

JANUARY/FEBRUARY 1993

ECONOMIC PERSPECTIVES

A review from the
Federal Reserve Bank
of Chicago

**Indicators, performance, and
policy in the 1930s and today**

NAFTA: a review of the issues

**Reducing credit risk in
over-the-counter derivatives**

Index for 1992

FEDERAL RESERVE BANK
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January/February 1993 Volume XVII, Issue 1

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ISSN 0164-0682

Indicators, performance, and policy in the 1930s and today

Robert D. Laurent



Recent economic growth has been sluggish despite persistent attempts to stimulate the economy. The apparently unresponsive nature of the

economy is quite unusual in recent history, leading observers to search back in history for similar periods that might help explain the anomaly of the present. This article compares monetary policy and economic performance in the current period with monetary policy and economic performance in the 1930s. The article argues that the current period is in a number of important respects qualitatively, if not quantitatively, similar to the early 1930s. In particular, the last three years are similar to the early 1930s in having the absence of strong economic growth, sharply lower short term interest rates, widening spreads between long term and short term interest rates, and stronger growth in the monetary base (a narrow monetary aggregate) than in the broader aggregates (M2 and M3).¹ Of course, these two periods are also quite different in a number of respects. For example, the decline in national income was much steeper in the 1930s and broad velocity (the ratio of GNP to broader monetary aggregates) declined in the 1930s but not in the current period. This article argues that the aforementioned similarities between the two periods suggest that in the current period, as in the 1930s, there is likely to be a stronger correlation between economic growth and the broader aggregates, such as M2 and M3, than either the narrow aggregates, such

as the monetary base and M1,² or interest rates and interest rate spreads. Hence, in the current period, the broader aggregates probably deserve greater weight than the narrower aggregates, the short term interest rate level, or interest rate spreads in the formation of monetary policy.

The present environment

Recent years have witnessed unusual economic weakness, though not because the episodes of actual economic decline have been unusually severe. Three consecutive quarters of falling real GNP is not at all unusual in the post-World War II period, nor is the total decline of 1.9 percent in real GNP from the second quarter of 1990 to the first quarter of 1991 especially severe. Indeed, the cumulative decline in real GNP over that period is actually milder than the average decline of 2.6 percent experienced in the preceding six recessions. Rather, the period has been unusual because of the length of time over which there has been an absence of strong economic growth. Eleven consecutive quarters of real GNP growth of less than 3 percent annually has not occurred in the entire period since 1947 when quarterly GNP data was first available.

The recent economic weakness is even more unusual because it has persisted despite actions by the Federal Reserve that would have usually stimulated the economy. Since April 1989, the Fed has made 24 consecutive cuts in

Robert D. Laurent is a senior economist at the Federal Reserve Bank of Chicago. The author thanks Steven Strongin and Carolyn McMullen for comments.

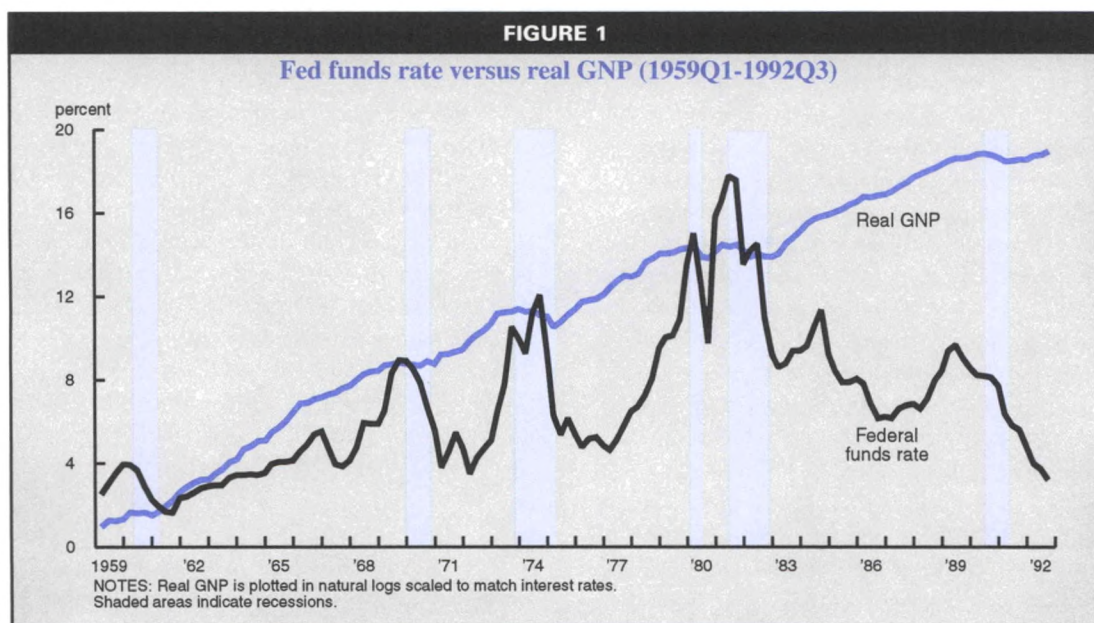
its target fed funds rate, reducing it by 675 basis points to its current level of 3 percent. The funds rate has been lowered by nearly as much at other times in the post-World War II period, but never to its present low levels. As Figure 1 shows, the funds rate has not only fallen sharply, it is presently at its lowest level in nearly 30 years.

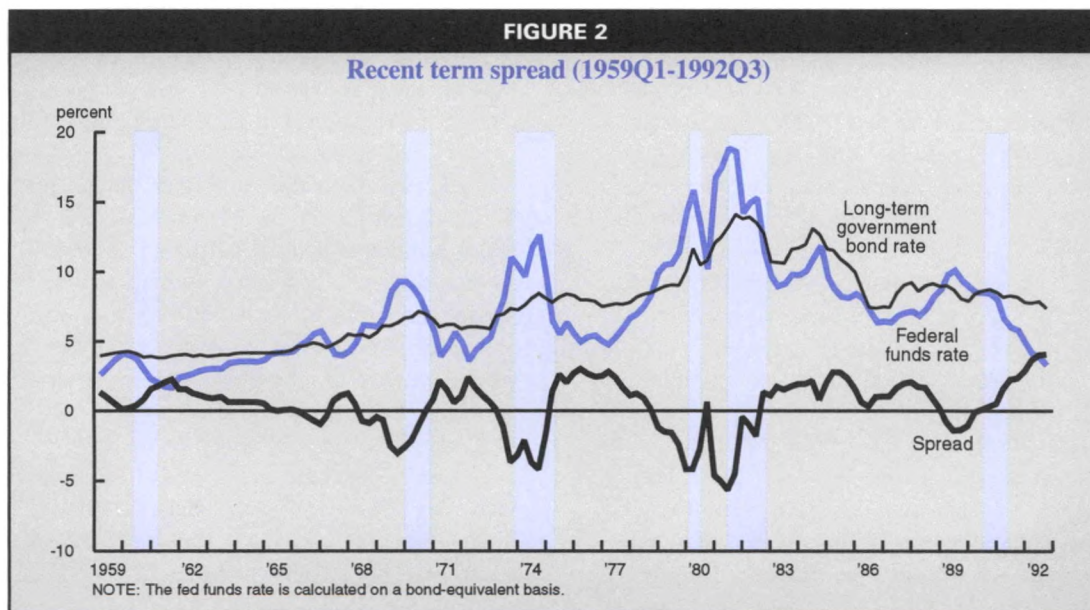
The recent behavior of the funds rate in the post-World War II era is unusual in yet another respect. As Figure 1 also shows, every previous recession in this period began with the funds rate either rising or close to its peak level, indicating that the Fed was seeking to tighten monetary policy at the time these recessions began. In contrast, the recent recession began more than a year after the Fed had started to lower the fed funds rate from its February 1989 peak (the NBER dates the cyclical peak in the economy at July 1990). This indicates that not only was the most recent recession not the result of intentional Fed actions but that Fed moves that would otherwise have produced a stronger economy were offset by other factors.

Figure 2 reveals another aspect of interest rate movements that has been unusual. The reduction in short term interest rates has been accompanied by a relatively minor decline in long term rates. As the Figure indicates, while the fed funds rate has fallen nearly 700 basis points since spring 1989, the 30 year Treasury bond rate has declined only about 140 basis points. As a consequence of these relative

movements, the spread between the long term Treasury bond rate and the short term overnight fed funds rate has expanded to over 450 basis points, the widest level in the entire post-World War II period, and most likely in all U.S. history. Typically, the wider the spread, the greater the subsequent growth in economic activity, so the recent exceptionally wide spread in combination with generally weak economic activity is also unexpected. The weak recovery from the recent recession relative to the recovery from other recessions, despite the historically wide spread, can be seen clearly in Figure 1.

During the last three years there has also been rapid growth in some of the narrower measures of money. The monetary base and M1 (both relatively narrow measures of money compared to the broader measures M2 and M3) have grown at annual rates of 9.3 and 8.5 percent respectively over the last three years. These growth rates are above the average growth of 7.2 and 6.6 percent for the monetary base and M1, respectively, in the last three decades. The growth in M1 has been particularly rapid in the last two years, when it grew by 10.7 percent while the monetary base grew by 9.3 percent. Typically, one would expect rapid growth in the monetary aggregates to be associated with strong growth in the economy. So once again, the combination of the rapid growth rates in the narrow monetary aggregates and the absence of strong growth in the economy is very unusual.





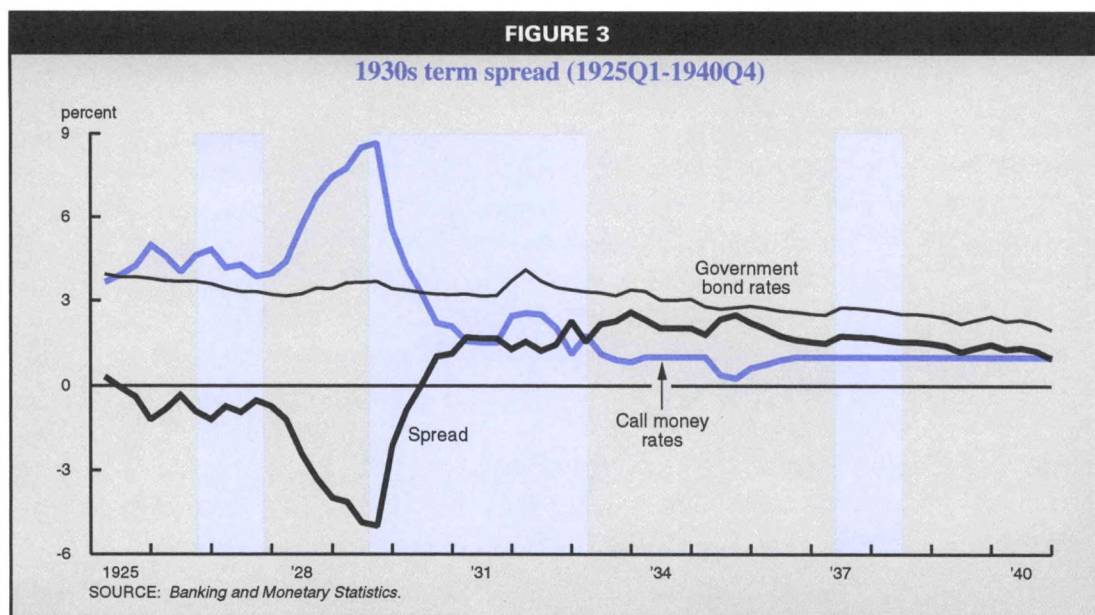
Similarity to the 1930s

The analysis above indicates that the most unusual aspect of recent economic performance is the combination of the absence of strong economic growth along with a sharp reduction in short term interest rates and rapid growth in the narrow monetary aggregates (the monetary base and M1), conditions that one might ordinarily associate with a stimulative monetary policy and strong economic growth. As already noted, the eleven consecutive quarters since first quarter 1989 of less than 3 percent annual GNP growth is unique over the period in which quarterly GNP data is available. It is likely that one would have to go back to the 1930s, and specifically the years from 1929 to 1933, to find such an extended period without at least one quarter of strong growth. This is not to say that the economy has experienced, or will experience, an economic decline like the 1930s. While both periods lacked strong growth, the actual performance was substantially different in the two periods. The magnitude of the decline experienced in the early 1930s dwarfed the 1.9 percent decline in real GNP from third quarter 1990 to first quarter 1991. As the name sometimes given to the earlier period—the Great Depression—implies, this period may well have been the most severe episode of economic decline in U.S. history. From 1929 to 1933, real GNP fell by more than 30 percent. The decline in income during the current period was much less severe than during the 1930s, in part because of government programs

started after the Great Depression, such as unemployment insurance and social security. These programs should keep expenditures up during periods of slower economic growth, thus helping to dampen economic downturns.

Figure 3 shows that, like the present period, a sharp fall in short term rates was also a characteristic of the early 1930s. Monetary policy of this period did not focus on the federal funds rate, because, among other reasons, the interbank market for overnight funds was not well developed at the time. Consequently, Figure 3 plots the overnight call rate on security loans. From a level of more than 8.5 percent in the third quarter of 1929, the rate declined to a level of less than 1.0 percent in the second half of 1933. The focus of monetary policy in this earlier period was much more directed towards the discount rate. Over this same time span, the discount rate was lowered from 6.0 percent to 2.0 percent, and in the interim had briefly gone as low as 1.5 percent. In the 1930s, as in the recent period, the decline in short term rates was not only sharp, but took rates to historical lows. Indeed, both the call money rate and the discount rate were taken to lows that had not been seen before in U.S. history and, with the exception of the late 1930s, have not been seen since.

Also similar to recent experience, the sharp decline in short term rates in the 1930s was not matched by a decline in long term rates. From fall 1929 to spring 1933, while call money rates were declining by more than 750 basis points,



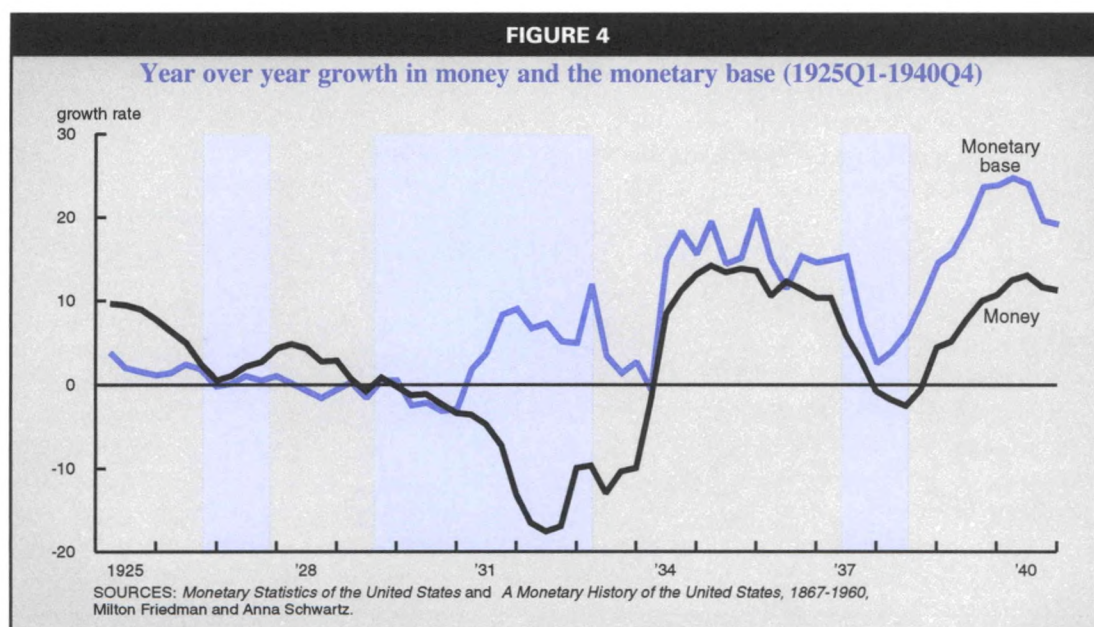
government bond rates declined by only 48 basis points to 3.20 percent. As can be seen in Figure 3, this had the effect of steeply widening the term spread. The term spread in 1933 was wider than it had been at any time in the previous 80 years.

Perhaps the most important similarity between the current period and that of the 1930s is the combination of sharply reduced short term rates and weak economic performance. If one assumes, as the great majority of observers do, that the effect of monetary policy can be gauged by looking at movements in short term interest rates produced by the monetary authority, then a very important conclusion emerges. Monetary policy in these two periods must have been ineffective, since short term rates were lowered so much and the economy remained weak. In the period of the 1930s this is exactly the conclusion that most observers drew from the sharp fall in short term rates to very low levels and the very, very weak performance of the economy. This view of the time that monetary policy was ineffective was captured in the aphorism that “you can’t push on a string” and came to dominate monetary economics for decades after the 1930s.

In the present period as well, some observers have concluded that monetary policy is ineffective against the problems presently afflicting the economy. Viewed from the point of view of interest rates, this view seems reasonable, given the fact that the reduction of 675

basis points in the fed funds rate has not resulted in strong economic growth and that this interest rate now stands at only 3 percent.

Besides the similarity in interest rate behavior between the present period and the early 1930s, there was also rapid growth in the monetary base, one of the narrow monetary aggregate measures. Figure 4 plots the growth rate of the monetary base and a broader measure of money comparable to the current M2 over the period from 1925 to 1940. Note that after 1930, growth in the monetary base was very rapid. Both in the 1930s and in the recent period some have interpreted the rapid growth in the monetary base as an indication that monetary policy was stimulative, perhaps too stimulative. Since the monetary base includes reserves held by depositories (banks and S&Ls), some observers interpret the monetary base as containing the “raw material” out of which depositories are able to extend credit by making loans or buying securities. In this view, rapid growth in the monetary base increases the possibility of subsequent rapid, perhaps too rapid, expansion in money and economic activity.³ It was just such a view that prompted the Fed in 1936 and 1937 to double reserve requirements in three steps, thereby initially cutting sharply the high level of excess reserves and reducing the possibility of any potentially excessive future expansion in money. As Figure 4 shows, the monetary base and money in fact slowed sharply in late 1937 and early 1938. However,



it is possible in the current period, as well as in the 1930s, to explain the more rapid growth in the narrower monetary aggregates in a way that does not imply monetary policy has been too stimulative, or even stimulative at all.

Gauging the effect of monetary policy

The previous discussion makes it clear that while there are many similarities between the behavior of interest rates and narrow monetary aggregates in the 1930s and the present period, the conclusion that monetary policy was ineffective in these two periods depends crucially on the assumption that the effect of monetary policy (that is, its impact on future economic activity) can be accurately gauged by looking at interest rate movements or movements in the narrow monetary aggregates. In particular, a key assumption, both now and in the 1930s, in the prevalent view that monetary policy is ineffective in stimulating the economy is that the effect of monetary policy can be accurately gauged simply by looking at the level, or changes in the level, of short term interest rates. It is clear that the monetary authority uses the short term federal funds rate as a tool to implement monetary policy. It is also clearly true that a lower fed funds rate means a more stimulative monetary policy than a higher fed funds rate *under the same set of economic conditions*. But it does not necessarily follow that a lower fed funds rate necessarily means an easy, or even easier, monetary policy if other economic

conditions change as well. There are other possible gauges of the effect of monetary policy for which there is substantial support, and which do not necessarily indicate that an easier, or more stimulative, monetary policy was implemented in these two periods and found ineffective. For example, broad money growth is probably the most prominent alternative in monetary theory to interest rates as a gauge of the effect of monetary policy. In this view the monetary authority uses movements in the short term federal funds rate as a tool to implement monetary policy, but growth in broad money is a better gauge of the effect of monetary policy on future economic activity.

Indeed, in the decades following the 1930s, one of the major debates in macroeconomics was the issue of how to gauge monetary policy and its effectiveness. A major issue in that debate was whether money or interest rates provided a better gauge of the effect of monetary policy. Today, a measure of growth in real M2—a broader aggregate than M1 or the monetary base—is included in the index of leading indicators,⁴ and the Fed presents targets for growth in the broader money measures (M2 and M3) in reporting to Congress on its future plans for monetary policy. If one looks at growth in these broader monetary aggregates, it is possible to argue that monetary policy was not as easy as an examination of interest rates or narrow money measures would indicate in either the more recent period or in the 1930s.

Recent money behavior

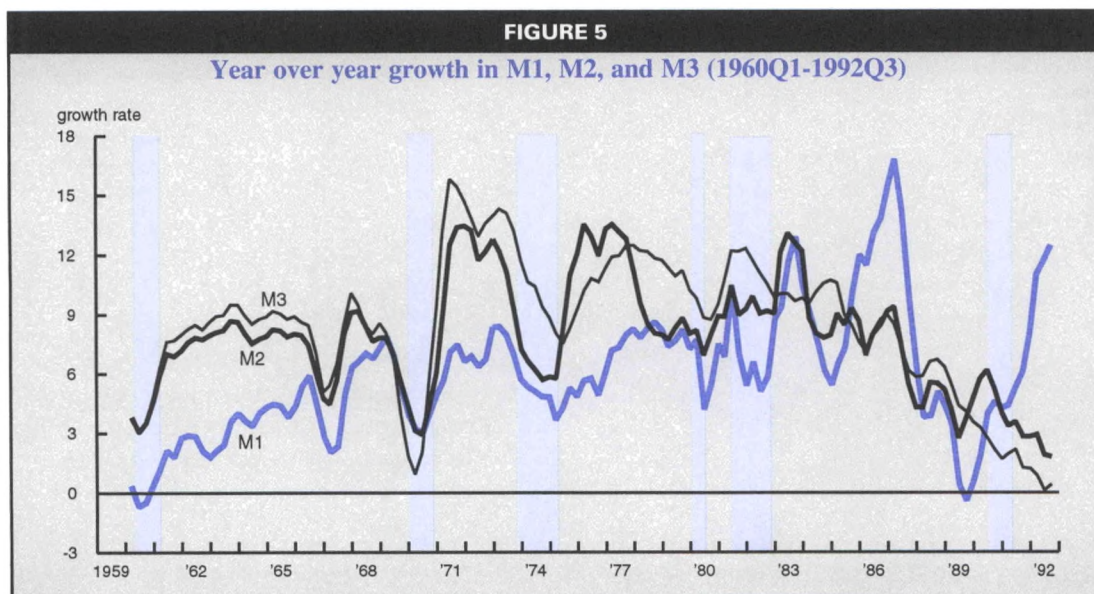
Figure 5 shows the year over year behavior of three money measures over the last three decades. The data in the Figure indicate that, for most of the period since 1959, growth rates in all three of the money measures have fluctuated together. However, in the period since 1980, the behavior of money has varied considerably, depending on the measure one examines. The narrow measure of money (M1) has recently shown one of its highest growth rates while the broader measures (M2 and M3) have shown the weakest growth in the more than thirty years plotted. Even among advocates of gauging monetary policy by money growth rates, there has been some debate as to which of these money growth rates is more indicative of the effect of monetary policy.⁵

There are some reasons to believe that the broader aggregates may be better indicators of the effect of monetary policy than the narrow aggregates, particularly under current conditions when interest rates have declined sharply. First, as already noted, the presumption appears to be that the broader aggregates are better indicators since real M2 is included in the index of leading indicators and the Fed chooses targets for M2 and M3, but not M1. Recent experience also indicates that the broader aggregates are likely to be better indicators. Since 1991, M1, the narrow aggregate, has grown at a much faster rate than M2 or M3, while the economy has experienced very slow growth. This already suggests that M2 and M3 have been bet-

ter indicators of economic growth than M1 during the recent period.⁶

Theoretical considerations also suggest that in the current situation of sharply falling short term interest rates, the broader money measures are likely to provide better gauges of the effect of monetary policy than the narrow money measure. Its advocates accord money a prominent role in monetary policy because changes in money are usually considered to be changes in supply impacting on an unchanged demand for money. In this view, an increase (decrease) in money represents an excess (deficiency) of money balances and leads to an increase (decrease) in spending and economic activity. However, if the change in money is produced (or matched) by a change in the quantity of money demanded by the public under current economic conditions, then the change in money balances would not represent an excess or deficiency and would not affect spending. This makes it important to understand whether a change in a money measure might have been produced (or matched) by a change in the demand for that money measure.

Notice in Figure 5 that M1 growth has become quite erratic in the 1980s. It has tended to be high when short term rates are falling (for example, 1985-1986, 1989-1992) and low when short term rates are rising (for example, 1987-1989). To understand this, consider the impact of a fall in short term interest rates on the various monetary aggregates. The fall in short term interest rates lowers the opportunity cost of holding very liquid deposits like transaction deposits,



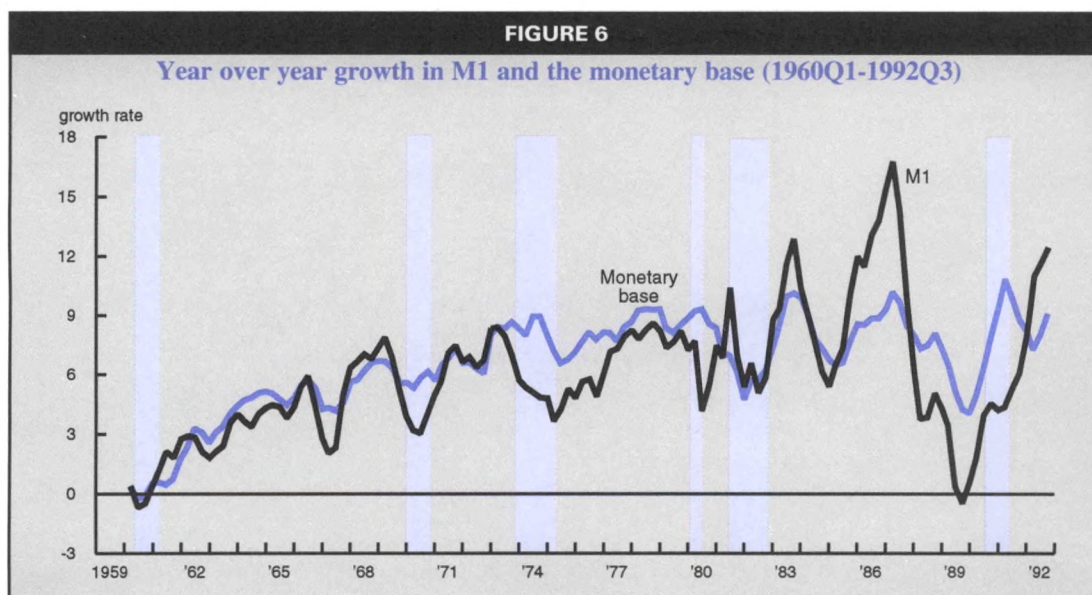
inducing holders of investment type deposits (for example, time deposits) to switch into transaction type deposits (for example, demand deposits or other checkable deposits). This shift in demand toward transaction type deposits has the effect of raising M1, however, since the increase in M1 was in response to increased demand, it does not increase economic activity, according to the above view. Notice, however, that the shift in demand to transaction type deposits does not affect a broad aggregate that includes both transaction type and investment type deposits. This suggests that a shift in demand between transaction type and investment type deposits is likely to affect the quantity of a narrow aggregate more than that of a broader aggregate. For this reason, one would expect movements in the broader aggregates to be more insulated from these shifts in demand produced by interest rate movements, and hence provide more accurate gauges of excesses or deficiencies in deposit balances and more accurate indicators of future spending and economic activity.

A shift in demand by the public, as described above, from investment type deposits (which typically have no reserve requirements) to transaction type deposits (which typically have reserve requirements) increases required reserves. If the Fed is trying to achieve a level of the fed funds rate, then it must increase reserves in response to this shift to prevent an increase in the funds rate. The data in Figure 6 show that growth in the monetary base has

tended to move with growth in M1 (the deviations that occur primarily reflect discrepancies between the growth rates of currency and transaction type deposits). As already noted, some observers have interpreted the recent strong growth of the monetary base as an indication of a very expansionary monetary policy, but this strong growth is merely the necessary consequence of a shift from investment type deposits into transaction type deposits and the fact that the Fed is trying to achieve a certain level of the fed funds rate. If, as indicated above, the increase in transaction type deposits resulting from a shift in demand is not expansionary, then neither is the resulting expansion in reserves. So, the rapid growth in the monetary base does not indicate an expansionary policy in this situation.

Money in the 1930s

Data on most measures of money were not available during the 1930s, but numbers constructed since then indicate that again there are a number of monetary policy parallels between the earlier period and the present. The data presented in Figure 4 show that the period from 1929 to 1933 was one of very weak growth in money. Over this period a broad monetary aggregate, roughly comparable to M2, declined by nearly a third. Even after taking account of falling prices, the real value of the money stock declined from 1929 to 1933. So, as at present, despite the sharp fall in short term interest rates over this period, broad mon-



ey measures suggest that monetary policy was not at all easy.

The data in Figure 4 also show, as noted earlier, that while broad money was falling in the earlier period, the monetary base was actually rising. From 1929 to 1933, this measure increased by slightly more than 20 percent. Though it is not clear that anyone at the time argued, as at present, that the growth of the monetary base indicated an expansionary monetary policy, it is illuminating for the present situation to examine the circumstances of the earlier deviation between growth in broader money measures and the monetary base. Just as in the present situation described above, the earlier deviation arose out of a shift in public preferences. The source and consequences of the shift in the public's money holding preferences was even clearer then than it is now. A massive wave of bank failures caused the public to sharply shift its preferences from bank deposits to currency. This shift can clearly be seen beginning in 1931. Given this increased desire for currency, the increases in the monetary base (where currency accounts for a much larger component than it does in broad money) were not indicative of an expansionary policy. But the shift in the composition of the monetary base from reserves to currency, and the threat of possible future bank runs, had the effect of inducing banks to reduce the supply of bank deposits and the broad aggregates. This supply effect, reducing the broad aggregates, was, in the theoretical framework of money advocates described earlier, a sign of a tighter monetary policy.

A factor which affects the relation between money and income marks an important distinction between the 1930s and the present period. In the early 1930s, prices were falling sharply, which meant that the real return to saving by holding currency or deposits was high, even at the low levels of nominal interest rates at the time. This increased the public's desire to save in the form of money, which reduced spending and income, resulting in a decrease in velocity (the ratio of GNP to money) even for a broad aggregate that includes both currency and bank deposits. This meant that in the 1930s, income declined even more than broad money did. In the recent period, velocity has not declined, that is, income has not declined relative to the broader monetary aggregates as it did in the 1930s.⁷

Condition of the banking system and deposit insurance

Even if the weak growth in broader money explains the sustained weakness in economic activity in these two episodes sixty years apart, the question remains why such sharp cuts in short term interest rates failed so uniquely and dramatically in these two episodes to produce stronger money growth. The most likely answer lies in a factor, introduced just above, that is perhaps the fundamental underlying similarity between the present period and 1930s: the amount of pressure on the banking system. The depositories that create money are under more pressure now than at any time since the 1930s. More depositories (banks and thrifts) have been closed in the last three years than at any time since the 1930s. In addition, increased capital requirements and tighter regulation have made even solvent depositories less willing to provide credit (and therefore create money) than would typically be the case under the same economic and interest rate conditions. This pressure on the depositories that create money has the effect of working in opposition to the stimulative thrust on money of lower short term interest rates. This means that the same reduction in the funds rate does not have as great an impact on money and, therefore, economic activity as it typically would.

The greatest difference for monetary policy between the present situation and the 1930s is unquestionably the existence of deposit insurance. By removing the risk of depository failure from depositors, it has prevented any shift by the public from deposits into currency and the potential problems such a shift could create for monetary policy. But deposit insurance has also helped to hide the economic forces at work in the current period. It does this by essentially removing the pain previously felt by depositors in the closing of insolvent depositories and the contraction in the money stock, and by separating in time the point at which an institution goes insolvent and the point at which the money stock contracts. The closing of an insolvent institution still contracts money as it did in the 1930s, but the cause and effect relationship is more difficult to see.

The absence of deposit insurance in the 1930s explains one other great difference between that period and the present. As a result of bank runs that occurred in the absence of deposit insurance, banks in the 1930s sharply

increased their demand for excess reserves in order to convince depositors not to withdraw their funds. Excess reserves increased from about 60 million at the end of 1930 to about 6.8 billion a decade later. This sharp increase, along with the very low level of short term interest rates, helped lend credibility to the view that monetary policy was ineffective during this period. One could argue that even if the monetary authority had tried to increase the money stock, any increase in reserves would have gone into excess reserves without increasing the money stock. Whatever the merits of the argument in the 1930s, it is clear that such an argument is not credible now. Because of deposit insurance, depositories do not need to worry about runs, thus they have no reason to increase excess reserves as banks did during the 1930s. At present there appears to be no more than normal demand for excess reserves on the part of depositories, and so a further increase in reserves, other things being equal, would lead to both a lowering of the fed funds rate and a further increase in the money stock.

Conclusion

The analysis above indicates that, from a monetary policy perspective, the present period seems somewhat unusual within the post-World War II era, and that it bears more qualitative, if not necessarily quantitative, similarities to the period of the early 1930s. The most immediate apparent similarity between the two periods is the combination of sharply lower short term rates and the absence of strong economic growth. If one believes that the effect of monetary policy can be determined simply by movements in short term interest rates, then it is easy to conclude that monetary policy has been ineffective in both of these periods. However, there are measures of broad money growth that can be interpreted as indicating that monetary policy was not easy over these two periods. In both of these periods there was substantially stronger growth in the narrow monetary aggregates than in the broad aggregates. The article argues that shifts in demand induced by the sharp fall in short term interest rates are particularly likely to render the

narrow monetary aggregates less reliable than the broader monetary aggregates as gauges of monetary policy in such periods of sharply falling short term rates. However, unexpected shifts in demand for money (whether broad or narrow) remains a problem in interpreting the impact of given money changes on economic activity. By producing changes in velocity (the ratio of GNP to money) these unexpected shifts in money demand produce unexpected shifts in GNP. The velocity of narrow money measures decreased in both the 1930s and the recent period, but velocity of the broader money measures in the two periods differed sharply. In the 1930s, the velocity of broad money fell, while in the recent period it has risen. To the extent that the demand for money (whether broad or narrow) is difficult to predict, velocity is difficult to predict and, consequently, it is difficult to predict income using broad money. Nevertheless, while there is considerable uncertainty in the use of any indicator, recent experience and historical analysis suggest that the broad monetary aggregates deserve greater weight than either the narrow aggregates or the level of short term interest rates in predicting future economic growth.

This still leaves open the question of why such sharp reductions in short term interest rates failed to stimulate broad money growth in only these episodes, some 60 years apart. The article argues that the fundamental similarity between these two periods was the severe stress experienced by money creating depositories. The closing of insolvent depositories, the increased regulatory pressure, and increases in the demand for capital all combined to weaken the normal stimulative impact of a given cut in short term interest rates. Achieving the same growth in the broad monetary aggregates requires much sharper cuts in short term interest rates in these circumstances. This article also argues that the existence of deposit insurance in the current period is the most important difference between the current period and the 1930s and has caused the consequences of depository pressures to manifest themselves in much different ways than they did in the 1930s.

FOOTNOTES

¹The monetary base is the sum of currency and reserves held at the Fed. Another narrow monetary aggregate, M1, is the sum of currency, demand deposits, other checkable deposits, and travelers checks. M2 is M1 plus savings deposits, small denomination time deposits, general purpose and broker/dealer money market mutual funds, and overnight repos and eurodollars. M3 is M2 plus large time deposits, institution-only money market funds, and longer term repos and eurodollars.

²M1 is the sum of currency, demand deposits, other checkable deposits, and travelers checks. M1 is smaller than M2 or M3 but larger than another narrow aggregate—the monetary base.

³For such a view, see the Shadow Open Market Committee (1991).

⁴Initially (May 1975) real M1 was the monetary aggregate inserted into the index of leading indicators, but since March 1979 real M2 has replaced real M1.

⁵In contrast to the view of the Shadow Open Market Committee already noted in footnote 3, Milton Friedman (1992) advocates M2 as an indicator of the effect of monetary policy.

⁶Two recent studies that appear to support the superiority of M2 over M1 in the recent period are Hess and Porter (1992) and Eugenie, Evans and Strongin (1992).

⁷A number of recent studies examining the behavior of velocity (income relative to M2) have been published in the Federal Reserve system. See Feinman and Porter (1992), Carlson and Samolyk (1992), Carlson and Byrne (1992), Duca (1992), Higgins (1992), and Motley (1992).

REFERENCES

Carlson, John D., and Katherine A. Samolyk, “The M2 slowdown and depository intermediation: implications for monetary policy,” *Economic Commentary*, Federal Reserve Bank of Cleveland, September 15, 1992.

Carlson, John D., and Susan M. Byrne, “Recent behavior of velocity: alternative measures of money,” *Economic Review*, Federal Reserve Bank of Cleveland, First Quarter, 1992.

Duca, John V., “The case of the missing M2,” *Economic Review*, Federal Reserve Bank of Dallas, Second Quarter, 1992.

Eugeni, Francesca, Charles Evans, and Steven Strongin, “Making sense of economic indicators: a consumer’s guide to indicators of real economic activity,” *Economic Perspectives*, Federal Reserve Bank of Chicago, September/October 1992, pp. 2-31.

Feinman, Joshua D., and Richard D. Porter, “The continuing weakness in M2,” Finance and Economics Discussion Series #209, Board of Governors of the Federal Reserve System, Washington, D.C., September 1992.

Friedman, Milton, “Too tight for a strong recovery,” *Wall Street Journal*, October 23, 1992, p. A14.

Hess, Gregory D., and Richard D. Porter, “Comparing interest-rate spreads and money growth as predictors of output growth: granger causality in the sense Granger intended,” manuscript forthcoming in the *Journal of Economics and Business*, 1992.

Higgins, Bryon, “Policy implications of recent M2 behavior,” *Economic Review*, Federal Reserve Bank of Kansas City, Third Quarter, 1992.

Motley, Brian, “Would new monetary aggregate improve policy?,” *Federal Reserve Bank of San Francisco Weekly Letter*, Federal Reserve Bank of San Francisco, No. 92-38, October 30, 1992.

Shadow Open Market Committee, “Policy statement and position papers,” William E. Simon Graduate School of Business Administration, University of Rochester, September 29-30, 1991

NAFTA: a review of the issues

Linda M. Aguilar



Because the United States is Mexico's largest trading partner and Mexico is the United States' third largest trading partner, Mexico's economic ups and downs are felt by many U.S. industries. The five largest U.S. exports to Mexico in 1991 were electrical machinery, nonelectrical machinery, transportation equipment, chemicals, and primary metals; totaling slightly less than two-thirds of manufacturing exports to Mexico that year. And the interdependence between the two countries is growing. In 1971, the U.S. provided 61.4 percent of Mexico's imports and received 61.6 percent of its exports. By 1989, those numbers had grown to 70.4 and 70.0, respectively. As illustrated in Figure 1, U.S. exports to Mexico rise and fall with the Mexican economy. During the 1970s, growth in U.S. exports was closely aligned to Mexican gross domestic product (GDP)—that is, changes in Mexican GDP were met by roughly an equal change in U.S. exports. But by the 1980s, the relationship had changed. As Mexico's economy expanded or contracted, U.S. exports increased or decreased by a greater amount. For example, in 1986, Mexican GDP declined 25.4 percent; U.S. exports declined 45.4 percent.

It seems plausible to conclude that U.S. policies that stimulate growth in Mexico could quickly benefit the U.S. One such policy is the proposed free trade agreement between the United States, Mexico, and Canada known as the North American Free Trade Agreement or NAFTA (see Box 1 for an overview of NAFTA). The potential benefits of a regional

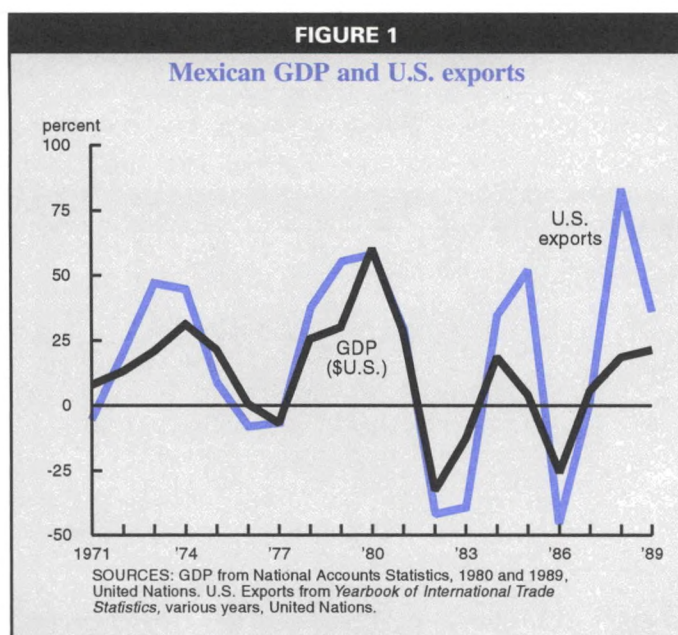
trading bloc to these nations are enormous. In 1990, the combined GDP of the three countries was \$6.2 trillion, a full \$221.3 billion greater than the European Economic Community's. Thus, all three countries would benefit from reduced costs, more competitive prices, and greater global trading power.

This article examines the trade relationship between the U.S. and Mexico¹ over the last few years, and discusses the potential benefits to the U.S. and the Seventh District of NAFTA. It also explores three of the issues negotiators faced during their eighteen months of negotiations that are of particular concern to the Seventh District: U.S. jobs and worker retraining, rules of origin, and the environment (that is, water and air quality).

Trade initiatives in Mexico

During the early 1970s, Mexico's economic and trade policies were considered protectionist. Foreign investment was restricted and many industries were state owned. Imports consisted primarily of industrial supplies, capital equipment, industrial and nonauto transportation equipment, and transportation parts. Exports were primarily agricultural and manufactured goods. Manufactured goods were derived largely from the "maquiladora" plants: foreign owned (mainly U.S.) plants that bring unfinished parts and components into Mexico

Linda M. Aguilar is a regional economist at the Federal Reserve Bank of Chicago. The author would like to thank William Testa, Carolyn McMullen, and Kathryn Moran for their helpful comments and insights.



for final processing and assembly prior to reexport into the United States (see Box 2 for an overview of the maquiladora program).

The rise in world oil prices during the 1970s prompted Mexico to develop its huge oil reserves. These reserves, in turn, served as collateral for substantial loans from the rest of the world, and in particular, U.S. banks. Exports of petroleum and petroleum products soared, reaching 75.3 percent of general exports in 1982. But by the early 1980s, world oil prices had topped out, and Mexico could no longer service its debt. New loans to Mexico ceased. Prodded by economic decline, the Mexican government implemented bold economic reforms which stabilized the economy, reignited economic development, and opened new horizons for trade and investment. In 1986, Mexico joined the General Agreement on Tariffs and Trade (GATT) and reduced its tariffs from levels of 100 percent, in some cases, to a maximum of 20 percent, which was even lower than the GATT maximum allowable tariff of 50 percent.² In addition, Mexico opened up foreign investment in many sectors and privatized many of its former, state-controlled industries. By the end of the 1980s, Mexico realized it would be necessary to solidify its new position as a growing and prosperous economy by integrating itself more closely, in particular through trade, with its two northern neighbors, the U.S. and Canada.

Impact on the Seventh District

Although the benefits of NAFTA to the U.S. at the regional level are difficult to determine, the Seventh District, which encompasses most of the states of Illinois, Indiana, Michigan, and Wisconsin and all of Iowa, should realize benefits through increased exports to Mexico.

Of particular significance to the U.S. and the Seventh District has been the growth of U.S. manufacturing exports to Mexico. As a region, the five District states increased their manufacturing exports to Mexico 90 percent over the 1987-1991 period; U.S. manufacturing exports increased 130 percent over the same period.

Also, roughly half of all manufacturing exports to Mexico over this period were in machinery and transportation equipment, two capital goods producing industries that form the cornerstone of the U.S. and, in particular, the Midwest economies (see Box 3 for recent trends in manufacturing exports to Mexico for the District).

In 1991, exports to Mexico of these two capital goods comprised 68 percent of Seventh District manufacturing exports and 53 percent of U.S. manufacturing exports. The importance of these goods to a growing economy is significant. In order to grow, a developing country needs to build factories, housing, and schools. To support this growth, there must be an infrastructure consisting of roads, airports, sewers, etc. For Mexico, imports of machines and transportation equipment³ have comprised anywhere from 30 to 55 percent of total commodities imports over the last 20 years. It would be safe to assume that this trend is likely to continue, particularly in the short run, with or without NAFTA. As Mexico develops, the demand for goods produced in the Seventh District, namely machinery and transportation equipment, and the benefits to the District, will also grow.

Labor issues

Among those voicing the strongest reservations about free trade with Mexico are U.S. factory workers, mainly because they fear that U.S. companies, seeking lower labor costs, will

transfer factory operations to Mexico where average compensation costs are far less than their U.S. counterparts (See Table 1). While studies have shown that wages are not necessar-

ily the driving factor in location decisions, it must be recognized that they represent a large share of manufacturing costs. For example, wages of production workers, excluding white

BOX 1

An overview of NAFTA and the trade agreement process

In February 1991, the United States, Mexico, and Canada agreed to begin negotiating a free trade agreement, at the request of Mexico's President Salinas. An agreement among the three countries is expected to benefit all, although at possibly very different levels, and eventually allow each trading partner roughly equal access to the others' markets. Formal negotiations began in June 1991, and on August 12, 1992, it was announced that an agreement had been reached.

Benefits of free trade

The direct benefit of free trade derives from the nearly complete elimination of tariffs between free trade partners. It is expected the U.S. will benefit¹ through expanded trade with a large and growing market, increased competitiveness in world markets, and more investment opportunities for U.S. firms. Mexico will benefit from more open and secure access to its largest market, the U.S.; increased confidence on the part of foreign firms to invest in Mexico; a more stable economic environment; and the return of Mexican owned capital. Canada's benefits are mostly in the form of safeguards: maintaining its status in international trade; no loss of its current trade preferences in the U.S. market; and equal access to Mexico's market. While NAFTA will, on net, benefit each nation, it is not a win-win situation for everybody. It produces both winners and losers among industries and occupations; and it must deal with such issues as worker displacement and rules of origin, as well as address issues such as the impact of free trade on the environment (that is, air and water quality).

The U.S. trade agreement process

Under the directive of the Trade Act of 1974, once the U.S. has decided to enter free trade negotiations with a country(s), the President submits a formal request to Congress requesting authority to negotiate with the proposed trade partner(s). Under the act's "fast track" authority, Congress has 60 legislative days to approve or reject the request. During this period, congressional committee hearings are held to solicit comments and testimony from interested parties. If the request to negotiate an agreement is approved, the negotiations can begin but must be completed within 2 years. Once

the negotiators prepare a final agreement, it is submitted to Congress for approval and it must be accepted or rejected as is. That is, no amendments or revisions are allowed. If approved by Congress, the President then signs the agreement and the terms and timetables agreed to by the trading partners can be implemented.

The NAFTA agenda

In agreeing to participate in a free trade agreement, the U.S., Canada, and Mexico developed an agenda of specific trade policies on which the three countries were to agree. The three countries also agreed to address issues and concerns that each country may have about the others' current and future trading policies. Towards that end, working groups were formed to negotiate the following issues:

Market access

- Tariffs and nontariff barriers
- Rules of origin
- Government procurement

Trade rules

- Safeguards
- Subsidies; countervailing and antidumping duties
- Health and safety standards

Services

Investment

Intellectual property

Dispute settlement

Negotiation results

When the agreement was announced on August 12, the following details, by industry, were provided:

Autos—Mexican tariffs were reduced from 20 to 10 percent immediately on autos and on most auto parts within 5 years; NAFTA completely eliminates auto tariffs in 10 years; eliminates export quotas and performance requirements on foreign owned manufacturing facilities in Mexico; eliminates duties on three-fourths of U.S. parts exports within 5 years; and eliminates Mexican import restrictions on buses and trucks within 5 years. To qualify for duty free trade, autos must contain 62.5 percent North American content.

Textiles and apparel—NAFTA eliminates barriers to trade on over 20 percent of U.S. textile and

collar jobs, accounted for 20.5 percent of value added by U.S. manufacturers in 1990.

In addition, U.S. workers' fears are not entirely unfounded. U.S. companies with for-

apparel exports; eliminates barriers on another 65 percent over the next six years; and provides strong rules of origin in order to qualify for duty free status.

Agriculture—one-half of U.S. exports to Mexico will be duty free immediately, with remaining goods to be tariff free within 15 years.

Energy and petrochemicals—NAFTA allows private ownership and operation of electric generating plants for self-generation, cogeneration, and independent power plants; provides immediate access to trade and investment for most petrochemicals; and allows U.S. firms to negotiate directly with Mexican purchasers of natural gas and electricity and to conclude contracts with PEMEX, Mexico's state run petroleum company, or CFE, Mexico's state owned electricity firm.

Electronics and telecommunications—NAFTA eliminates most Mexican tariffs on telecommunications equipment, computers and parts, and electronic components immediately with complete elimination within 5 years.

Financial services—U.S. banks and securities firms will be allowed to establish wholly owned subsidiaries with transitional restrictions to be phased out by January 2000.

Insurance—existing joint ventures will be allowed 100 percent ownership by 1996; new entrants can obtain majority ownership by 1998; and all equity and market share restrictions will be eliminated by 2000.

Investment—Mexico will eliminate export performance requirements and domestic content rules for U.S. firms operating in Mexico.

Land transportation—U.S. trucking firms will be allowed to carry international cargo to the contiguous Mexican states by 1995 with cross border access to all of Mexico by the end of 1999.

Environment—U.S. environmental, health, and safety standards will be maintained, with states and local governments having the ability to increase standards as needed; NAFTA preserves international treaty obligations such as trade limits on protected species and permits more stringent standards to be imposed on new investment.

¹Benefits to each of the three trading partners are credited to Hufbauer and Schott (1992).

eign affiliates in Mexico increased employment from 1977 to 1989 by 146,000 workers (or 39.4 percent) at the same time that employment in foreign operations of U.S. companies worldwide declined by 8 percent (see Table 2). In particular, employment has grown rapidly in electronics industries and in transportation with each of the Big 3 automakers having auto or truck assembly operations in Mexico. These two industries accounted for 47 percent of employment of U.S. operations in Mexico in 1989.

While these figures document the job flight to Mexico, it is important to note that other forces are also dislocating American workers, including the movement of production to other low wage countries, such as Taiwan and Singapore, by both domestic and foreign companies. Thus, U.S. jobs lost to Mexico might instead have been moved to another low wage country rather than remaining in the U.S. In fact, some business and labor representatives believe that open borders with Mexico have, so far, helped preserve jobs in the U.S. that would have otherwise been lost overseas. It is argued that, in some instances, access to low wage labor in Mexico has sustained the U.S. share of such production in the face of foreign competition, and may be the advantage U.S. companies need to remain price competitive in world markets. Some supporters of NAFTA⁴ even argue that protecting jobs in industries in which the U.S. does not hold a comparative advantage makes both the U.S. and Mexico less prosperous. U.S. jobs "saved" in one industry are merely jobs lost in other industries.

From a U.S. perspective, Mexico's growing economy, together with NAFTA, may have a positive effect on the U.S. economy. A recent Commerce Department report indicates that in 1990, exports to Mexico supported 538,000 domestic jobs and that for every 10 jobs directly supported (for example, manufacturing jobs), another 19 more jobs (such as supplier jobs) are indirectly supported.⁵ Also, most studies of the impact of NAFTA on U.S. industries agree that industries with increased export potential will be winners (including chemicals, plastics, machinery, and metals) and other industries, especially those that have been tariff protected (such as citrus crops, sugar, apparel, and furniture) will be losers. However, on net, the U.S. will likely realize only small or negligible increases in production.

TABLE 1							
Hourly manufacturing compensation costs for production workers							
	1985	1986	1987	1988	1989	1990	1991
	(-----U.S. dollar costs-----)						
U.S.	\$13.01	\$13.25	\$13.52	\$13.91	\$14.31	\$14.88	\$15.45
Canada	\$10.80	\$11.00	\$11.94	\$13.51	\$14.81	\$16.02	\$17.31
Mexico	\$1.60	\$1.10	\$1.06	\$1.32	\$1.59	\$1.80	\$2.17
	1985-1988	1989	1990	1991			
	(----Annual % change in U.S. dollar costs----)						
U.S.	2.3	2.9	4.0	3.8			
Canada	7.7	9.6	8.2	8.1			
Mexico	-6.2	20.5	13.2	20.6			

SOURCE: U.S. Dept. of Labor, Bureau of Labor Statistics, *International Comparisons of Hourly Compensation Costs for Production Workers in Manufacturing, 1991* – Report 825.

Worker retraining and other assistance

Although NAFTA will be phased in slowly over many years, it is likely to accelerate the labor market upheaval that certain industries and local areas have already experienced. Particular regions, including the Midwest, are highly concentrated in industries, such as the

domestic auto industry, that have and are undergoing deep disruptions.

Officially the Big 3 automakers support “a well crafted NAFTA” and expect that increased trade with Mexico “could result in expanded export opportunities for U.S. vehicle and parts manufacturers.”⁶ Underlying this statement is

BOX 2

An overview of the maquiladora program

The maquiladora program was initiated in 1965 by the Mexican government in response to the cancellation by the United States of a prior work program, called the *bracero* program, that allowed Mexican workers to cross the border for seasonal work. The maquiladora program allows 100 percent foreign ownership of a firm located in Mexico for the purpose of manufacture and assembly of products for export. In the original program, imports used in processing were not subject to Mexican tariffs providing they were 100 percent reexported. Recent changes to the program allow a portion of the goods to be sold in the domestic market. Only the value added in Mexico (that is, labor costs and domestic parts) are subject to import tariffs upon reentry. Also, machinery or other items used in the production are exempt from Mexican import tariffs.

The textile industry was the first industry to use the maquiladora program but over time, other labor-intensive industries such as electrical components, furniture, and transportation equipment also opened factories in Mexico. Originally, maquiladoras had to be located along the Mexican border, but that restric-

tion is no longer in force. By 1990, 470,000 workers, including both production and administrative workers, were employed in maquiladoras.

Most maquiladoras are U.S. owned, but there are a few Canadian, Japanese, and European operations as well. Due to the present state of the U.S. economy, more applications to build maquiladoras were received from non-U.S. companies in 1991 than from U.S. companies.

While NAFTA will eventually remove most tariff and nontariff barriers to trade between the U.S. and Mexico, the fate of the maquiladoras is uncertain. The theory that more U.S. plants will relocate to Mexico to take advantage of lower Mexican wages is not necessarily sound. For one, as the Mexican economy grows, the wage gap will eventually decrease. Also, other factors, such as infrastructure and natural resources, play a large part in location decisions. On the other hand, Mexico is a large and growing market, and the decision to relocate to be closer to a firm's market will become a factor in favor of either relocating or expanding operations.

TABLE 2					
Employment of U.S. nonbank foreign affiliates					
Year	Mexico	Canada	All countries	Non-Mexico	Asia/Pacific
	(-----Thousands of workers-----)				
1977	370.1	1,064.5	7,196.7	6,826.6	1,208.3
1982	470.3	913.8	6,640.2	6,169.9	1,159.7
1983	442.9	900.6	6,383.1	5,940.2	1,170.0
1984	430.0	897.9	6,417.5	5,987.5	1,182.0
1985	465.9	900.6	6,419.3	5,953.4	1,155.5
1986	441.9	905.1	6,250.2	5,808.3	1,210.8
1987	438.1	907.8	6,296.6	5,858.5	1,214.7
1988	460.1	965.5	6,403.5	5,943.4	1,283.9
1989	515.8	945.4	6,621.4	6,105.6	1,416.2
Change 1977-89	145.7	-119.1	-575.3	-721.0	207.9
% change 1977-89	39.4	-11.2	-8.0	-10.6	17.2

SOURCE: Department of Commerce, Bureau of Economic Analysis.

the expectation that the potential of the Mexican market is so large that American operations will expand significantly to accommodate it.

Even so, U.S. labor lobbied hard to have worker displacement addressed and job retraining included in NAFTA negotiations. While the Bush administration does recognize that job replacement is likely to occur and recognizes the need for job retraining, no formal program was included in the proposed NAFTA. However, shortly after the NAFTA agreement was completed, President Bush proposed a five year, \$3 billion per year job training initiative, of which \$2 billion per year would be earmarked for dislocated workers. This plan, called the New Century Workforce proposal, would replace the current Economic Dislocation and Worker Adjustment Assistance program, as well as the Trade Adjustment Assistance Act, and would require congressional approval.

Rules of origin

"Rules of origin" is a trade term which defines the minimum percentage of a country's exported product that must be produced or substantially transformed within the border of the exporting country (also known as "local content"). The term "substantially transformed" means that products that use foreign inputs must go through considerable change

(for example, a raw material being processed into a finished good) in order to be used in an export to a free trade partner. The reason for this rule is to limit a country involved in a free trade agreement from using cheaper, foreign parts in its exports and then using its favorable tariff arrangements to avoid higher import tariffs.

While all industries are concerned with this issue, the domestic auto industry, headquartered in the Seventh District, had proposed that a strong rule of origin apply to the automotive industry. In addition to a lengthy phase-in period designed to protect companies with existing operations in Mexico, the Big 3 automakers had suggested that the rules of origin be more stringent in an agreement with Mexico. In the U.S.-Canada free trade act, auto related rules of origin are applied to each plant, with a current minimum of 50 percent local content required. For the U.S.-Canada-Mexico agreement, the Big 3 had suggested that each company, rather than each plant, be allowed to average the local content requirement, with GM suggesting a 60 percent requirement, and Ford and Chrysler proposing 70 percent.⁷ NAFTA proposes a 62.5 percent local content rule for passenger vehicles and 60 percent for other vehicles and auto parts based on net cost (total cost less royalties, sales promotion, and packing and shipping).

BOX 3

Seventh District manufacturing exports to Mexico

Over the 1987-1991 period, total export shipments from District states grew from \$35.5 billion to \$52.9 billion. Exports to Mexico grew by \$1.5 billion over this period, or from 4.8 percent of total manufacturing exports to 6.2 percent.

Recent trends in District manufacturing exports (Millions of dollars)

Sector	1987	% of District industrial exports ¹	1991	% of District industrial exports ¹
Food and tobacco	\$43.3	3.6	\$117.1	6.0
Textiles and apparel	2.1	1.7	44.9	18.3
Wood and furniture	4.0	1.3	51.7	6.1
Publications and printing	18.7	2.6	51.3	4.0
Chemicals	75.7	2.6	147.8	3.3
Petroleum refining	3.5	1.4	2.5	1.7
Rubber	18.9	3.5	110.6	9.0
Leather	0.7	0.7	2.7	1.7
Stone and glass	14.5	3.0	24.5	4.7
Primary metals	50.3	6.6	206.2	9.7
Fabricated metals	25.9	1.2	169.8	5.7
Machinery, except electric	353.0	4.5	933.2	7.9
Electrical machinery	121.4	4.1	273.5	5.4
Transportation	860.8	6.1	1,004.7	6.0
Measuring instruments, miscellaneous manufacturing	123.0	9.7	111.1	3.6
TOTAL	\$1,715.6	4.8	\$3,251.7	6.2

¹The amounts in this column represent the percent of total District exports of each industry that are exported to Mexico. For example, in 1987, District exports of food and tobacco to Mexico represented 3.6 percent of total District exports of food and tobacco to all foreign countries.

The five largest industries by shipment value to Mexico from District states in 1991 were transportation, machinery except electrical, electrical machinery, primary metals, and fabricated metals.

These five industries increased exports to Mexico by \$848 million over the period, comprising 55 percent of total manufacturing export growth.

District exports to Mexico grew in other industries as well. For example, in 1987, exports of textiles and apparel to Mexico comprised only 1.7 percent of total textiles and apparel exports. By 1991, exports to Mexico had grown to 18.3 percent of total textiles and apparel exports. Likewise, wood and furniture exports grew from 1.3 percent to 6.1 percent; rubber exports from 3.5 percent to 9.0 percent; fabricated metals from 1.2 percent to 5.7 percent; and primary metals from 6.6 percent to 9.7 percent. Measuring instruments and miscellaneous manufacturing was the only industry that experienced a decline in exports to Mexico over the period.

Environmental issues

A third issue addressed by NAFTA was the environmental impact of increased production. Environmental concerns usually were voiced by three interest groups: environmentalists, industry sectors concerned about losing their jobs to low cost Mexican labor, and industry sectors that stand to gain from increased trade with Mexico.

Environmentalists fear that increased trade with Mexico will expand already problematic environmental conditions, such as air and water pollution, and increase health and safety concerns for workers caused by lax (or nonexistent)

enforcement of health and safety standards. These concerns are not only for the Mexican workers, but also for the spillover effects in many U.S. cities along the U.S.-Mexico border. For example, those concerned by this issue cite the Mexican maquiladora program that brought thousands of Mexican workers and their families to Mexican border towns without adequate infrastructure to house and feed them. This resulted in substandard living conditions in the Mexican towns and in pollution of the ground water and air of both the Mexican towns and the American towns just north of the border.

Industries concerned about losing their jobs to Mexican workers have embraced the environmentalists' cause and are suspicious that U.S. and foreign companies will relocate to Mexico to avoid their own countries' antipollution laws. The environmentalists also fear the U.S. may relax its own laws to remain competitive.

Industries that stand to gain from NAFTA point to the recent progress Mexico has made towards cleaning up its environment. For example, the Mexican government has lowered the lead content of petrol, closed some of its worst factories, and passed new environmental laws modeled after U.S. laws. In addition, one study of the environmental impacts of NAFTA suggests that because of Mexico's abundance of labor, it is likely that the types of industries that will open or relocate to Mexico will be more labor intensive than capital intensive, resulting in less energy use and less hazardous waste.⁸

Environmental concerns prompted the United States to develop an action plan that directed the Environmental Protection Agency to meet with their Mexican counterparts to ensure that comprehensive environmental, safety, and health standards and enforcement measures were included in the agreement. In the Bush administration's 1993 budget proposal, \$241 million is requested for border cleanup, nearly double that of fiscal year 1992. However, in a recently submitted environmental plan, no new cleanup funds beyond 1993 have been requested.⁹ Other U.S. agencies, like the Food and Drug Administration, the Department of Agriculture, and the Department of Labor, also were directed to

participate in the negotiations to ensure that all U.S. environmental concerns were addressed. The proposed NAFTA includes a section on the environment that stresses no reduction in current standards and a move towards harmonization of standards among the three trade partners. This agreement is the first trade agreement to specifically address the environment.

Conclusion

The potential for the U.S., Canada, and Mexico to become the world's largest regional trading bloc will enhance all three countries' ability to prosper and compete. Mexico will most likely benefit the most from its new standing as a North American trading partner. Its recent moves towards international market liberalization and economic reform have already begun to change the world's view of Mexico in terms of trade and investment; NAFTA will solidify it. The U.S. will benefit not only in terms of increased exports, but also from better and more open relations with Mexico in areas such as drug enforcement and illegal immigration.

However, widespread U.S. support for NAFTA will depend on how well the negotiators were able to protect the wide array of U.S. interests, particularly as they relate to rules of origin, worker retraining and dislocation programs, and the environment. If it is to receive broad based support, the costs and benefits of NAFTA must accrue to those directly affected, rather than unfairly burden or protect the few.

FOOTNOTES

¹Because the United States and Canada already have an existing free trade agreement, this article will focus on U.S.-Mexico trade relations.

²*The likely impact on the United States of a free trade act with Mexico*, United States International Trade Commission, pp. 1-2.

³Because of the use of different data sources, the term "capital goods" as it relates to exports from the U.S. and imports to Mexico is not totally comparable.

⁴McTeer (1991), p. 6.

⁵Davis (1992), p. 2.

⁶Chrysler, Ford, and General Motors (1991).

⁷Chrysler, Ford, and General Motors (1991).

⁸Grossman and Krueger (1991).

⁹Stokes (1992), p. 507.

REFERENCES

Davis, Lester A., *U.S. Jobs Supported by Merchandise Exports*, U.S. Department of Commerce, April 1992.

Grossman, Gene M., and Alan B. Krueger, "Environmental impacts of a North American free trade agreement," National Bureau of Eco-

conomic Research working paper series, No. 3914, November 1991.

Hufbauer, Gary Clyde, and Jeffrey J. Schott, "North American free trade: issues and recommendations," Institute for International Trade, March 1992.

McTeer, Robert D., Jr., "Free trade will bring better jobs," *The Southwest Economy*, Federal Reserve Bank of Dallas, September/October 1991.

Position of Chrysler, Ford, and General Motors on the Key Objectives of the North American Free Trade Agreement, paper submitted to the U.S. Trade Representative, Motor Vehicle Manufacturers Association of the U.S., Inc., Sept. 9, 1991.

Stokes, Bruce, "On the brink," *National Journal*, February 29, 1992, p. 507.

United States International Trade Commission, *The likely impact on the United States of a free trade act with Mexico*, February 1991.

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Reducing credit risk in over-the-counter derivatives

John P. Behof



During 1992, there has been much discussion of the staggering size and dramatic growth in the use of derivative and off balance sheet financial products and the potential risks these products present to the global financial system. A number of events in particular have led to greater concerns surrounding management of credit risk arising from derivative and off balance sheet products. While the term “derivatives” is used to describe a variety of nontraditional financial instruments such as interest rate swaps, financial futures, and options, most risk concerns are focused on the proliferation of over-the-counter (OTC) products which bear direct counterparty credit exposure. OTC derivatives include a myriad of swap and option products linked to interest rates, currencies, equities, and commodities. Unlike exchange traded futures and options contracts with margin requirements, OTC off balance sheet products incur credit risk due to the potential default of the counterparty prior to contract maturity.

The bankruptcy of Drexel Burnham Lambert and the subsequent failures of the Bank of New England, Development Corp. of New Zealand, and British & Commonwealth Merchant Bank caused many market participants, especially corporations, European users, and investment funds, to restrict their OTC derivatives credit exposure to only AAA and AA firms.¹ The more recent bankruptcies of Olympia & York and other corporate entities with fairly substantial derivative books further illustrated the dangers in conducting OTC derivatives business

with weak corporate counterparties outside of the interbank arena.

Besides the actual bankruptcies that have occurred, many other firms have been downgraded recently, causing credit sensitivity in OTC derivatives to increase substantially. Other factors contributing to the recent credit concerns include the increasing complexity and maturity of the deals, the increased participation of weaker corporations, uncertainty about legal remedies, and increased difficulty in judging the creditworthiness of derivatives users due to current accounting rules.²

These credit constraints have the potential to impact the number and nature of market participants as well as impede the dramatic growth of off balance sheet financial products. Major commercial and investment banks that have been downgraded have already lost market share and fee income from high margin corporate customers that are in some cases authorized to deal with only AAA or AA firms. The remaining AAA and AA market makers are also reducing their exposure to the downgraded firms, threatening the ability of lesser rated entities to participate in these markets safely and profitably. These pressures could trigger a migration to exchange traded markets, especially in light of the fact that recent regulatory changes will likely

John P. Behof is a Senior Examiner in the Department of Supervision & Regulation at the Federal Reserve Bank of Chicago. The author is especially grateful for assistance by Barbara Kavanagh, Financial Markets Officer. The author would also like to thank Herbert L. Baer, Garrett Glass, John Stocchetti, and Ken Wiersum for their insightful comments.

allow futures exchanges to list OTC products as well as the already listed contracts which can be used as substitutes.³

As a result, derivative market participants have devised new methods for dealing with increased credit risk as well increased usage of more established methods. These may generally be divided into the following categories: (a) formation of a special purpose vehicle (SPV) or special operating subsidiary with a higher credit rating than the parent; (b) collateralization of credit risk; (c) cash settlements, assignments, and unwinds; (d) netting of obligations, both bilaterally and multilaterally; and (e) third party "portfolio" support, such as pool insurance, letters of credit, or guarantees. Some credit reducing techniques, such as bilateral netting and collateral agreements, have been used for years by a minority of counterparties to aid in their execution of trades with each other. Others, such as SPVs and multilateral netting are more recent innovations. The successful implementation of any of these credit reducing techniques will determine whether these markets experience continued growth or stagnate under the weight of credit constraints. This article will describe and analyze some of the more notable attempts at reducing credit exposure in derivatives.

Special purpose vehicles

The use of special purpose vehicles (SPVs) as a credit enhancement in derivatives is in some ways analogous to securitization. Over the past five years, several institutions of less than AAA rating have found securitization to fund certain assets to be cost effective. In a traditional securitization structure, a separate organization, usually a trust, is established to isolate the assets in question from the overall risk of the originator. Establishing corporate separateness is essential for three reasons: to allow the SPV to obtain a separate, higher rating; and to insure that, in the event of bankruptcy or insolvency of the parent, the SPV could avoid having its assets and/or cash flows made part of the bankrupt parent by "substantive consolidation;" and to assure the parent's creditors or regulators that there is no recourse to the parent.

A classic securitization is the conveyance of a pool of assets to the trust, with the credit risk of the pool partially insured by a mechanism such as a reserve for losses, letter of credit, etc. In the case of derivatives, SPVs have generally been established to isolate a product line *pro-*

spectively. A review of two SPVs established to date by major investment banking firms illustrates this.

Both Goldman Sachs Equity Markets L.P. and Merrill Lynch & Co. have established and capitalized SPVs to improve their trading products' capabilities. In each instance, the parent company has contributed significant capital to the newly formed entity. Both SPVs obtained AAA ratings whereas the parent firms had A+ senior unsecured debt ratings. The level of capitalization in each, together with certain other steps taken to effect corporate separateness and contain the level of credit and market risks indigenous to the portfolios, allowed the SPVs to attain separate, higher ratings.

In the case of Goldman Sachs, GS Financial Products International, L.P. (GSFPI) takes the legal form of a limited partnership. It was initially capitalized by a parental contribution of a portfolio of in-the-money yen denominated options and warrants on the Nikkei 225 stock index valued at approximately 9.3 billion Japanese yen. In the case of Merrill Lynch, Merrill Lynch Derivative Products, Inc. (MLDPI) is a legally independent subsidiary capitalized via \$300 million in common stock issued to Merrill Lynch and a \$50 million preferred stock issue placed with a third party. With each vehicle, additional elements are present to insure corporate separateness that include all or some of the following: some element of management and directorate independence, operating and accounting safeguards, and ongoing, independent audit or third party oversight.

Credit and market risk associated with the SPVs existing and/or prospective business is limited by setting certain preestablished parameters within which business will be conducted. Counterparties need to meet certain *de minimus* standards designed to insure diversification and to limit risk taking. These include the credit rating of counterparties, exposure to an individual counterparty, limits on aggregate exposure to a class of a given rating category, and limits on diversification of country risk by country of origin of counterparty. Credit quality can also be maintained through various capital targets which become increasingly restrictive as counterparty ratings decline and probability of default increases.

Equally important are the terms of such other factors as market, currency, and/or interest

rate risk exposures. MLDPI is chartered to enter into interest rate and currency swaps, caps and floors, and interest rate options. Each swap MLDPI enters into with a customer will be mirrored by a swap with the opposite payment characteristics from Merrill. MLDPI will therefore not be directly exposed to fluctuations in interest rates or exchange rates.⁴ Since Merrill's rating of A+ makes it the lowest rated counterparty conducting business with MLDPI, the latter is protected by a requirement that Merrill collateralize its *net* position with MLDPI. The ability to provide collateral on a net basis is one reason SPVs are more attractive than executing separate collateral agreements with each counterparty.

As of this writing, there are several commercial banks contemplating the establishment of SPVs in the form of operating subsidiaries to house at least a portion of their derivatives business. The creation of SPVs by banks raises several new regulatory issues.

(a) Bankruptcy remoteness: in the case of a commercial bank, the issue is whether, in the event of insolvency of the associated bank, the Federal Deposit Insurance Corporation (FDIC) would recognize the derivatives subsidiary as being a separate entity or instead consider it part of the institution in receivership. As of this writing, it is unclear whether the rating agencies will rate bank derivative product subsidiaries AAA without some form of assurance from the FDIC that they will in fact be treated as "bankruptcy remote."

(b) Capital adequacy: clearly the Merrill Lynch and Goldman SPVs were begun with substantial capital contributions from their parents. The ability of commercial banks to contribute such sums and remain adequately capitalized as independent entities will be subject to review. In addition, movement of collateral from the bank to the SPV will be required in the event the value of the bank's position deteriorates or if one of the SPV's counterparties is downgraded. In the proposals to date, the derivative subsidiaries are structured as operating subsidiaries of the commercial bank so that any equity contributed to the subsidiary could be "recaptured" in the accounting consolidation process. The question becomes one of whether consolidation of allocated capital should be permitted for risk capital adequacy purposes.

(c) Preemption of the FDIC and unsecured creditors: the question arises of whether unse-

cured creditors of the bank establishing the derivatives operating subsidiary are effectively disadvantaged by a portion of capital being allocated to the subsidiary. In the case of commercial banks, the ultimate unsecured lender could be the FDIC.

The proponents of bank SPVs recognize these issues as important, but believe they are not exclusive to derivative subsidiaries for the following reasons. First, the establishment of bankruptcy remote entities by banks is not a new concept and the legal precedent for corporate separateness is well established. Second, the consolidation of nonderivative operating subsidiaries for the "recapture" of risk based capital is a regularly accepted practice, except for bank holding company subsidiaries (Section 20 subsidiaries) that are involved in "bank ineligible" securities underwriting activities which have been allowed by the Federal Reserve Board on a limited basis since 1987.⁵ However, the combination of a bankruptcy remote entity which is also an operating subsidiary is a new concept. Finally, the preemption of the FDIC and other unsecured creditors can be accomplished effectively through a number of other collateralized activities already conducted by banks, including exchange trading, unilateral, bilateral, and multi-lateral collateral agreements, as well as repurchase agreements and membership in clearinghouses. For example, if a bank were taken over by a government agency, it is unlikely the agency could repudiate an obligation to a third party and expect that party to return the collateral it held as security for the obligation.

Although SPVs are in their infancy, market participants note that each of the vehicles established to date are reported to be successfully booking business with corporate users and OTC market participants. However, two negatives of SPVs have been noted. First, some corporations do not believe the AAA SPVs are truly AAA and will "look through" the vehicles to the parent's credit rating. Second, some corporations are not agreeing to have their trades reassigned out of the SPV in the case of their own downgrading.

Bilateral netting

Banks and other derivative market participants have been more aggressively pursuing netting agreements, both bilateral and multilateral, as a reaction to credit concerns. The ability to net obligations within product groups, such as

foreign exchange and interest rates commodities, has been the focus of the vast majority of these attempts, although cross product netting between derivative types is becoming more prevalent. For example, if Bank A was owed a net present value of \$50 million on interest rate swaps by Bank B, but owed \$25 million in currency options to Bank B, netting the two obligations would reduce credit risk by half. Some cross product netting agreements have gone so far as to include the netting of nonderivative obligations such as loans with net derivative balances, but these are very rare. Some large banks have indicated that having derivative bilateral netting agreements with approximately a dozen large counterparties could reduce credit risk by as much as 50 percent.

Bilateral netting agreements can generally be divided into four categories: netting by novation, close out netting, payment netting, and cross product netting.

Netting by novation

Netting by novation refers to a legally binding netting where matched pairs of trades between counterparties are superseded by subsequent trades—in effect, a running balance is operative.⁶ The Financial Institutions Reform, Recovery, and Enforcement Act of 1989 (FIRREA) specified several “qualified financial contracts” and how netting of these contracts would be treated in receivership or conservatorship for U.S. depository institutions. This allowed institutions to comfortably participate in written novation agreements for most derivative contracts with U.S. depository institutions without much worry of regulatory repudiation.

Netting by novation has been popular with foreign exchange contracts because large numbers of matched trades typically exist (same currency, same settlement date, same counterparty), although spot foreign exchange was not specifically mentioned in FIRREA. In interest rate products and other OTC derivatives, however, netting by novation is less common since trades with matching terms are more unusual. Since principal is not exchanged, it is the periodic payments that fall on the same settlement date within the same product line which are novated. It would appear, however, that the desire to utilize netting by novation in a credit sensitive environment may encourage more standardization in these products.

Regulators have expressed concern that the large growth in outstanding notional principal value in derivative markets has been accompanied by a commensurate amount of growth of the risk in these markets. The trend toward netting schemes, however, has the power to reduce real credit risk relative to the size of notional values. Using the outstanding notional principal as a proxy for risk will become even more tenuous as legally enforceable netting environments proliferate. In countries where it is known to be enforceable, netting must be viewed as a powerful credit enhancer and may become even more prevalent in the years ahead.

Close out netting

Close out netting is a netting procedure which becomes operative only in the event one or both of the counterparties defaults on its obligations or a triggering event takes place, such as a downgrade. Although close out netting agreements used to be mostly stand alone agreements, they are increasingly becoming part of master agreements. The current International Swap Dealers’ Association (ISDA) master agreement, a bilateral agreement typically used between interest rate derivative counterparties, defines the methodology by which all contracts between the party and the counterparty will be netted to a single number in the event of a default. In addition, the standard swap agreement has a provision which states that a default on any single swap or derivative obligation between the counterparties triggers termination of all derivative contracts between the counterparties, thus preventing “cherry picking” (that is, demanding payment for trades with positive mark to markets and reneging on trades with negative mark to markets) by counterparties. Once termination is triggered, all positions are marked to market and any payments owed to the defaulting party are netted against payments owed by the defaulting party before settlement is made.

Changes in the bankruptcy laws in the United States in 1990 made close out netting in derivatives standard procedure for corporate entities, while the FDIC Improvement Act of 1991 (FDICIA) clarified the enforceability of close out netting and netting by novation in derivatives for depository institutions. By being even more specific about the protection from cherry picking by regulatory conservators and counterparties, FDICIA improved what FIRREA had begun. Since FIRREA states that close out

netting will be accomplished using net present values, it lessened significantly the credit risk associated with long term financial contracts. FDICIA does not limit the netting procedures to "qualified financial contracts" like FIRREA, thereby opening the door for cross product netting of financial contracts with other more traditional obligations. FDICIA does, however, contain stringent documentary requirements for counterparties, consistent with FIRREA and the Bankruptcy Code for corporations.

Payment netting

Payment netting or "position netting" is an unwritten arrangement between two counterparties to net the payments arising from two or more derivative transactions on which payments are due on the same day. A written agreement to net payments would be considered netting by novation. In either case, the underlying credit risk from mark to market values is unchanged, because they remain legally obligated for the gross transactions.⁷ The number of settlement messages are also reduced, as are the amount of funds needed for routine settlements. The value of informal payment netting is unclear, however, because whether it is legally binding remains untested.

Cross product netting

As previously mentioned, netting across derivative product categories has been experimented with for the last several years, while netting derivatives with nonderivatives is just beginning. For example, suppose XYZ Corporation has an exposure to Bank A. In order to ensure that Bank A could perform, it grants a loan or credit line to XYZ Corporation. The loan or credit line would be in the same amount as the exposure, with the credit line only being drawn upon by Corporation XYZ if Bank A appeared to be in trouble. With a cross product netting agreement, if Bank A is taken over by a federal agency, Corporation XYZ's exposure on the derivative would be netted against the loan, and therefore the net exposure would be eliminated. Although potentially a powerful credit enhancer, this type of arrangement may face criticism as it could strain bank liquidity when it was needed most. Surely, as this type and other types of cross product netting schemes come to light in the next few years, there will be much debate as to whether their benefits are outweighed by other risks they may introduce.

The legal implications of bilateral netting

The legal enforceability of bilateral netting agreements is paramount in order to effect any risk reduction in the case of counterparty bankruptcy. It has been substantially enhanced in the U.S. by recent amendments to the United States Bankruptcy Codes (1990), FIRREA, and FDICIA for depository institutions. The ability of conservators to cherry pick has been severely restricted in the U.S. by these legislative changes, but only if written bilateral netting agreements exist. Section 212 of FIRREA states that no person will be prohibited from exercising his or her right to net obligations of any qualified financial contracts with depository institutions in conservatorship or receivership. FIRREA defined qualified financial contracts as any securities contract, commodity contract, forward contract, repurchase agreement, swap agreement, and any similar agreement.⁸

Despite the legal changes incorporated in FIRREA and the bankruptcy code, some uncertainty remained. For example, since the qualified categories were so broadly defined, it was never made clear whether spot foreign exchange contracts were included. In addition, it was also never made clear whether netting would be permitted across categories of individually qualified contracts. FDICIA's approach, however, is to look at the type of contracting party, not the contract. Any kind of agreement between *financial institutions* in which parties agree to net positions subject to certain contingencies would be considered a qualified netting contract. Under FDICIA, the Federal Reserve Board may determine what is a financial institution and is currently determining whether insurance companies, swap affiliates of broker-dealers, nonbank subsidiaries of banks and bank holding companies, or other entities will be included in the definition.⁹

Outside of the U.S., the legal enforceability of netting is not as straightforward. The Lamfalussy Committee on Interbank Netting Schemes concluded in its 1990 report that bilateral master agreements and other bilateral netting by novation or current account agreements are likely to be enforceable in countries where the 1988 Basle Accord is in effect.¹⁰ The ISDA has obtained legal opinions from counsel in Belgium, Canada, France, Germany, Italy, Japan, the Netherlands, Sweden, and the United

Kingdom indicating that netting provisions contained in bilateral master agreements were likely to be upheld in each of those countries.¹¹ Unfortunately, constructing legally enforceable netting agreements, considering the sometimes conflicting legal structures of different countries, is often at odds with the attempts to standardize such agreements. Also, because so few derivative firms have gone bankrupt, different degrees of comfort are taken from reasoned legal opinions, especially when the more esoteric derivatives are involved and countries with less clear legal precedent are involved. In addition, regulatory authorities have expressed concern over the enforceability of netting agreements during an international financial crisis, which would have potentially widespread systemic implications.

Although they can be somewhat expensive and difficult to execute, bilateral netting agreements are gaining popularity as an immediate remedy to credit constraints, particularly since multilateral clearinghouses appear to be a year or two away from establishment. Until recent introduction of more standardized documents, standardized bilateral netting agreements were usually customized documents or somewhat customized versions of the ISDA master agreement which were negotiated by the attorneys from each counterparty. As bilateral netting agreements have gained popularity, more standardized agreements are appearing. ISDA has developed a standardized bilateral close out netting agreement which is part of the so called multiproduct master agreement which has recently been completed. Other agreements used in the market which have provisions for bilateral netting include the International Currency Options Market Master Agreement and Guide (ICOM), the New York bank foreign exchange master, the PSA agreement for bond options and repurchase agreements, the cross border Canadian foreign exchange agreement, and FXNET. In addition, the ICOM group is preparing an agreement for foreign exchange spot and forward transactions which will include netting provisions. None of these netting documents has yet emerged as a clearly preferred document within the financial industry.

Collateral pledging for OTC derivatives

Recently, many interbank derivatives market participants have established unilateral and bilateral collateral agreements or margining agreements among themselves and with corporate counterparties. In short, bilateral collateral agree-

ments require two way movement of assets, that is, the positions are marked to market and the debtor counterparty pledges cash or securities to the contra counterparty. Unilateral agreements require one counterparty to deliver collateral on trades with negative mark to markets but not the other, presumably because one counterparty is less creditworthy. Theoretically, if the debtor counterparty that pledged collateral was to default, the contra counterparty would take possession of the collateral. This system is analogous to the futures exchanges' mark to market system. In a futures system, participants with positive mark to market positions receive cash. Under a collateral agreement they are pledged assets.

Bilateral collateral agreements have become popular with downgraded interbank participants because they allow them to continue to trade among themselves, while capping, or limiting, attendant credit exposure; unilateral agreements have allowed weaker corporations and thrifts to participate in OTC derivatives. In general, the highest rated interbank players (AAA, AA) have preferred to trade among themselves and with highly rated corporations and have not to date been active in establishing interbank collateral agreements. Recently, however, more highly rated participants have been attracted to the concept in order to facilitate trades with lower rated counterparties and increase volume with higher rated counterparties.

One question is whether the cost of collateralizing losing trades would prohibit widespread acceptance of the concept. Investigation shows, however, that the cost can be made manageable. Several cost cutting methods are in use.

- (a) High thresholds for movement of collateral (usually several million dollars) eliminate the need to move collateral in the case of small losses. High thresholds decrease the probability that collateral will move, but allow for protection against large credit losses and reduce costs significantly. In many cases, the counterparty with the higher credit rating may have a higher threshold or point at which collateral need be pledged than the lower rated counterparty. This system of uneven thresholds allows lower rated interbank participants to avoid unilateral collateral agreements. Uneven thresholds also allow for the possibility that the lower rated bank may receive collateral. In cases where creditworthiness is of great concern, a negative thresh-

old is established. Collateral is pledged on an existing deal in which the debtor's mark to market value approaches zero but is not yet negative. When a negative threshold is in effect, some initial collateral may be required on day 1 because the mark to market value would already be near zero for the weaker counterparty on the day the contract is executed.

- (b) Triggering events such as rating agency downgrades or lower capital ratios can be used to initiate collateral movements. This type of advance agreement can reduce substantially the operational costs of moving collateral regularly while maintaining significant protection from losses.
- (c) Commingling of funds allows the collateral recipient to earn some interest on the collateral to defray the cost of its collateral outlays. In this respect, cash collateral is treated like a pledged bank deposit and security collateral would be available for repledging by the holder. However, some collateral agreements prohibit repledging of securities or commingling of funds.
- (d) Security substitution or rehypothecation provides even greater flexibility and less cost. For example, debtor counterparties may use term repurchase agreements (repos) to obtain collateral, that is they would make a short term loan to a third party and receive securities as collateral for the loan. These securities would then be pledged to the derivative contra counterparty as collateral on the derivative position, which could be long term. With rehypothecation, the debtor may substitute alternate securities or cash with the derivative contra counterparty when the repo term is up or at any time, thus allowing the most cost effective use of collateral. The following example illustrates these transactions.

Suppose Bank A is the debtor counterparty and must pledge collateral to the contra counterparty (Bank B). After comparing all the interest rate swap contracts between Bank A and Bank B, Bank A has a negative mark to market of \$12 million with Bank B. (In other words, interest rate movements since the time of initially entering into these contracts have been in favor of B, thereby leaving it with credit risk exposure to Bank A.) The collateral threshold, however, is \$10 million. Bank A is therefore required to

pledge \$2 million collateral to Bank B. Bank A could deposit \$2 million cash in a bank account at Bank B and earn the interest. Bank A could also send securities that it already owns.

Those already collateralizing transactions believe that the collateral agreements described above would be enforceable in a bankruptcy proceeding, especially in the case where securities are used. In fact, banks sometimes avoid using cash as collateral even when it is more economical because of the greater uncertainty of retrieving the cash in the event of a default. The greatest uncertainty lies in the case when excess collateral has been delivered to a counterparty with a positive mark to market that subsequently defaults. If cash collateral is used to fulfill the debtor counterparty's obligations, any claims for any "excess" cash resulting from revaluing the contracts could be viewed as an unsecured claim by a bankruptcy court. When securities have been used as collateral, the excess amount seems less likely to become an unsecured claim because securities are easier to trace and to identify than cash. Therefore, it is presumed that excess collateral in the form of securities would be easier to retrieve in the case of bankruptcy.

To enhance the enforceability of collateral agreements, a security agreement addendum may be attached to the customer master agreement. The agreements are generally customized. If all trades made between the two counterparties within a particular product group are netted—that is, all cities, branches, subsidiaries, or affiliates—then the collateral agreement would reflect this and thus avoid sending collateral to one location while receiving collateral from another. Similarly, cross product netting agreements may be considered in the collateral agreement. If swaps and option activity is netted across foreign exchange, interest rate, equity, and commodity derivative products, then moving collateral for one group of products while offsetting values were available from another product group would be unnecessary.

To improve efficiency in the delivery and receipt of collateral, counterparty agreements will specify minimum increments of collateral to be moved. In other words, rather than move collateral daily, it would only be moved when the mark to market value deteriorates by a set amount (for example, \$1 million). Minimum increments save staffing costs, wire fees, and other fees. The combination of high thresholds

and high increments can lower the cost of a collateral program while maintaining considerable protection against large credit losses. This valuable credit enhancement is attained with daily monitoring of both mark to market and collateral values, but infrequent movements of collateral.

In addition to thresholds, increments, triggering events, and substitution provisions, the collateral or security agreement will generally also specify the types of securities, whether haircuts or reductions will be applied to their current value, the rates of interest that will be paid to the party posting collateral, and the time frame within which collateral must be delivered.

Collateralizing or margining of losses in the OTC derivatives markets will undoubtedly grow as a means to deal with credit concerns, unless multilateral clearinghouses come into prominence or credit concerns ease. The cost of collateral programs will be minimized by the cost cutting methods outlined above, as well as by achieving economies of scale upon greater acceptance of collateral programs. The growth of collateral agreements will certainly be furthered by the trend toward standardized master agreements for derivatives, which will help save the costs of completely customized agreements.¹²

Mark to market settlement and discretionary cash settlement

Mark to market settlement is also used by counterparties to reduce bilateral credit exposure. In this case, two counterparties agree to periodically send cash to cover negative mark to markets in much the same manner that futures exchanges require full and immediate payment to cover losses incurred. The counterparty with the positive mark to market takes actual ownership of the cash and therefore legally erases the obligations of the debtor counterparty. Unfortunately, this requires both parties to continuously agree on the value of the position, which can be difficult for complex contracts. Also, it is more costly to the debtor counterparty because no earnings on the transferred assets can be accrued as in collateral arrangements. In general, counterparties are somewhat reluctant to agree to cash settlement because the benefits of such a system are more skewed toward the counterparty with the positive mark to market than collateral systems and the costs are higher to the debtor. Some master agreements now include triggering events which require mark to market settlement

in the case of a downgrade of the less creditworthy counterparty or, in some cases, either counterparty.

Whereas mark to market settlements require periodic payments on losses for ongoing contracts, discretionary cash settlement agreements permit early termination of existing contracts at a predetermined settlement date. At the outset of a 5 year contract, for example, the two counterparties would agree to actually settle up after 2 years and terminate the contract at the discretion of either counterparty. If the fixed settlement date passes, however, without either party exercising the settlement option, the contract must then be held to maturity. The methodology of marking the position to market would be agreed to at the outset. Discretionary cash settlement can be appealing since risk can be eliminated at an agreed upon date, and the cost of periodic mark to market payments or periodic collateral movements can be avoided. This is particularly useful when credit concerns for long term contracts are particularly acute.

As mentioned above, in both mark to market settlement and cash settlement agreements the counterparties must clearly articulate the means for calculating the cash settlement amount either in an appended schedule to the standard agreement or in some other document governing the relationship.

Netting services and clearinghouses

In order to aid the operational aspects of private bilateral agreements, several bilateral netting services have sprung up which provide "matching services." The two most prominent of these systems are called FXNET Ltd. and SWIFT Accord, which match outstanding transactions between two counterparties and replace them with a single settlement amount at the end of the day.¹³ Both systems avoid the telecommunication and systems costs and the inefficiencies of matching trades in each individual back office. Both systems are informational intermediaries and as such do not own the trades submitted or become involved in the settlement, which is up to the individual participants. FXNET Ltd., in operation since 1985, is owned by a consortium of 12 of the world's top twenty banks, for which Quotron Systems Inc. is the manager. Trades entered through FXNET are bilaterally netted. SWIFT Accord is owned by the Society for Worldwide Interbank Financial Telecommunication, which has a financial com-

munications network covering 3,000 financial institutions in 72 countries.

Currently, there are also two notable attempts underway to establish multilateral netting systems or clearinghouses for foreign exchange and eventually other derivatives. The credit enhancement advantages enjoyed by such arrangements are: 1) netting amongst several counterparties rather than each individually yields great operational efficiencies and reduces payment flows substantially; 2) the clearinghouses may provide limited guarantees to the trades; and 3) the clearinghouses will act as a central conduit for payments and potentially reduce settlement risk. These clearinghouses will have to be approved by the host central bank as well as meet the standards of the group of central banks whose currencies are involved.

One of the two attempts to establish multilateral netting is being organized in North America. This clearinghouse will involve two U.S. and six Canadian banks (First National Bank of Chicago, Chase Manhattan Bank, Bank of Montreal, Bank of Nova Scotia, Canadian Imperial Bank of Commerce, National Bank of Canada, Royal Bank of Canada and Toronto Dominion Bank). In 1992, the members of the North American Clearing House began using a centralized facility to match and bilaterally net trades. In 1993, the clearinghouse is scheduled to begin providing multilateral netting by novation of foreign exchange trades. It may eventually expand to include currency option and other derivatives. The North American clearinghouse will be counterparty to all matched trades in order to maintain the legal discipline of novation. It will net trades for settlement and mark to market. The clearinghouse will attempt to control the daily movements of all currencies so as to create a delivery versus payment settlement system. Clearinghouse members will be responsible for covering another member's default, with the loss sharing formula based on bilateral credit exposures, not volume. Therefore, there will be concentration exposure, counterparty exposure, and liquidity limits in place to control the risks associated with single or multiple defaults.¹⁴

The other multilateral netting system under development is called the European Clearinghouse Organization (ECHO) which is owned by fourteen European banks and is currently expected to be operative in early 1994. Its policies and

procedures will be similar to the North American initiative with some important exceptions. The legal basis will not be novation but "open offer," under which any two members' trades will belong instantly to the clearinghouse without initial reference to clearinghouse limits. Over 20 currencies will be involved rather than the seven major currencies outlined in the North American plan. Access to ECHO will be limited to the SWIFT Accord trade confirmation system. ECHO will be based in the UK and therefore the Bank of England will be the lead oversight organization.¹⁵

Conclusion

Depository institutions and other derivative market participants have reacted to increased credit risk and risk sensitivities by creating innovative and powerful credit enhancers and by greater utilization of credit reducing techniques that already existed. SPVs have the potential to alleviate credit concerns for certain classes of market participants who insist on dealing with only the highest rated entities. The successful experiences to date and the fact that the rating agencies will likely ease restrictions as they become more comfortable with the concept suggest that use of SPVs will increase in the future. SPVs are not a panacea for credit risk, however, and therefore will likely be just one methodology among many. Furthermore, regulatory concerns in commercial banking concerning deposit insurance and risk based capital may prevent commercial banks from establishing SPVs or may require a less capital intensive form.

Bilateral collateral agreements have great potential to alleviate credit concerns, especially in light of the fact they do not require regulatory or rating agency approval and thus can be used immediately. Although once thought to be cost prohibitive, collateral users have indicated the use of cost saving mechanisms such as thresholds brings down the costs to acceptable levels. The use of more standardized agreements will also lower the cost and time involved in negotiating customized agreements for each individual counterparty. Therefore, it is likely that bilateral collateral agreements will grow rapidly in the near future.

The increased use of bilateral netting between counterparties is inevitable in the years ahead, with or without collateral movement. Although there is much potential in the countries

where netting is believed to be enforceable, the success of the various initiatives to promote enforceability around the world will make for even greater potential. The increasing use of standardized cross product netting, especially across derivative product lines, will further increase the potential of bilateral netting to ease credit concerns.

Multilateral netting schemes have great credit reducing potential for derivatives and already have made progress in overcoming many obstacles in their development. However, delays in launching have prevented the systems from helping to ease the current wave of credit sensitivities and limited product coverage will

impede their usefulness in the near term. When fully operational, however, they have great potential for becoming one of the most important credit reducers of the future.

Although this article has focused on SPVs, collateralization programs, and netting schemes, it was noted that other techniques such as periodic settlement and close out mechanisms are continually being implemented. Other credit reducing techniques include guarantees, assignments, and private portfolio insurance. Continued growth in derivatives, together with ongoing credit quality concerns and regulatory scrutiny of these markets may be expected to give rise to even more innovative proposals.

FOOTNOTES

¹Liebowitz, (1992).

²"Credit implications for firms that use derivatives," *Moody's Special Comment, Moody's Investors Service*, November 1991, p. 2.

³U.S. Congress (1992).

⁴"Moody's rates the counterparty risk of Merrill Lynch Derivative Products, Inc. Aaa," *Moody's Special Report*, December 1991, p. 1.

⁵*Federal Reserve Bulletin* (1987).

⁶Novation is defined in footnote 6 of Annex 3 of the 1988 *Basle Accord* as "a bilateral contract between two counterparties under which any obligation to each other to deliver a given currency on a given date is automatically amalgamated with all other obligations for the same currency and value date, legally substituting one single net amount for the previous gross obligations."

⁷"Report on netting schemes," Bank for International Settlements, Basle, February 1989, p. 12.

⁸U.S. Congress Financial Institutions Reform, Recovery, and Enforcement Act of 1989, Pub. L. No. 101-73, 212(a), 103 Stat. 183 and 239, 1989.

⁹Emert (1992).

¹⁰"Report of the Committee on Interbank Netting Schemes of the central banks of the Group of Ten Countries," Bank for International Settlements, Basle, November 1990, p. 16.

¹¹"Treatment of bilateral master agreement netting under the 1988 *Basle Accord* on International Convergence of Capital Measurement and Capital Standards," Letter of Mark C. Brickell, Chairman, International Swap Dealers Association, to Richard Farrant, Chairman, Committee on Off Balance Sheet Risk Supervision, Bank for International Settlements, August 15, 1991, p. 5.

¹²Wiersum and Stocchetti (1992).

¹³"Banks eye forex matching systems," *Wall Street Computer Review*, Volume 9, Number 2, p. 46.

¹⁴"North American foreign exchange multilateral netting project status report," October 21, 1992, International Clearing Systems, Inc., Chicago, pp. 18-19.

¹⁵"ECHO plans new netting scheme," *Futures and Options Plus*, Futures and Options World, Ltd., London, July 3, 1992, p. 12.

REFERENCES

Baer, Herbert L., and Douglas D. Evanoff, "Payment system issues in financial markets that never sleep, *Economic Perspectives*, Federal Reserve Bank of Chicago, November/December 1990, pp. 6-12.

Bank for International Settlements, "Report of the Committee on Interbank Netting Schemes

of the Central Banks of the Group of Ten Countries," (the Lamfalussy Report), the Committee on Interbank Netting Schemes, M.A. Lamfalussy, Chairman, Basle, November 1990.

_____, "Report on netting schemes," (the Angell Report), prepared by the Group of Experts on Payment Systems of

the Central Banks of the Group of Ten Countries, Basle, February 1989.

_____, "The supervisory treatment of netting under the 1988 Basle Accord on Capital Standards: an issues paper," prepared by a group of technical experts of bank supervisory authorities of G-10 countries, April 21, 1992.

"Bankruptcy treatment of swap agreements and forward contracts," Report from the Committee on the Judiciary, House of Representatives, 101st Congress, Second Session, May 14, 1990.

"Banks eye forex matching systems," *Wall Street Computer Review*, Volume 9, No. 2, April 1992, pp. 45-52.

"BIS risk based capital Guidelines," speech by R.H. Farrant, Bank of England, Deputy Head of Banking Supervision, to the ISDA Annual General Meeting, March 13, 1992.

Credit Comments, "Credit Sensitivity Spurs Enhanced DPC Growth," *Standard and Poor's Creditweek*, May 18, 1992, pp 35-84.

Emert, John, "Issues involving netting of derivatives and foreign exchange transactions," Citibank, N.A., September 2, 1992.

"ECHO netting - multilateral FX netting in Europe," discussion document, London, March 1991.

"ECHO plans new netting scheme," *Futures and Options Plus*, July 13, 1992, p. 12.

Federal Reserve Bulletin, 473, 1987.

Liebowitz, Michael, "Can the triple-A subs live up to their billing?," *Investment Dealers' Digest*, November 2, 1992, pp. 16-24.

Moody's Press Release, "Moody's assigns Aaa ratings to debt obligations of GS Financial Products International, L.P., New York, March 23, 1992, pp. 1-3.

"Moody's rates the counterparty risk of Merrill Lynch Derivative Products, Inc. Aaa," *Moody's Special Report*, December 1991.

Moody's Special Comment, "Credit implications for the firms that use derivatives," *Moody's Investors' Service*, November 1991.

Patrikis, Ernest, T., and Karen Walraven, "The netting provision of the Federal Deposit Insurance Corporation Improvement Act of 1991," *Futures International Law Letter*, May 1992.

Sarwal, Arun, and Tremble, Kerry, "Happiness is a full net", *Euromoney*, April, 1991, pp. 34-36.

"Swap and think," *Risk*, Volume 5, Number 3, March, 1992.

"Treatment of bilateral master agreement netting under the 1988 Basle Accord on International Convergence of Capital Measurement and Capital Standards," Letters of Mark C. Brickell, Chairman, International Swap Dealers Association, Inc., to Richard Farrant, Chairman, Committee on Off-Balance Sheet Risk Supervision, Bank for International Settlements, October 24, 1991 and August 15, 1991.

United States Senate, "Interest swap hearing," Subcommittee on Courts and Administrative Practice, Committee on the Judiciary, 101st Congress, First Session on S.396 - A Bill to Amend Title II of the United States Code, The Bankruptcy Code Regarding Swap Agreements, April 11, 1989.

U.S. Congress, "Conference report on H.R. 707, Futures Trading Practices Act of 1992," Congressional Record-House, H10915, October 2, 1992.

_____, Financial Institution Reform, Recovery, and Enforcement Act of 1989, Pub. L. No. 101- 73, 212(a), 103 Stat. 183, 239 (1989).

Wiersum, Ken, and Stocchetti, John, "Hedging counterparty risk: the ins and outs of collateralized swaps," *Business International Money Report*, May 25, 1992, pp. 206-208.

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