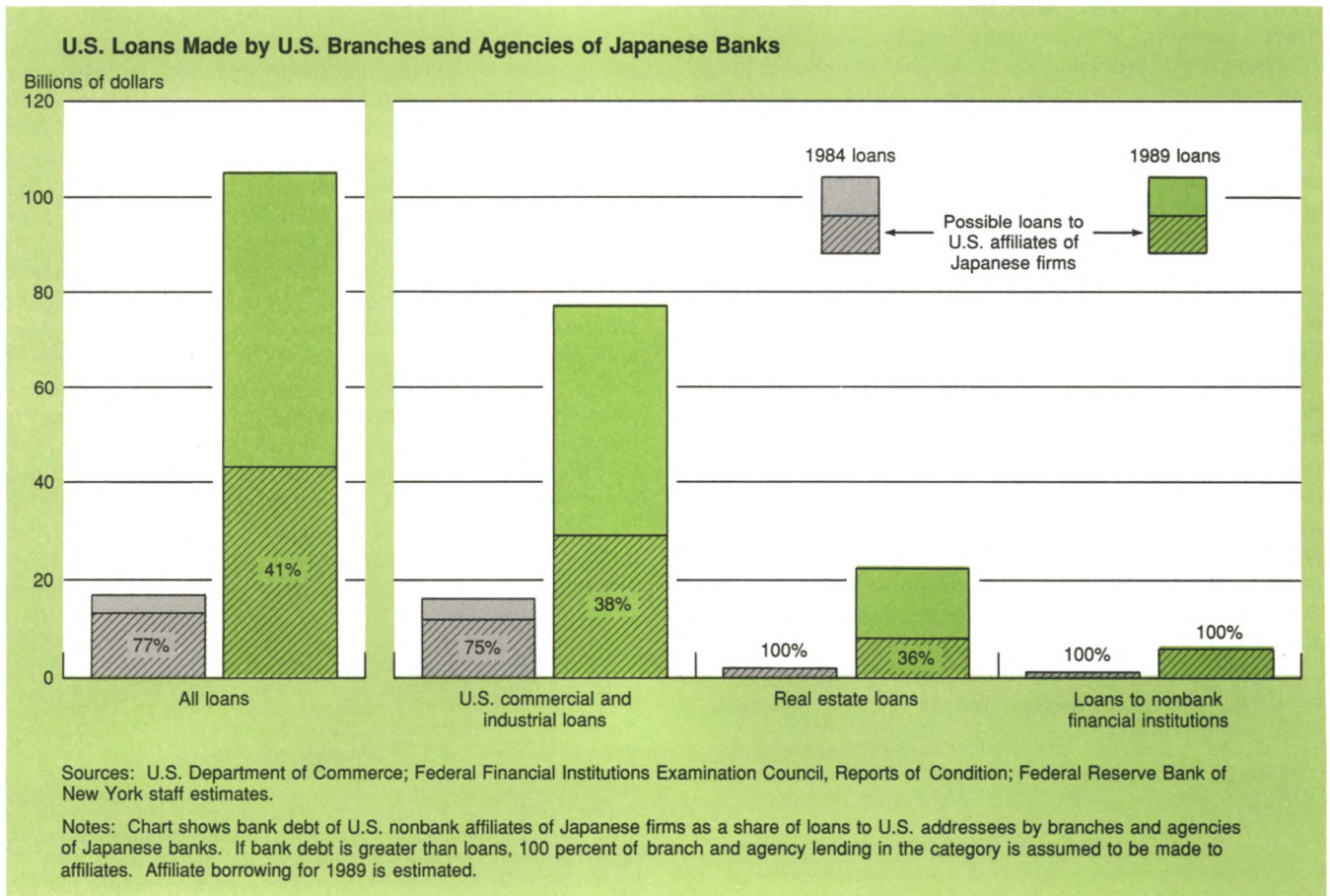
The nonfinance sectors, commerce and industry and real estate, offer clear-cut evidence of the diminished role of U.S. affiliates of Japanese firms as a customer base. At the beginning of the period under study, Japanese banks may well have relied on Japanese customers for a ready-made customer base in these sectors. In 1984, U.S. borrowing by Japanese-owned firms accounted for as much as three-quarters of the commercial and industrial loans made by Japanese banks' branches and agencies. Japanese-owned real estate firms and partnerships could have accounted for all real estate loans by the branches and agencies until 1986. But in more recent years, a different pattern emerged. Our estimates suggest that in 1988 and 1989,

U.S. borrowing by Japanese-owned commercial and industrial firms and by real estate firms could account for less than two-fifths of total credit by Japanese banks' branches and agencies to each of these sectors.

This shift in the customer base did not affect one area of lending. In both 1984 and 1989, loans to nonbank finance affiliates of Japanese firms could entirely account for this category of lending by branches and agencies of Japanese banks. Such loans, however, amounted to a relatively small part of overall lending by branches and agencies: about 3 percent of their total portfolio in 1984 and 1989. Thus it appears that Japanese banks, in expanding their U.S. operations, increasingly directed their credit to U.S.-owned commercial, industrial, and real estate firms.

Nonfinance affiliates of Japanese firms do not dominate Japanese bank lending in the United States despite their heavy reliance on bank financing. Roughly half of the U.S. liabilities of these nonfinance affiliates have been, and continue to be, owed to banks (see table). This financing pattern mirrors that of nonfinancial

⁴See Rama Seth and Alicia Quijano, "Growth in Japanese Lending and in Investment in the United States: Are They Related?" Federal Reserve Bank of New York, Research Paper no. 9101, January 1991.



Bank Share of Affiliate Debt

(Percent)

	1984	1989
All sectors	50	16
Finance and insurance (nonbank only)	23	5
Nonfinance	57	55
Real estate	78	80
Other industries	56	50

Sources: U.S. Department of Commerce; Federal Reserve Bank of New York staff estimates.

Notes: Table reflects U.S. liabilities of U.S. nonbank affiliates of Japanese firms. Figures for 1989 are estimates.

firms in Japan, which owed an estimated 53 percent of their debt to banks in 1985.⁵ U.S.-owned nonfinancial corporate business, by contrast, owed only between one-fifth to one-quarter of its liabilities to banks during the same period.⁶

An interesting sidelight to this finding is the fact that nonbank financial firms affiliated with Japanese firms rely hardly at all on bank financing. Acquisition-led tripling of the balance sheets of these affiliates—predominantly securities firms—probably explains why their liability structure so closely resembles that of U.S. securities firms in general.⁷ In both cases, only a minor

part of the firms' liabilities is owed to banks. Seven percent of the Japanese finance affiliates' liabilities has been to banks in recent years, and 4 percent to 6 percent of the liabilities of the largest U.S. securities firms was owed to banks between 1984 and 1989.⁸

Conclusion

In conclusion, recent growth in Japanese banks' assets in the United States cannot be solely or even largely attributed to growth in direct investment from Japan. Japanese banks may initially have followed their Japanese customers to the United States, at least in order to lend to firms in commerce, industry, and real estate. Home-country relationships, however, cannot explain the recent expanded presence of the Japanese in the U.S. lending market. Although Japanese nonfinance affiliates rely more heavily than their U.S. counterparts on bank loans, they do not account for the bulk of U.S. lending by Japanese banks' branches and agencies. Rather, loans to U.S.-owned firms now appear to predominate in the U.S. loan books of Japanese banks.

This finding suggests that any slowdown in foreign asset growth stemming from Japanese banks' difficulty in meeting capital requirements could have a broader impact than often thought. Specifically, U.S.-owned firms could find themselves vulnerable to a tightening of credit by Japanese banks.

⁵Bank for International Settlements, *59th Annual Report*, June 1989, p. 87.

⁶Board of Governors of the Federal Reserve System, *Flow of Funds Accounts, Financial Assets and Liabilities, Year-end 1966-89*, September 1990, p. 10.

⁷The similarity in the liability structure of U.S.-owned and Japanese-owned firms emerged when Yasuda Life Insurance acquired an 18 percent interest in Paine Webber and Nippon Life Insurance

Footnote 7 continued

acquired a 13 percent interest in Shearson Lehman Brothers in 1987. In spite of the minority ownership, the U.S. Commerce Department classifies all of the acquired liabilities as those of the new affiliate. Before these acquisitions, the bank share in affiliate financing was roughly 20 percent.

⁸John R. Dacey and Jackie Bazel-Horowitz, "Liability Management," *Funding and Liquidity: Recent Changes in Liquidity Management Practices at Commercial Banks and Securities Firms*, Federal Reserve Bank of New York, July 1990, p. 80.

Appendix: Data Sources

Data on U.S. nonbank affiliates of Japanese companies are from the Commerce Department series on foreign direct investment, and data on U.S. branches and agencies of Japanese banks are from the Federal Financial Institutions Examination Council (FFIEC) call reports. The broad sectoral classification in the two data sets allows us to compare each category of loans with the borrowings of affiliates in the same sector. For example, U.S. borrowings of affiliates in commerce and industry, estimated at \$29 billion, are compared with the \$77

billion in commercial and industrial loans to U.S. addressees made by branches and agencies (see table below). On the basis of this comparison, we estimate that affiliates could account for a maximum of 38 percent of branch and agency loans in this category (see chart). The maximum could only apply in the extreme case in which all affiliate local borrowings are from Japanese banks' branches and agencies in the United States.

The Commerce Department's annual surveys of direct investment and the 1987 benchmark survey identify

Appendix: Data Sources (Continued)

external sources of funds for affiliates in the United States.[†] These sources of funds are decomposed into the liabilities of affiliates owed to the foreign parent, to other foreigners, and until 1987, to U.S. banks and nonbanks. The 1988 and 1989 U.S. bank liabilities are estimated on the basis of the distribution of bank and nonbank liabilities and the average growth rates by sector in previous years. For this study, only data on affiliate debt to U.S. banks and to U.S. nonbanks are used because they are the most comparable with the FFIEC call report data.

The FFIEC call report data on Japanese banks' branches and agencies decompose lending by obligor: commercial and industrial (both U.S. and foreign resi-

dents), real estate, nonbank financial institutions, foreign governments, and purchasers of securities. We exclude Japanese banks' subsidiaries from our study because of their greater independence from the parent, wider scope of activities, and acquisition-related growth, all of which point to a weaker link with Japanese firms in the United States. Were the subsidiary data to be included and the assumption that affiliates borrow only from Japanese-owned banks retained, we would find the link between Japanese banking and Japanese direct investment in the United States to be even weaker than is suggested here.

Since the Commerce Department data do not reveal the ownership of the banks providing credit to the foreign-owned firms in the United States and the call report data do not identify loans made to U.S. affiliates of Japanese firms, we juxtapose the two sets of data. By assuming that all affiliate bank debt is with Japanese banks, we can infer a ceiling on the share of affiliate borrowing in Japanese bank lending.

[†]For an explanation of Commerce Department data, see Alicia M. Quijano, "A Guide to BEA Statistics on Foreign Direct Investment in the United States," *Survey of Current Business*, February 1990, pp. 29-37.

Juxtaposition of Two Data Sources

(Billions of Dollars)

Affiliate Debt [†]	1984	1989	Branch and Agency Lending [‡]	1984	1989
Total	14	49	Total	38	130
Commerce and industry [§]	12	29	To commercial and industrial firms	28	90
Finance and insurance	1	12	U.S.	16	77
Real estate	1	8	Foreign	12	12
			To financial institutions	1	6
			To real estate firms	0	22
			Other	9	12
			To foreign governments	8	10
			For purchasing and carrying securities	1	2

Sources: U.S. Department of Commerce; Federal Financial Institutions Examination Council, Reports of Condition; Federal Reserve Bank of New York staff estimates.

Note: 1989 figures for affiliate debt are estimates.

[†] Consists of U.S. bank liabilities of Japanese firms' U.S. nonbank affiliates.

[‡] Consists of nonbank loans of Japanese banks' U.S. branches and agencies.

[§] Includes all industries other than finance, insurance, and real estate. Insurance affiliates account for less than 0.5 percent of the bank debt of finance affiliates, most of which are securities firms.

Another View of the Underpricing of Initial Public Offerings

by Judith S. Ruud

Over the past two decades several studies have reported that initial public offerings on average achieve sizable returns over very short periods.¹ In the parlance of investment bankers, firms going public appear to "leave money on the table" in significant amounts. While hardly a cause for complaint from investors, such underpricing might hurt emerging firms trying to raise capital for expansion. The high average initial returns on new issue shares is therefore an anomaly that invites further study.

Most current academic theories hold that initial public offering (IPO) underpricing is undertaken deliberately.² Proponents of this view offer different rationales for intentional underpricing. For example, underwriters may recommend low offering prices to reduce the effort required to sell new issues, or issuers may purposely underprice their IPOs in order to cash in on a reputation for good performance later.³ The findings presented

here, however, suggest that the apparent underpricing (that is, high average initial returns) may be largely attributed to a different source—the frequent market practice of underwriter price support or stabilization.⁴

Underwriter price support involves transactions that serve the specific purpose of keeping the market price from falling too far below the fixed selling price of the offering. Although price support may tie up underwriters' capital in the short run, it is often thought that the practice ultimately enhances underwriters' reputations with issuers and investors. The Securities and Exchange Commission generally prohibits security price manipulation, but it has permitted price support on the grounds that it mitigates underwriter losses stemming from temporary downward price pressure during the selling period.⁵ The Commission has taken the position that stabilization is not manipulative as long as the possibility of stabilization is disclosed in the offering prospectus.⁶

Statistical analysis provides a means of evaluating whether IPO underpricing is a deliberate strategy or a consequence of underwriter price support. Specifically, if IPO underpricing were done deliberately across the board, the distribution of a sample of IPO initial returns might approximate a bell-shaped curve, with the

¹See, for example, Roger Ibbotson, "Price Performance of Common Stock New Issues," *Journal of Financial Economics*, vol. 2 (1975), pp. 235-72; Roger Ibbotson and Jeffrey Jaffe, "Hot Issue Markets," *Journal of Finance*, vol. 30 (1975), pp. 1027-42; and Jay Ritter, "The 'Hot Issue' Market of 1980," *Journal of Business*, vol. 57 (1984), pp. 215-40.

²See, for example, David Baron, "A Model of the Demand for Investment Banking Advising and Distribution Services for New Issues," *Journal of Finance*, vol. 37 (1982), pp. 955-76; Kevin Rock, "Why New Issues Are Underpriced," *Journal of Financial Economics*, vol. 15 (1986), pp. 187-212; Seha Tinic, "Anatomy of Initial Public Offerings of Common Stock," *Journal of Finance*, vol. 43 (1988), pp. 789-822; Franklin Allen and Gerald Faulhaber, "Signaling by Underpricing in the IPO Market," *Journal of Financial Economics*, vol. 23 (1989), pp. 303-23; Mark Grinblatt and Chuan Yang Hwang, "Signalling and the Pricing of New Issues," *Journal of Finance*, vol. 44 (1989), pp. 393-420; and Ivo Welch, "Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings," *Journal of Finance*, vol. 44 (1989), pp. 421-49.

³For evidence against the latter hypothesis see Judith S. Ruud, "Underpricing of Initial Public Offerings: Goodwill, Price Shaving or Price Support?" Ph.D. diss., Harvard University, 1990. Chapter 4 finds little evidence of any future benefit from IPO underpricing.

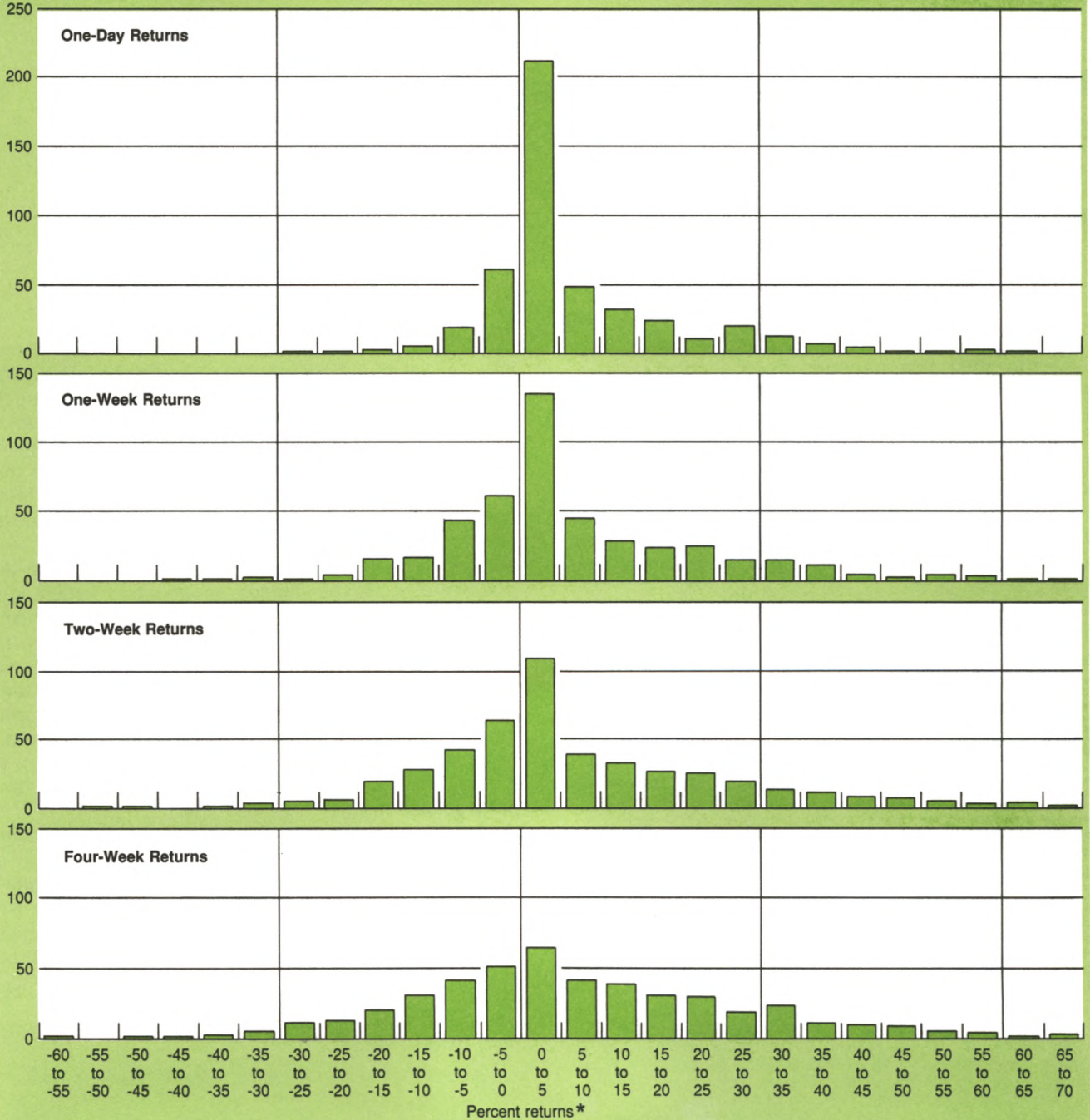
⁴For a detailed presentation of this argument and methodology, see Judith S. Ruud, "Underwriter Price Support and the IPO Underpricing Puzzle," Federal Reserve Bank of New York, Research Paper no. 9117, May 1991.

⁵See Securities Exchange Act Release no. 2446 (March 18, 1940). The Securities Act of 1934, 15 USC §10(b) and 17 CFR §240.10b-7, permits stabilization.

⁶To preserve the option of stabilization, most offering prospectuses contain the following legend: "In connection with this offering, the underwriters may effect transactions which stabilize or maintain the market price of the common stock of the company at a level above that which might otherwise prevail in the open market. Such stabilization, if commenced, may be discontinued at any time."

Initial Public Offering Returns for Different Intervals

Occurrences



Sources: Securities Data Company; Investment Dealers' Digest; and Standard and Poor's Daily Stock Price Record.

Note: Returns are measured as the natural logarithm of the ratio of the market price at the end of the indicated period to the original offering price.

* Each range starts at the first indicated value and continues to, but does not include, the second. For example, the range 0 to 5 includes returns of 0 through 4.99 percent.

peak of the distribution centered on a return greater than zero. In fact, however, relatively few IPOs sink much below their offering price immediately. Instead of tracing a bell-shaped curve with a positive mean, the distribution of one-day returns peaks steeply around zero and the negative tail of the distribution is significantly curtailed.

Underwriter price support affords a plausible explanation for the positively skewed distribution of initial IPO returns. The effect of such price support would be to reduce the number of negative initial returns from what would otherwise be observed. If investment bankers are actively supporting price in the aftermarket, observations that would have been in the left tail of the distribution (that is, negative returns) may be propped up to zero or a small negative return by a standing purchase order at or slightly below the offer price. The statistical term for this effect is censoring.⁷ Initial returns of zero are observed in instances that would have yielded negative returns in the absence of underwriter price support. Thus, systematic price support would allow the right tail (positive returns) to be observed, but not the "true" left tail. This previously overlooked censoring of the negative tail of the distribution of initial returns could produce a positive mean initial return even if offering prices were set at their true expected market value.

The observed distributions of initial returns of 469 IPOs occurring in 1982 and 1983 are consistent with the hypothesis that positive mean initial returns are largely due to underwriter price support. The four panels of the chart—the cross-sectional distributions of one-day returns, one-week returns, two-week returns and four-week returns—illustrate the initial effect and gradual withdrawal of price support. The distribution of initial one-day returns peaks steeply around the zero percent return range and appears to have a partially censored left tail.⁸ Fifty-nine percent of the one-day initial returns

fall between the range of -5 percent to 5 percent. In fully 25 percent of the one-day initial return observations, the closing price is the same as the offering price. The concentration of the observed distribution of initial one-day returns around zero indicates the potentially strong influence of price support.

The tendency for most of those stocks with one-day returns in the zero return range to fall in price, thus yielding negative one- and two-week returns, is also consistent with the gradual withdrawal of price support. Of those IPOs in the modal one-day return range of zero percent to 5 percent, only 8 percent increase in price, while 47 percent report negative one-week returns and the remaining 45 percent report one-week returns in the same distribution range. The overall one-week mean return is less than the overall one-day mean return. Successively smaller mean returns over time suggest that reports of positive mean initial returns are not primarily the result of systematic underpricing, but rather the result of temporary underwriter price support of new issues. As price support is withdrawn, the mean initial return decreases.

Even stronger indications of the influence of price support are found for the subset of IPOs underwritten by top-tier investment banks.⁹ Because price support requires a commitment of capital, larger and wealthier investment banks would be more likely to engage in the practice.

In sum, investigation of the *distribution* of initial IPO returns shows that positive mean initial returns result in some measure from a partially censored left (negative) tail. Underwriter price support or stabilization can readily account for this censoring of the distribution of initial returns: stock prices are allowed to rise, but are prevented from falling significantly until the issue is fully sold. This interpretation, which incorporates neglected information on return distributions and on market practice, stands in contrast to the view that positive average initial IPO returns result from deliberate underpricing of most offerings.

⁷A sample is said to be censored if there is some threshold level below which actual values are not observed. In this case the threshold value is zero.

⁸In statistical terms, the distribution exhibits considerable leptokurtosis and positive skewness.

⁹Details can be found in Ruud, "Underwriter Price Support."

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