

Economic Review



FEDERAL RESERVE BANK OF KANSAS CITY

January 1989

Globalization of Financial Markets:

International Supervisory and Regulatory Issues

Financial Market Volatility:

Summary of the Bank's 1988 Symposium

Regional Exports of Manufactured Products

January 1989, Volume 74, No. 1

The *Economic Review* (ISSN0161-2387) is published monthly by the Federal Reserve Bank of Kansas City, except in July/August and September/October, when it is published bi-monthly. Subscriptions and additional copies are available without charge. Send requests to the Public Affairs Department, Research Division, Federal Reserve Bank of Kansas City, 925 Grand Avenue, Kansas City, Missouri, 64198. Please include your mailing label with any address change. If any material is reproduced from this publication, please credit the source. Second class postage paid at Kansas City, Missouri. Postmaster: send address changes to *Economic Review*, Research Division, Federal Reserve Bank of Kansas City, 925 Grand Avenue, Kansas City, Missouri 64198.

Economic Review



FEDERAL RESERVE BANK OF KANSAS CITY

January 1989

Globalization of Financial Markets: International Supervisory and Regulatory Issues 3

By Alexandre Lamfalussy

The world's financial markets are becoming more integrated. Accordingly, bank and securities market supervisors need to cooperate more fully, both nationally and internationally.

Financial Market Volatility: Summary of the Bank's 1988 Symposium 9

By Stuart E. Weiner

The stock market crash of October 1987 bolstered the perception that financial market volatility is rising. Participants at the bank's 1988 economic symposium discussed the sources and impacts of financial market volatility and explored some possible public policy responses.

Regional Exports of Manufactured Products 21

By Tim R. Smith

New data from the Commerce Department compare the manufactured exports from the various regions of the United States. With these data, policymakers and businesspeople can understand which industries and countries account for most of the exports from their respective regions.

Globalization of Financial Markets: International Supervisory and Regulatory Issues

By Alexandre Lamfalussy

My subject today is international supervisory issues and I propose to divide my remarks into two parts. First, I should like to use (or abuse) the privilege of a luncheon speaker to make some very general observations on the rationale for official supervision of financial institutions, and for international cooperation in this field, in today's world; and second, I shall look at some current issues facing supervisors. A good deal of what I shall have to say will be about the supervision of banks, but I shall also refer to supervision of securities markets.

Alexandre Lamfalussy is the general manager for the Bank for International Settlements in Basel, Switzerland. The article is based on the luncheon address at the symposium on "Financial Market Volatility," sponsored by the Federal Reserve Bank of Kansas City at Jackson Hole, Wyoming, August 17-19, 1988. The views expressed in this article are those of the author and do not necessarily reflect the views of the Federal Reserve Bank of Kansas City.

Rationale for supervision

To begin, then, with the question as to the rationale for supervision in today's world. The traditional goal assigned to the supervision of the financial industry in general, and of banking in particular, is to ensure the stability of the system as a whole by promoting sound management of individual institutions. The reason for caring more about stability in the financial, and especially the banking, sector than about that in any other industry appears to be twofold: First, the failure of individual institutions can lead to chain reactions within the system because of the strong links tying institutions to each other, because of the speed at which funds can be shifted and because of the overwhelming role of expectations; and, second, as a result of its central place in the mechanism of credit allocation and in the pay-

ments and settlements system, whatever happens within the banking world can have far-reaching consequences for the real economy. It is for these reasons that central banks have been entrusted with the lender-of-last-resort function, of which bank supervision—so runs the argument—would seem to be the natural corollary.

I have not noticed anyone seriously challenging the view that the pursuit of stability in banking is a worthwhile objective, nor, indeed, that the achievement of this objective presupposes that central banks should be able and willing to perform (at least in a global sense) their lender-of-last-resort function. What has been questioned, however, by a number of observers and analysts in recent years is whether supervision has become largely unnecessary to the achievement of systemic stability and also whether it may not actually be counterproductive. I propose to look briefly at both these views.

Those who argue that supervision has become largely unnecessary are, in effect, saying that nowadays bank failures are no more harmful economically than failures of firms in other sectors of the economy. This assertion is based on the existence of retail deposit insurance schemes, which mean that most bank depositors now run no risk of losing their money if a bank fails. From this it is argued that the threat of systemic runs on banks leading to a multiple contraction of bank money and credit is now a thing of the past. This view would seem to be supported by the observation of what has, or rather has not, happened in recent years. In contrast to events in the 1930s, the numerous and, in some instances, very severe shocks that have affected individual banks or even the whole industry in the 1980s have not produced large-scale disturbances that could be called a genuine banking crisis.

The second of the two views I mentioned, namely that bank supervision may actually be counterproductive, is based on the argument that supervision has costs in weakening the efficiency

with which banking functions. This is not a new view and it has several interconnected facets. Regulatory prescriptions governing, say, minimum capital or liquidity ratios are accused of inviting bank managements to suspend their own judgment on the risk involved in certain bank activities and/or to try to evade the cost they imply. At the same time, supervision, especially if carried out by the central bank, may induce the latter to bail out individual institutions more or less systematically. The argument that supervision is the natural corollary of the lender-of-last-resort function is therefore turned upside down: Supervision carries with it the temptation to be lender of last resort to individual institutions in a fashion and with a predictability that would tend to distort management behavior. The result would be a weakening of market discipline, reinforcing the supposedly perverse influence of deposit insurance. Banks may take greater risks than they otherwise would with their depositors' money and, at the same time, depositors may be less attentive to the quality of bank management. The efficiency of market discipline would be impaired. Note that the logical implication of this view is that individual banks should be allowed to fail, or at least that no single institution should be able to operate on the assumption of a bailout—a principle I would find hard to contradict.

I would not want to deny that banking supervision, or retail deposit insurance, may *in general* involve some costs. These costs may be characterized as interference with the workings of the market. They include some loss of efficiency in banking and, of course, costs to the taxpayer to the extent that the bailout is financed by the state. I would not dispute either that some specific aspects of individual countries' supervisory regimes may be unnecessary, or even perhaps, counterproductive. Nor do I wish to hide my mixed feelings on observing the frequency of bailouts. But I believe that both the supervisory and the rescue techniques are improvable, so that

these costs can be reduced, although not completely eliminated. More important, however, to my mind is the question about the balance between the costs and benefits of official supervision.

To that question I would give the traditional answer that the benefits of supervision clearly outweigh the costs, for two reasons. First, I think it is an exaggeration to say that retail deposit insurance schemes have largely extinguished the risks of systemic runs on banks. Quite apart from the fact that not all countries provide deposit insurance, the main thing wrong with this argument is that insurance does not cover wholesale deposits, nor deposits placed in foreign branches. In saying this, I am well aware that in the United States there is an active brokerage trade engaged in cutting up wholesale deposits into retail slices. But insurance is not, indeed should not be, complete, and I would add that it is in the field of wholesale banking in the Euromarkets that competition has been keenest in recent years, and that banking has become more integrated worldwide.

I am familiar with the argument that wholesale (i.e., corporate) depositors are supposed to be able to judge the quality of bank managements, and therefore, to look to the safety of their deposits, better than the man in the street. Recent experience does not suggest that this is always the case. For instance, it was not true of the wholesale depositors at Continental Illinois Bank, particularly those in the Euromarkets from which Continental drew a large part of its funding.

My second reason, or set of reasons, for holding the traditional view has to do with the structural changes that have taken place in banking over the past decade and with some of their consequences. The main features of these changes have been international financial integration, the wave of financial innovations and the deregulation of banking. Their most important consequence has been a very marked increase in competition between financial intermediaries, both in their home markets and, even more so, inter-

nationally.

There are three points to which I would draw your attention to this connection. First, greater competition in banking is supposed to improve the allocation of resources through banks. I am ready to accept this as a general proposition, but I have some difficulty in forgetting the lessons of the debt crisis. The present external over-indebtedness of many sovereign borrowers—one of the largest contemporary macroeconomic imbalances, and one that continues to give a lot of headache to the banks themselves—emerged at a time when bank credit was provided by banks which were not only competing freely with each other but were doing so with very little regulatory impediment. The Euromarket of the 1970s and early 1980s came as close as possible to the model of a free, unregulated market. It is, of course, true that “overlending” could not have happened without “overborrowing,” and that it was not easy to foresee a combination of world slump with very high interest rates. Nevertheless, anyone who had the experience of seeing bankers queuing up in front of the offices of lesser developed country (LDC) finance ministers at that time cannot help feeling that the highly competitive environment had something to do with the emergence of the problem.

Second, in recent years, there has been a very large increase in corporate and household debt ratios, particularly here in the United States but also in some other industrial countries, carrying obvious risks in the event of a cyclical downturn. One cannot rule out, in my view, the influence of financial innovations, notably leveraged buy-outs, on the increase in corporate debt ratios.

Third, and more generally, competition works partly through the elimination of weaker units from the system—the process that Schumpeter described as “creative destruction.” If, like me, you cannot accept the view that the risk of systemic runs on banks is now a thing of the past, you feel that such destruction can be more danger-

ous in banking than in any other sector of the economy. Moreover, the worldwide integration of banking has given this risk a dimension that it never had before.

My purpose in making these points is not to argue that the costs of increased competition in banking outweigh the benefits. I do not believe that they do; nor do I wish to underestimate those benefits. My argument is simply this: The rapid evolution toward a more and more competitive environment in banking exerts tremendous pressure on bank management to outperform rival banks or simply to fight for survival. This means not only cost cutting but also finer pricing for deposits, a search for higher-yielding investment, new ventures, the use of innovative techniques and new products. In other words, it is likely to imply an incentive to greater risk-taking. Add to this a very uncertain and basically imbalanced global macroeconomic environment leading to wildly fluctuating exchange rates, interest rates, stock prices, real estate values, and commodity prices, and it is hard to avoid the impression that the risks in banking have been set on a rising trend. I do think that in order to preserve the stability of the banking system, which is a valuable aim in its own right, bank management needs the support of the restraining influence of supervision even at the cost of some loss of efficiency, whatever the definition of efficiency may be. And it is obvious that in today's globalized banking market, supervision has to be as far as possible globalized, both in the geographical and in the inter-industry sense of the term.

Current supervisory issues

I now turn to some current supervisory issues. Capital adequacy lies at the heart of sound banking. For some years, therefore, the efforts of supervisors to help banks meet the challenges of the more competitive environment in which they now operate have been concentrated on strength-

ening banks' capital positions. The accord reached in July 1988 by the G-10 central banks on capital adequacy represents the culmination of those efforts. I know that the agreement has not been universally acclaimed by all sections of the banking community in the United States, but it has also been criticised, from different angles, in other countries. This is, perhaps, the sign that it is a good agreement, well-balanced and distributing the strategic adjustment efforts evenly across the world. I would like to spend a few minutes considering the importance of this landmark in supervisory cooperation.

It has two aims: to strengthen bank capital standards in the G-10 countries where the core of the international banking system is located, and to do so in a way that tends to equalize the impact of supervision on the competitive positions of banks in different G-10 countries.

Disparities between national regulations with respect to the measurement of capital and the assessment of capital adequacy can have a number of harmful consequences. First, banks in countries with high capital standards are less able than their opposite numbers in countries with lower standards to compete for new business. Second, as a consequence, banks with lower capital and larger balance sheets will be able to lend on substantially lower margins with the result of diminishing returns for all. Third, some banks may, therefore, take on riskier, higher-margin lending in an effort to boost their earnings. And, fourth, the combination of these factors can make it harder for banks, and for supervisors, in a given country to raise their capital standards in isolation from what is happening elsewhere.

It may be argued that over the long run the market might do the job that the new accord on capital adequacy is designed to do. The market would, without any help from supervisors, pass its verdict on weak and inadequately capitalized banks and would reward strong banks for their prudence. But the history of banking does not sug-

gest that the market can do this sort of thing and, *at the same time*, preserve the system's stability. This is a practical illustration of the general point I made earlier, namely that whatever costs supervision may imply, they are likely to be offset, especially in today's world, by the advantages such supervision produces in terms of the preservation of financial stability.

Turning now to the securities markets, last October's stock market crash and the events that followed it were remarkable for two features, the first having been the speed at which other markets reacted to the fall in prices on Wall Street. That was the most dramatic illustration we have yet had of the degree to which financial markets are now integrated worldwide. Moreover, this reaction occurred despite quite marked contrasts between different countries, both in economic conditions and in price-to-earnings ratios for equities.

The second feature was the resilience that the markets displayed after the crash. There was no cumulative decline of share prices which, in fact, stabilized rather quickly (except in Japan) at lower levels.

This resilience of markets was no doubt partly the result of the rapid and efficient way in which the Federal Reserve and other central banks supplied extra liquidity to their markets. Given that the authorities took those actions, we shall never know to what extent there were also market forces at work that prevented a tailspin of prices which would certainly have had deflationary effects on the real economy. Probably there were such forces at work. But, in my view, it was a good thing that the central banks did not wait to see how effective they would have been, on their own, in stabilizing the situation.

One consequence of the post-crash resilience of markets was that no really large-scale problems emerged in the financial markets, either for individual institutions or, still less, for the system itself. This means, in my view, that there is no

reason in the light of last year's events to consider drastic changes in the ways that markets work and, in particular, to try and put into reverse the structural changes of the past decade. At the same time, however, the crash certainly pointed up issues for market participants and for supervisors in both the banking and securities markets.

Those who supervise securities markets have had brought home to them, more clearly than before, the extent to which the cash securities markets and the markets in derivative instruments are linked to one another. Effective supervision of the securities markets must cover all their different parts.

Those responsible for supervising banks have realised more clearly than before the implications of the banks' increased involvement in the securities business. In fact, the losses sustained by banks on equity holdings were, in most instances, substantially offset by gains on their bond portfolios. The full implications of the banks' participation in the securitization phenomenon of the 1980s will only become apparent when we next experience a period of rising interest rates and falling bond prices—when there might well be no offset from rising equity prices to banks' losses on their bond portfolios.

Last year's events have also alerted bank supervisors and securities market supervisors to the necessity of cooperating with one another, both nationally and internationally. Action is now being taken to organize such cooperation. Even at the national level this may not always be easy, for institutional and other reasons. Internationally, it is likely to prove even more difficult, since the greater the number of countries that attempt cooperation the harder it becomes to reach an agreement that is both worthwhile and workable. But the worldwide character of financial markets and the geographical mobility of both financial transactions and financial institutions mean that cooperation between supervisors in different parts of the financial system needs to be put on the

widest practicable basis.

Conclusion

Let me conclude by expressing my conviction that one of the great challenges policymakers are facing today is to encourage market participants to behave in a way that maximizes the advantages of free global competition without exposing the system to greater instability. They can do this by creating an appropriate regulatory framework and by implementing stability-oriented macroeconomic policies. I have tried to make the point

several times that the adjustment of supervisory practices and their coordination internationally have an essential part to play. It was not within my remit today to insist on the role that must be assumed by macroeconomic policies—and their coordination—but it is clear to me that the high capital mobility implied by free competition will not be tolerant *vis-a-vis* policies that lead to, or appear to be unable to correct, large financial imbalances, be they domestic or international. And this intolerance would express itself in continued exchange rate and financial asset price volatility—the very topic of this symposium.

Financial Market Volatility: Summary of the Bank's 1988 Symposium

By Stuart E. Weiner

The stock market crash of 1987 sent shock waves through the world's financial markets. Stock exchanges in New York, Chicago, London, Tokyo, Frankfurt, and a host of other cities suffered major declines. In response, credit markets, commodity markets, and foreign exchange markets registered sharp swings. Not since the Great Depression had the world seen such turmoil in financial markets.

But, dramatic as it was, the crash of 1987 was not the first hint that something was amiss. For several years, there had been a perception that financial market volatility was rising. The crash only served to bolster that perception.

In an effort to learn more about the volatility of markets, the Federal Reserve Bank of Kansas City sponsored a symposium titled "Financial Market Volatility," held at Jackson Hole, Wyoming, August 17-19, 1988. The symposium brought together distinguished academics, industry

representatives, and policymakers. Three basic questions were posed. First, what are the sources of financial market volatility? Second, what impact does it have on domestic and international economies? And third, what public policies should be adopted in response? The view of most of the participants at the symposium was that too little is known about the causes and consequences of financial market volatility to have much confidence in any particular policy response.

This article summarizes the papers and commentary presented at the symposium. The first section examines the sources of financial market volatility. The second section explores the consequences of financial market volatility. The third section evaluates possible policy responses. The final section summarizes the remarks of an overview panel.

Sources of volatility

Robert Shiller and Frederic Mishkin led off the symposium with an examination of the sources of financial market volatility. They agreed the sources are difficult to identify.

Stuart E. Weiner is a research officer and economist at the Federal Reserve Bank of Kansas City.

In his paper “Causes of Changing Financial Market Volatility,” Robert Shiller noted that recent financial market volatility is not unique. Throughout the postwar period, stock markets, commodity markets, bond markets, and foreign exchange markets have recorded sharp movements. And while it is true these markets exhibited considerable volatility in 1987, volatility does not appear to be trending upward.

Shiller stressed that very little is known about the determinants of financial market volatility. Economists and other researchers simply do not have a proven theory of financial fluctuations. The theories that do exist are often unconvincing.

As an example, Shiller pointed to the efficient-markets explanation of financial market volatility. This theory argues that changes in financial market prices reflect changes in underlying economic variables. The data do not appear to support this theory, however, because financial market volatility shows little relation to the volatility of such variables as industrial production, short-term interest rates, or the price level.

Nor do technological innovations provide an adequate explanation of financial market volatility. Narrowing his focus to the stock market, Shiller argued that stock-index futures, arbitrage program trading, and portfolio insurance probably did not play a fundamental role in the October 1987 stock market crash. He noted that the stock market has been quite volatile in the past, when such innovations did not exist. Consequently, proposals that would limit or otherwise alter these innovations are likely to be ineffective or even counterproductive. These proposals include trading halts or “circuit breakers,” increased margin requirements on futures contracts, limitations on index arbitrage, and the abolishment of portfolio insurance.

One explanation of financial market volatility that does have some merit, according to Shiller, is market psychology. Investors sometimes appear to react to each other rather than to some funda-

mental event, and this process can set into motion large market swings. Shiller contended that market psychology was a key factor behind the stock market crash of 1987. As evidence, he pointed to an investor survey that he took immediately after the crash. The survey suggests that, on the day of the crash, investors were not responding to any specific news item but to the news of the crash itself.

In discussing Shiller’s paper, Frederic Mishkin agreed that stock market volatility is difficult to explain. And although he was somewhat skeptical about Shiller’s survey evidence, he too believed that factors other than underlying economic fundamentals might have played a role in the stock market crash of 1987.

Mishkin pointed out that most of the recent proposals to reduce stock market volatility would make markets less efficient. Markets would become less liquid, respond more slowly to new information, or reveal less about trading pressures. So even if such proposals reduced volatility—and it is not clear that they would—they would have a detrimental impact on market efficiency.

Mishkin also addressed the role of monetary policy in the face of financial market volatility. Monetary policymakers have two options when confronted with financial market volatility. They can attempt to reduce this volatility by intervening in markets, or they can stay out of the markets but stand ready to function as lender of last resort in the event of a financial crisis. Mishkin indicated a preference for the latter. He cited the Federal Reserve’s responses to the Penn Central crisis of 1970 and the stock market crash of 1987 as successful applications of this approach.

Consequences of volatility

Volatility in financial markets could have far-reaching ramifications. Symposium participants suggested that such volatility could disrupt domes-

Financial Market Volatility

A symposium sponsored by the Federal Reserve Bank of Kansas City
August 17-19, 1988

Session 1

Robert Eisner, Professor, Northwestern University, *moderator*

Causes of Changing Financial Market Volatility, Robert Shiller, Professor, Yale University
Commentary, Frederic Mishkin, Professor, Columbia University

Financial Factors in Business Fluctuations, Mark Gertler, Associate Professor, University of Wisconsin, and R. Glenn Hubbard, Professor, Columbia University
Commentary, Robert Hall, Professor, Stanford University

The International Transmission of Asset Price Volatility, Charles Goodhart, Professor, London School of Economics
Commentary, Brian Quinn, Executive Director, Bank of England
Commentary, Michael Mussa, Member, U.S. Council of Economic Advisers

Globalization of Financial Markets: International Supervisory and Regulatory Issues—Luncheon Address, Alexandre Lamfalussy, General Manager, Bank for International Settlements

Session 2

Lyle Gramley, Senior Staff Vice President and Chief Economist, Mortgage Bankers Association, *moderator*

Policies to Curb Stock Market Volatility, Franklin Edwards, Professor, Columbia University
Commentary, Lawrence Summers, Professor, Harvard University
Commentary, David Hale, First Vice President and Chief Economist, Kemper Financial Services, Inc.

Exchange Rate Volatility and Misalignment: Evaluating Some Proposals for Reform, Jacob Frenkel, Economic Counsellor and Director of Research, International Monetary Fund, and Morris Goldstein, Deputy Director, Research Department, International Monetary Fund
Commentary, Paul Krugman, Professor, Massachusetts Institute of Technology
Commentary, Robert Hormats, Vice Chairman, Goldman Sachs International Corporation

Overview Panel

Louis Margolis, Managing Director, Salomon Brothers, Inc.
Robert Roosa, Partner, Brown Brothers Harriman and Company
James Tobin, Professor, Yale University

tic economic activity, unsettle international asset flows, and place strains on global supervisory efforts.

Domestic impact

In their paper “Financial Factors in Business Fluctuations,” Mark Gertler and R. Glenn Hubbard examined the impact of financial market fluctuations on business fluctuations. Through what channels, they asked, can financial market disruptions affect the real economy?

Gertler and Hubbard noted that economists have long thought there could be an important link between the financial and real sectors of the economy. The Great Depression has always seemed an obvious example. Recently, economists have developed models that examine this link formally. These models usually apply to capital investment, but they can often be applied to consumer spending and hiring decisions as well.

According to these theories, financial market fluctuations can affect the real economy through two channels: fluctuations in the internal net worth of firms and fluctuations in the availability of bank credit. In the first case, a faltering economy or a redistribution of wealth from debtors to creditors lowers the collateralizable net worth of firms, making it more difficult for those firms to borrow. Consequently, capital investment declines. In the second case, a financial disruption, such as a bank failure, reduces the flow of bank credit to borrowing firms, also causing investment to decline. In both cases, changes in the financial sector lead to changes in the real sector.

Gertler and Hubbard claimed that evidence supports these theories. Econometric studies and historical events strongly suggest that financial market fluctuations can have an impact on the investment of firms, particularly small firms. Consequently, financial market fluctuations can have an impact on the macroeconomy.

Gertler and Hubbard also offered an explana-

tion for why the stock market crash of 1987 had such little effect on the economy. While stock prices did show considerable variability in 1987, they did not show exceptional changes from the beginning of the year to the end of the year. Therefore, to the extent that changes in stock prices mirror changes in firms’ collateralizable net worth (which is not directly observable), the net worth of firms did not change substantially for the year as a whole. Consequently, one would not have expected much effect on investment and, hence, on the overall economy. Moreover, it is not clear that changes in stock prices actually mirror changes in a firm’s net worth. And finally, Gertler and Hubbard noted that the crash of 1987—unlike the crash of 1929—did not cause a severe restriction of bank credit, because the Federal Reserve aggressively stepped in to provide adequate liquidity.

In discussing the Gertler-Hubbard paper, Robert Hall agreed that financial market fluctuations can affect the real economy through the two channels identified by Gertler and Hubbard. Hall noted that the model they presented—with its emphasis on the firm’s internal net worth—was an example of what he calls the “back to the wall” theory of finance. This theory holds that an effective arrangement for shareholders and managers is for shareholders to receive payments that resemble fixed debt, not variable dividends, and for managers to retain exceptional profits but also be liable for exceptional losses. In this sense, managers’ backs are to the wall. Hall asserted that many financial arrangements in the real world take this form. Hall agreed with Gertler and Hubbard that the 1987 stock market crash was fundamentally different from the 1929 crash and that its effects were therefore quite different as well.

International impact

Charles Goodhart, in his paper “The Interna-

tional Transmission of Asset Price Volatility," examined the links throughout the world's financial markets. He asked whether financial markets, especially equity markets, have become more interdependent. Specifically, is volatility in one market now more likely to be transmitted to other markets?

Goodhart reported that recent research with a colleague suggests that financial markets have not become more interdependent. According to this study, volatilities in various domestic markets showed no tendency over the 1967-to-1985 period to become more highly correlated internationally. Thus, Goodhart argued, one must be cautious in adopting the view that financial market interdependence is on the rise.

Goodhart stressed, however, that international transmission mechanisms can still play a major role on certain key occasions. And the stock market crash of 1987 appears to have been such an occasion. Research by other colleagues of Goodhart suggests that developments before and after the crash are consistent with the view that a normal "contagion" relationship among markets turned into a panicky "cross-infection" relationship.

Goodhart explained that there is nothing abnormal about movements in one stock market being affected by movements in another. Indeed, it is rational for domestic analysts to take their cue partly from movements overseas—in effect, allowing foreign analysts to evaluate foreign news for them. But, Goodhart added, such contagion can escalate into cross-infection when domestic analysts ignore fundamentals and pay excessive attention to the prices set by others. Econometric studies of the London, Tokyo, and New York stock markets indicate that contagion did in fact escalate after the crash. And this escalation would help explain one of the puzzling features of the crash, the nearly universal decline of stock markets worldwide despite different institutional frameworks and different economic outlooks.

Goodhart also presented some results of a study he currently has underway, which examines the relationship between stock market movements and foreign exchange movements. To the extent that foreign exchange movements are a good proxy for fundamental news, incorporating such movements in econometric studies should allow the researcher to get a better handle on contagion and cross-infection effects in stock markets. Unfortunately, Goodhart's preliminary results suggest that foreign exchange movements are not a good proxy for fundamental news. Nevertheless, Goodhart has been able to draw two tentative conclusions from his work. First, among the three stock markets, London, Tokyo, and New York, the Tokyo market appears to be the most immune to international developments, while the London market appears to be the most vulnerable. And second, in the wake of the October 1987 crash, the New York market appears to have become more vulnerable.

In commenting on the Goodhart paper, Brian Quinn agreed that the London, Tokyo, and New York stock markets are quite different in structure, and thus one would expect differing degrees of international sensitivity. Quinn concurred that the London market is probably the most open of the three.

Quinn emphasized that it is important to determine whether the 1987 crash represented a special, isolated case or the arrival of a new era of heightened volatility. Quinn's view, in contrast to Goodhart's, was that financial markets have become more volatile and interdependent. As evidence, Quinn pointed to the sweeping, global nature of the 1987 crash and, more narrowly, to the growing importance of foreign activity on the London stock exchange. Quinn stressed that this growing integration of the world's financial markets will put heavy demands on industry supervisors and regulators.

Michael Mussa, in his discussion of the Goodhart paper, echoed the view that interna-

tional transmission was very much in evidence during the stock market crash of 1987. Fundamentals—a deterioration in the U.S. trade account, a rise in U.S. and other interest rates, and a possible policy dispute between the United States and West Germany—were probably responsible for the initial decline in the U.S. stock market on the morning of October 19. The 300-point decline over a two-hour period in mid-day, however, was probably due to psychological factors. Whatever the reasons for the decline, the collapse of the U.S. market fueled collapses in the Tokyo and London markets, and the situation did not improve until the U.S. market stabilized the next day.

Supervisory impact

In his luncheon address, “Globalization of Financial Markets: International Supervisory and Regulatory Issues,” Alexandre Lamfalussy examined the role of bank supervisors and securities market supervisors in today’s world of highly integrated markets. He offered several comments on the rationale for supervision as well as some thoughts on the October 1987 stock market crash.

Lamfalussy noted that the principal rationale for supervising financial institutions, especially banks, is to ensure stability of the financial system. He also noted that this rationale has been challenged in recent years. Some analysts believe bank supervision is unnecessary to achieve financial stability. They argue that deposit insurance, by preventing bank runs, has made banking crises obsolete. Other analysts believe bank supervision can actually impair financial stability. They argue that supervision reduces the efficiency of the banking system and weakens market discipline.

While acknowledging that supervision has its costs, Lamfalussy contended that the benefits of supervision outweigh these costs. In his view,

deposit insurance has not eliminated the risk of systemic runs on banks. Moreover, the risks in banking have been rising as a result of greater competition and major imbalances in the world economy, the latter generating disruptive swings in financial markets. Consequently, Lamfalussy stated, “I do think that in order to preserve the stability of the banking system . . . bank management needs the support of the restraining influence of supervision—even at the cost of some loss of efficiency, whatever the definition of efficiency may be.” As to who should do the supervising, Lamfalussy responded, “It is obvious that in today’s globalized banking market, supervision has to be as far as possible globalized, both in the geographical and in the inter-industry sense of the term.” Lamfalussy pointed to the recent G-10 agreement on bank capital standards as a concrete example of globalized supervision.

Turning to the stock market crash of 1987, Lamfalussy reported that he was quite struck by the speed with which it circled the globe. The crash left no doubt in his mind that the world’s financial markets had become more integrated. Lamfalussy was also impressed by the resilience of markets after the crash. Actions by the Federal Reserve and other central banks to provide ample liquidity played a key role in stabilizing markets, Lamfalussy asserted. And finally, Lamfalussy reiterated his call for globalized supervision, noting that the crash “alerted bank supervisors and securities market supervisors to the necessity of cooperating with one another both nationally and internationally.”

Policy response

The recent turmoil in financial markets has generated numerous proposals for reform. Major reforms have been proposed for stock markets and foreign exchange markets. Symposium participants had differing views on the merits of such proposals.

Stock market proposals

In his paper "Policies to Curb Stock Market Volatility," Franklin Edwards examined recent proposals to reduce stock market volatility. He asserted that these efforts are misplaced and counterproductive.

In developing his argument, Edwards first noted that the causes of stock market volatility have not been clearly identified. However, disagreement about its causes has not prevented a proliferation of proposals to reduce this volatility. Proposed remedies include curbs on program trading, portfolio insurance, and index arbitrage; higher margin requirements on index futures and options; and the imposition of trading halts, or circuit breakers, in markets. Edwards sees problems with virtually all of these proposals.

Edwards reported that he is not convinced that program trading, portfolio insurance, and index arbitrage have increased stock market volatility. As a result, he is not convinced that restricting these types of trading would be beneficial. Indeed, Edwards argued, such restrictions could prove costly to society.

Higher margin requirements on index futures and options also make little sense, according to Edwards. Higher margins may reduce speculation in markets, but less speculation would not necessarily lead to less volatility in these markets. Speculation can be stabilizing as well as destabilizing. As an example, Edwards pointed to the October 1987 crash. On October 19 and 20, speculators were net buyers of stocks, not net sellers. Had higher margins been in place at the time, these speculators and their stabilizing influence may well have been absent.

Edwards argued that circuit breakers are also problematic. Under a circuit breaker scheme, trading would be stopped when certain predetermined conditions occurred—for example, when prices fell too low or volume rose too high. The fundamental problem with circuit breakers is that

they do not allow markets to adjust fully to new information. If the breaker is activated, the determination of equilibrium prices is interrupted. An additional objection to circuit breakers is that they may foster the kind of panic selling or buying they are intended to prevent. Fearing they may be locked into undesirable positions, traders may buy or sell frantically as the breaker threshold approaches.

Edwards contended that, rather than focusing narrowly on limiting volatility in domestic equity markets, policymakers should direct their attention to the far-reaching developments in international financial markets. The financial world is rapidly becoming a single, global market, and policymakers need to take steps to ensure that this global market is as liquid and efficient as possible.

In commenting on the Edwards paper, Lawrence Summers indicated he would not rule out remedial intervention in stock markets. He is not convinced that unbridled volatility and a hands-off policy stance yield benefits to the real economy.

Summers identified two types of trading strategies that investors pursue: negative feedback strategies and positive feedback strategies. Under negative feedback strategies, investors buy when the market declines. Under positive feedback strategies, investors sell when the market declines. Because positive feedback strategies are self-reinforcing—that is, declines in the market lead to further declines in the market—they are likely to increase volatility. Thus, Summers argued, in evaluating proposals to reduce stock market volatility, one should consider whether they would discourage positive feedback strategies.

Summers suspects that low margin requirements encourage positive feedback strategies. Indeed, Summers believes that greater liquidity in futures markets in general probably encourages positive feedback strategies more than negative

feedback strategies. Thus, Summers reported, he is not adverse to making markets less liquid, to “throwing some sand in the wheels.”

David Hale, in his discussion of the Edwards paper, suggested the stock market crash of 1987 was something of a blessing. One should not necessarily view it as a problem, he argued, but rather as a solution to other problems. Specifically, the crash lowered inflation fears and reduced upward pressure on interest rates, thus strengthening the U.S. economy in 1988. Hale agreed with Edwards that higher margin requirements on futures contracts would probably not have cushioned the crash. And, also like Edwards, Hale asserted that policymakers need to think seriously about how the financial system is evolving. Technology, securitization, and globalization are transforming the financial landscape.

Foreign exchange market proposals

In their paper “Exchange Rate Volatility and Misalignment: Evaluating Some Proposals for Reform,” Jacob Frenkel and Morris Goldstein examined recent proposals for reducing volatility and misalignment of exchange rates. These proposals include target zones, restrictions on international capital flows, and enhanced international coordination. Frenkel and Goldstein did not advocate one proposal over the others, but rather highlighted the relevant issues involved in all three.

Frenkel and Goldstein stressed that there is an important distinction between exchange rate volatility and exchange rate misalignment. Exchange rate volatility refers to short-term fluctuations of exchange rates around their long-term trends. Exchange rate misalignment refers to significant deviations in exchange rates from their long-term equilibrium levels. Some analysts believe exchange rates have been both excessively volatile and misaligned in recent years.

Frenkel and Goldstein noted that exchange rate

volatility has been much higher in the floating-rate period than in the Bretton Woods period. Moreover, this volatility has shown no tendency to subside as the floating-rate period has worn on. However, in the post-Bretton Woods era exchange rates have been less volatile than interest rates, stock prices, and commodity prices. Are today’s exchange rates excessively volatile? Are they seriously misaligned? Frenkel and Goldstein asserted that the answers are not obvious.

Turning their focus to proposed remedies, Frenkel and Goldstein first examined target zones. Under a system of target zones, nations agree to try to keep their currencies within certain bands. The width of the bands, the frequency with which the bands are revised, and the authorities’ commitment to the bands are crucial features of a target-zone agreement. The principal advantage of target zones is they may force discipline on a nation’s fiscal policy. Had target zones been in place in the early 1980s, for example, the United States might have been dissuaded from running huge federal budget deficits for fear of running up the value of the dollar. The principal disadvantage of target zones is they may force monetary policy to pursue conflicting goals—for example, fighting inflation *and* discouraging an appreciating currency.

Restricting international capital flows, either directly or through taxation, is another proposal for reducing exchange rate volatility. Such proposals are based on the notion that speculation in exchange markets causes excessive volatility. The problem with this view, according to Frenkel and Goldstein, is that speculation can be stabilizing as well as destabilizing. So capital restrictions could be counterproductive. In addition, there is the possibility of “regulatory arbitrage,” of capital restrictions in one country simply leading to more speculation and more volatility in another country.

Enhanced international coordination is a third proposal for reducing exchange rate volatility.

Related to (and perhaps incorporating) target zones, enhanced coordination would require major countries to modify their macroeconomic policies more willingly to ensure consistent policies across countries. As Frenkel and Goldstein pointed out, several questions arise in considering coordination proposals. For example, should coordination be conducted continuously or only at times of crisis? How many nations should be involved? And are the gains from enhanced coordination ultimately worth the effort?

In discussing the Frenkel-Goldstein paper, Paul Krugman contended that exchange rates are excessively volatile. He believes financial markets in general, and foreign exchange markets in particular, are often irrational in the sense that trading is not always based on fundamentals. And in the case of exchange rates, at least, the resulting volatility is deleterious because it can impair the ability of firms to make sound decisions. Because such firms are unable to distinguish fundamental developments from speculative bubbles, their location and sourcing decisions suffer.

Krugman advocated a return to some type of fixed exchange rate system. He argued that such systems have worked effectively in the past. Krugman was less enthusiastic about policy coordination, feeling the prospects are not as encouraging.

Robert Hormats, in his discussion of the Frenkel-Goldstein paper, argued that target zones and policy coordination could be effective in reducing market volatility. Hormats believes foreign exchange markets in recent years have been driven by expectations. And expectations of central bank policies have been particularly important. According to Hormats, if the leading nations of the world decided to move to a "hard" target-zone system, one with narrow and infrequently revised currency bands, central bank policies would become even more critical. In particular, one or more central banks would have

to emerge—as the Bundesbank has emerged in the European Monetary System—as the anchor around which other central banks could converge.

Panel overview

Three participants—Louis Margolis, Robert Roosa, and James Tobin—provided an overview of the issues raised at the symposium. Margolis and Roosa focused on the stock market and foreign exchange market, respectively, while Tobin addressed his comments more generally.

Louis Margolis contended that U.S. equity markets are in the midst of an evolutionary process. That process began in 1975, when deregulation eliminated fixed commission rates on secondary market trading. This switch to fully negotiated rates has squeezed the profits of the commission brokerage business, especially the profits of specialists and block traders. It is no coincidence, Margolis asserted, that full-service firms have shifted resources away from secondary market trading and toward the more profitable areas of new security issuance, mergers and acquisition, and leveraged buyouts.

Margolis continued that, with their profit margins reduced, specialists and block traders can no longer provide adequate liquidity to the market in times of stress. They simply do not have the financial resources to make bids that would stabilize the market. At old commission levels they had the necessary funds to provide liquidity, but at current levels they do not. The October 1987 crash is a case in point. Insufficient liquidity was one reason why the crash was so abrupt.

Margolis emphasized, however, that equity markets are developing alternative sources of liquidity. These sources include options, futures, electronic screen-based trading, and portfolio trading. In other words, equity markets are being transformed. The appropriate policy response, according to Margolis, is to encourage this transformation, to remove any obstacles that could

trigger another crash.

Robert Roosa, in his remarks, suggested that the volatility of today's financial markets can be traced to two basic sources. The first is the unprecedented integration of these markets and the related appearance of new instruments and new trading techniques. This integration has permitted individual and institutional investors to respond more quickly and more effectively to profit opportunities. The second source of today's volatility is long-term, underlying cycles in the real economy. These cycles cause prices of financial assets, particularly foreign exchange rates, to follow sustained paths for a time, then to stall, then suddenly to decline or rise to new sustained paths. The result is significant asset-price volatility.

Roosa believes that growth with stability is the proper objective of economic policy. Accordingly, he strongly endorses the recent efforts by the G-5 countries (United States, Japan, West Germany, Great Britain, France) to achieve that stability. Roosa reported that he has been quite encouraged by the coordination the G-5 countries have displayed since the Plaza Agreement of September 1985. In particular, he has been encouraged by the system of target zones that has emerged. These target zones represent a step back toward fixed exchange rates, which Roosa believed were partially responsible for the "remarkable" worldwide growth of the Bretton Woods era. The world economy has pressing imbalances, Roosa argued, and enhanced coordination among the world's leading countries appears a promising way to address those imbalances.

James Tobin, in his comments, argued that financial markets should be made less liquid. Asset prices are not driven solely by fundamentals—indeed, prices often appear to be driven by sheer speculation. Such speculation, Tobin asserted, wastes productive resources, especially human resources.

Tobin emphasized that economists and other researchers do not have a good theory of volatility. For example, it is not clear how volatility should be measured. Should it be measured over a day, over a month, or over a year? Nor is it clear how volatility is related to volume. Does volatility rise when transactions volume rises? Or does the opposite occur? Researchers do not know.

One thing that Tobin is confident about is that asset prices do not always reflect fundamentals. Herd behavior—in which traders react to each other rather than to some fundamental development—is responsible for much market movement, Tobin claimed. Related to this is the preoccupation of traders with seemingly minor news stories, statistical releases, and policymaker statements. It is hard to believe, Tobin asserted, that all of these items represent fundamental news.

To reduce financial market volatility, Tobin advocated a tax on the volume of transactions in stock markets, foreign exchange markets, and perhaps other markets. The purpose of this tax would be to discourage short-term speculation and encourage portfolio decisions based on long-term fundamentals. A tax of 1 percent, on both buying and selling, might be reasonable. In addition, Tobin would change the capital gains tax, introducing a sliding scale of tax rates linked to holding periods. For example, the capital gain on a financial asset held less than one year would be subject to full taxation, while the gain on an asset held 30 years would be subject to no taxation. Like the transactions tax, this measure would presumably lengthen the horizon for portfolio decisions. It is Tobin's view that financial markets would benefit from such "sand in the wheels."

The stock market crash of 1987 emphasized how turbulent financial markets can become. It also provided the impetus for much new research on financial market volatility. The issues have proved to be quite complex.

The experts brought together at the Federal Reserve Bank of Kansas City's 1988 symposium concurred that financial market volatility is not well understood. Symposium participants did not reach a consensus on the sources of volatility. Nor did they reach a consensus on the consequences

of volatility. A point they did agree on was that financial market volatility largely remains a mystery. And in light of this, most participants felt policymakers should proceed very cautiously before adopting any particular policy response.

Financial Market Volatility

A Symposium Sponsored By
The Federal Reserve Bank of Kansas City

Financial Market Volatility



For a copy, please write:

Public Affairs Department
Federal Reserve Bank of Kansas City
925 Grand Avenue
Kansas City, Missouri 64198

The 1987 stock market crash bolstered the perception that financial market volatility is rising. To provide a forum for an exchange of ideas on the subject, the Federal Reserve Bank of Kansas City hosted a symposium on "Financial Market Volatility," on August 17-19, 1988, at Jackson Hole, Wyoming. The symposium proceedings, available soon, discuss the sources and impacts of volatility and explore some possible public policy responses.

Past Symposiums

Restructuring the Financial System
(1987)

Debt, Financial Stability, and Public Policy (1986)

The U.S. Dollar—Recent Developments, Outlook, and Policy Options (1985)

Competing in the World Marketplace: The Challenge for American Agriculture (1985)

Price Stability and Public Policy (1984)

Industrial Change and Public Policy (1983)

Monetary Policy Issues in the 1980s (1982)

Modeling Agriculture for Policy Analysis (1981)

Regional Exports of Manufactured Products

By *Tim R. Smith*

Exports have become an increasingly important base of economic activity for the United States and its various regions since the exchange value of the U.S. dollar began to decline in 1985. Unfortunately, little is known about the regional distribution of export activity or the characteristics of regional exports. Without this information, economists and other observers have been unable to measure precisely the regional impacts of the general revival in U.S. export-related industries.

Newly available state export data published by the Commerce Department give a clearer view of regional export activity. Yet this view suffers from some serious limitations. First, the state export data do not accurately reflect the production locations of exported goods. Second, the state of origin of almost one-fourth of total U.S. exports cannot be identified at all. And third, the published Commerce Department data do not

include details about industrial mix or destinations of state exports.

This article supplements the published state export data with previously unpublished manufactured export data furnished by the Commerce Department to shed an important light on the industrial mix and destination of state exports.¹ By grouping the states into nine regions based on similar manufacturing activities and proximity to major ports, these data enable state and local policymakers and businesspeople to compare the exports from their respective regions and to understand which industries and countries most significantly affect exports from their regions.

The purpose of this article is to provide data that do not suffer as much from the shortcomings of the published Commerce Department state export data. The regional data reported in this article can be used to describe more accurately the characteristics of regional exports. The first section describes the major shortcomings of the published data and outlines the approach taken to make the data more meaningful to observers of regional export activity. The second section shows how the unpublished regional aggregations,

Tim R. Smith is a senior economist at the Federal Reserve Bank of Kansas City. Landell Froerer, a research associate at the bank, assisted in the preparation of the article.

despite some remaining limitations, give a new perspective on two important dimensions of regional exports. These dimensions, for which little information has previously been available, are industrial mix and destination.

Data and methodology

The widely publicized state rankings of 1987 exports are somewhat misleading.² The state-level export data are intended to identify the state “where the merchandise began its export journey.” However, the reported state of origin is not always the state where the goods are manufactured or produced. The state of origin can also be the state where goods are consolidated by an intermediary for overseas shipment or the state where the port of embarkation is located. This article alleviates this problem by focusing only on manufactured exports and by grouping states into regions. The resulting information will provide observers of regional export activity a basis for a thorough comparison of regional manufactured exports.

The problem of identifying origin—the attribution error—is especially pronounced for agricultural and mined commodities. Small shipments of these commodities are often combined at storage facilities along their journey to the port. This practice of consolidation makes attributing exports to the state where the goods are produced very difficult. The state of origin for these goods is often reported by shippers as the state of consolidation or the port state instead of the state in which the goods are produced. For example, Louisiana, a major port for agricultural products, reports crop exports far exceeding those from top producing states such as Kansas. Much of the Kansas crop exports and those for other major crop-growing states are likely included in the Louisiana export total.

Manufactured export data furnished by the Commerce Department, but previously unpub-

lished, are much less distorted by attribution error than the published total export data because agricultural and mined exports are excluded. Although agricultural and mined exports are a relatively small 9.3 percent of U.S. exports, the inclusion of these commodities skews the aggregate export values toward states with major ports and understates the total exports from agricultural and mining states. Moreover, because individual shipments of manufactured goods are easier to distinguish from one another than agricultural or mined products, they are less likely to suffer attribution errors caused by consolidation. Although the manufactured export data provide a narrower measure of exports, state and local policymakers have been particularly interested in manufactured exports, since these exports have benefited most from the depreciation of the U.S. dollar.

Some of the remaining attribution error in the state manufacturing data can be overcome by grouping states into multistate regions. Regional rankings reflect a more accurate account of goods produced for export because attribution errors are less serious between regions than between states. This is especially true for manufacturing because industrial plants often locate near ports to make it easier to receive imported materials and export finished goods. The location of manufacturing activity is less constrained than is the location of agriculture and mining by the location of natural resources.

This article considers export activity in nine regions of the United States (Figure 1). The regions were chosen by grouping states with similar kinds of manufacturing activity and, where possible, by grouping states according to proximity to major ports. The Plains and Rocky Mountain regions were intentionally not associated with Western states because doing so would seriously overstate the manufactured exports from these interior regions.

In addition to minimizing the attribution error,

FIGURE 1
U.S. export regions



this article includes two additional features that make the data easier to interpret. First, the article reports only the shares of regional manufactured exports for individual industries or destination countries instead of exact dollar values, because these values are understated due to the large proportion of manufactured exports with unknown origin. Expressing regional exports as shares instead of levels allows qualitative comparisons to be made across regions, assuming exports with unknown origin have the same geographical distribution as exports with known origin.³

The second way that the article makes the data easier to interpret is by scaling the broadest measure of regional manufacturing exports to the size of the regions. The 1987 values of manufactured exports and total personal income for each region are shown in Table 1. Personal income is included in this table to provide a benchmark

of overall economic activity in the regions and to standardize the comparison of manufactured exports across regions. Therefore, one way to interpret the last column in Table 1 is the proportion of a region's total economic activity (measured by personal income) accounted for by export of manufactured goods (measured by the value of shipments).

Characteristics of regional manufactured exports

Regional exports of manufactured goods can be understood more clearly with the information about important export industries in each region and the destinations of exports from each region provided in Tables 2-5. Despite limitations in identifying the exact origins of exported products, the regional export data provide useful information about the relative importance of individual

TABLE 1

Value of manufactured exports and personal income by region, 1987

	1987 value of manufactured exports (\$ billions)	Regional share of manufactured exports (percent)	1987 personal income (\$ billions)	Regional share of personal income (percent)	Ratio of manufactured exports to personal income ($\times 100$)
Great Lakes (Illinois, Indiana, Michigan, Ohio, Wisconsin)	32.28	14.95	637.45	16.92	5.06
Mid-Atlantic (Dist. of Columbia, Delaware, Maryland, New Jersey, New York, Pennsylvania)	24.89	11.53	764.30	20.28	3.26
New England (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)	11.45	5.30	238.64	6.33	4.80
Plains (Iowa, Kansas, Minnesota, Missouri, North Dakota, Nebraska, South Dakota)	8.38	3.88	260.85	6.92	3.21
Rocky Mountain (Colorado, Idaho, Montana, Utah, Wyoming)	2.66	1.23	98.53	2.62	2.70
South Atlantic (Florida, Georgia, North Carolina, South Carolina, Virginia, West Virginia)	20.00	9.27	521.26	13.83	3.84
South Central (Alabama, Arkansas, Kentucky, Louisiana, Missis- sippi, Tennessee)	10.30	4.77	261.90	6.95	3.93
Southwest (Arizona, New Mexico, Oklahoma, Texas)	21.39	9.91	340.13	9.03	6.29
West (Alaska, California, Hawaii, Nevada, Oregon, Washington)	38.11	17.66	645.06	17.12	5.91
Unknown origin	46.40	21.50	—	—	—
Total	215.86	100.00	3,768.12	100.00	5.73

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce. Personal income data from *Survey of Current Business*, U.S. Department of Commerce, Bureau of Economic Analysis, Vol. 68, No. 8, August 1988.

export industries and the destinations of regional manufactured exports.

Industrial mix

Data in Table 2 illustrate how the industrial makeup of export activity differs across regions. Selected industry shares of 1987 manufactured exports for the U.S. and nine regions are shown in the table. The industries are grouped into two broad categories: durables and nondurables. The shares listed for each region in the table show the percent of total manufactured exports from that region accounted for by a given industry.

Durables industries account for more exports than nondurables industries in most regions. In fact, exports of durable goods account for over two-thirds of total U.S. manufactured exports. Regionally, durables range in importance from 86 percent of manufactured exports in New England to 34.7 percent in the South Central region.

Some individual industries are clearly more important exporters than others. The three most important durables industries for both the nation and most regions are nonelectrical machinery, electrical machinery, and transportation equipment. The biggest category of nondurables exports for the nation and most regions is chemicals.

Although Table 2 demonstrates the variation in the industrial characteristics of each region's manufactured exports, it does not show which regions dominate in the export of each particular product. For example, the effects of regional specialization in some industries, such as lumber and wood in the West and textiles in the South Atlantic, are overwhelmed in Table 2 by the dominance of nonelectrical machinery, electrical machinery, and transportation equipment. Lumber and wood products account for only 5.9 percent of manufactured exports from the West, and textiles account for only 3.8 percent of manufac-

ture exports from the South Atlantic region.

Another way to view regional exports is to consider the proportions of each category of manufactured exports emanating from each region, as shown in Table 3. Each row in Table 3 divides 1987 manufactured export activity across the nine regions. The resulting regional distribution points to regions that are important to the export of particular goods. For example, the West is the most important exporter of lumber and wood products, and the South Atlantic region is the most important exporter of textiles.

Some clear patterns show up in Table 3. Durables exports originate mainly in three regions—the Great Lakes, Mid-Atlantic, and West—which account for over half of the U.S. exports of durable goods. Nondurables exports come predominantly from the “Sun Belt” regions—South Atlantic, South Central, and Southwest. These three regions together account for over 42 percent of nondurables exports.

Destinations

Knowledge of destinations of regional exports helps in understanding the participation of regions in the ongoing expansion of U.S. exports. Since the U.S. dollar has not depreciated by the same amount against all currencies in recent years, regions that export mainly to Europe or Japan will be affected differently than regions that export to other countries. For example, growth in exports to Canada has not been boosted as much from dollar depreciation as growth in exports to Europe or Japan, because the dollar has depreciated more against such currencies as the mark, the pound, and the yen than against the Canadian dollar.

The shares of manufactured exports from each region shipped to the nation's top 10 export destinations in 1987 are shown in Table 4. The countries listed in the table receive different proportions of exports from each region. While these

TABLE 2
Selected industry shares of regional manufactured exports, 1987
 (percent of regional total)

Industry	Great Lakes	Mid-Atlantic	New England	Plains	Rocky Mountain	South Atlantic	South Central	Southwest	West	Unknown	United States
DURABLES	81.7	75.5	86.0	74.6	76.0	46.7	34.7	57.6	81.3	56.1	67.4
Lumber, wood Nonelectrical	0.5	0.7	0.9	0.6	0.6	0.8	1.5	0.3	5.9	1.8	1.8
machinery	23.2	18.3	41.3	32.1	28.3	18.2	11.7	19.2	20.2	13.2	19.9
Electrical machinery	8.5	15.0	13.6	9.2	23.7	9.1	6.1	21.3	18.4	6.6	12.3
Transportation equipment	35.3	15.4	12.8	20.5	2.2	9.7	9.3	8.1	25.4	22.4	20.0
Instruments and related products	3.0	10.7	11.1	5.8	12.6	2.8	1.5	2.8	6.1	2.8	5.0
Other durables	11.2	15.4	6.3	6.4	8.6	6.1	4.6	5.9	5.3	9.3	8.4
NONDURABLES	16.6	22.3	12.1	24.1	22.6	51.5	64.3	41.6	17.5	29.8	28.4
Food	1.9	1.6	1.5	12.1	7.6	3.6	18.7	4.8	6.3	9.1	5.9
Tobacco	0.0	0.2	0.0	0.0	0.0	10.8	0.3	0.0	0.0	0.2	1.1
Chemicals	9.9	12.0	3.9	5.9	8.5	20.8	28.6	26.5	3.6	10.5	12.2
Textiles	0.1	0.9	0.7	0.1	0.1	3.8	0.8	0.8	0.1	1.1	0.9
Other nondurables	4.7	7.6	6.0	6.0	6.4	12.5	15.9	9.5	7.5	8.9	8.3
UNCLASSIFIED	1.8	2.3	1.9	1.3	1.4	1.8	1.0	0.8	1.2	14.1	4.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U. S. Department of Commerce.

TABLE 3
Regional shares of manufactured exports by industry, 1987
 (percent of total exports by each industry)

Industry	Great Lakes	Mid-Atlantic	New England	Plains	Rocky Mountain	South Atlantic	South Central	Southwest	West	Unknown	Total
	DURABLES	18.1	12.9	6.8	4.3	1.4	6.4	2.5	8.5	21.3	17.9
Lumber, wood	4.0	4.5	2.5	1.3	0.4	4.0	3.8	1.4	56.8	21.5	100.0
Furniture	18.4	8.4	2.3	2.3	0.6	13.7	3.4	9.8	10.8	30.2	100.0
Stone, clay, glass	29.4	16.3	4.1	2.8	1.1	10.7	4.9	5.5	6.6	18.6	100.0
Primary metals	10.8	24.4	2.8	2.4	2.2	5.3	2.6	8.0	13.7	27.8	100.0
Fabricated metals	30.9	12.2	4.6	3.4	0.7	7.6	2.1	7.3	9.5	21.7	100.0
Nonelectrical machinery	17.4	10.6	11.0	6.3	1.8	8.5	2.8	9.6	17.9	14.2	100.0
Electrical machinery	10.4	14.1	5.9	2.9	2.4	6.9	2.4	17.2	26.5	11.5	100.0
Transportation equipment	26.4	8.9	3.4	4.0	0.1	4.5	2.2	4.0	22.4	24.1	100.0
Instruments	8.9	25.0	11.9	4.6	3.2	5.2	1.5	5.7	21.9	12.2	100.0
Miscellaneous	9.1	36.7	5.6	3.0	0.6	4.4	2.2	3.8	12.2	22.4	100.0
NONDURABLES	8.7	9.1	2.3	3.3	1.0	16.8	10.8	14.6	10.9	22.6	100.0
Food	4.8	3.1	1.3	8.0	1.6	5.7	15.2	8.1	18.9	33.3	100.0
Tobacco	0.2	1.6	0.0	0.0	0.0	93.6	1.3	0.0	0.1	3.2	100.0
Textiles	2.1	11.5	4.2	0.6	0.2	38.9	4.2	8.6	2.7	26.9	100.0
Apparel	4.0	17.5	2.1	1.4	0.7	28.9	5.2	12.2	6.8	21.4	100.0
Paper	4.7	5.6	4.7	1.7	1.6	23.9	11.4	5.1	17.1	24.3	100.0
Printing and publishing	19.9	24.5	5.0	6.7	0.8	3.9	4.9	2.0	8.9	23.5	100.0
Chemicals	12.1	11.3	1.7	1.9	0.9	15.8	11.2	21.5	5.2	18.5	100.0
Petroleum	4.4	4.1	0.2	0.6	0.4	0.7	13.3	24.9	26.6	24.8	100.0
Rubber and plastics	16.1	15.9	5.2	5.4	0.9	14.4	5.7	9.2	9.2	18.1	100.0
Leather	7.9	20.9	14.9	6.4	0.5	4.6	1.5	6.5	7.2	29.5	100.0
UNCLASSIFIED	6.3	6.1	2.3	1.2	0.4	3.8	1.1	1.9	5.0	71.7	100.0
ALL INDUSTRIES	15.0	11.5	5.3	3.9	1.2	9.3	4.8	9.9	17.7	21.5	100.0

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U. S. Department of Commerce.

TABLE 4
Destinations of regional manufactured exports, 1987
 (percent of regional total)

	Great Lakes	Mid-Atlantic	New England	Plains	Rocky Mountain	South Atlantic	South Central	Southwest	West	Unknown	United States
Canada	49.2	23.3	19.0	33.4	17.8	13.1	19.0	9.5	9.3	28.3	23.4
Japan	6.5	8.1	11.6	11.6	19.7	8.2	7.7	6.3	20.6	8.5	10.4
Mexico	5.3	3.2	1.8	3.4	3.8	2.2	4.0	27.5	5.1	3.5	6.2
Great Britain	4.8	6.7	12.3	7.5	8.0	5.5	4.4	4.6	8.2	3.8	6.0
Germany	4.3	6.3	6.9	5.4	8.4	3.6	4.3	3.0	6.4	3.9	4.9
France	4.2	4.4	4.7	3.8	3.6	3.0	3.8	2.8	3.0	2.0	3.3
Netherlands	1.9	2.8	4.7	2.9	1.8	2.4	8.2	3.9	3.0	2.9	3.1
Korea	1.5	2.1	2.1	3.5	3.6	1.4	3.1	3.2	4.1	3.8	2.9
Taiwan	1.4	3.1	2.1	1.4	2.2	1.7	1.9	3.2	3.7	3.4	2.7
Belgium/ Luxembourg	1.9	3.0	1.9	1.7	1.6	7.6	4.1	2.5	1.3	1.3	2.5
Total	81.0	63.0	67.1	74.6	70.5	48.7	60.5	66.5	64.7	61.4	65.3

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

10 countries together receive about two-thirds of total U.S. manufactured exports, the amounts they receive vary regionally from 48.7 percent of South Atlantic manufactured exports to 81 percent of Great Lakes manufactured exports.

Understanding where countries buy their manufactured goods in the United States is also important, because it could guide economic development policies directed at boosting regional export activity. State and local policymakers are interested in the relative participation of their region in the total U.S. exports to a given country. Economic development efforts aimed at regional export activity could be enhanced by targeting those export destinations in which a region already has a strong foothold relative to other regions.

While the largest exporting regions have significant shares of export activity with several coun-

tries, some important bilateral relationships for regions are evident in the table. Table 5 compares the shares of each region in the 1987 manufactured exports to each of the nation's 10 most important export destinations. Regional export relationships appear to be determined largely by proximity. The Great Lakes region accounts for the largest share of manufactured exports to Canada. Japan receives most of its U.S. manufactured goods from the West, and Mexico receives most of its U.S. products from the Southwest.

Conclusions

Despite the difficulty in identifying the production location of some exported products, manufactured export data provide information about the industrial mix and destinations of regional exports that has not been available before. The data also

TABLE 5

Regional distribution of manufactured exports to selected trading partners, 1987
(percent of total exports to each country)

	Great Lakes	Mid- Atlantic	New England	Plains	Rocky Mountain	South Atlantic	South Central	South- west	West	Unknown	Total
Canada	31.5	11.5	4.3	5.6	0.9	5.2	3.9	4.0	7.1	26.0	100.0
Japan	9.3	8.9	5.9	4.3	2.3	7.3	3.5	6.0	34.9	17.6	100.0
Mexico	12.9	5.9	1.5	2.1	0.8	3.3	3.1	43.9	14.6	12.0	100.0
Great Britain	12.1	12.9	10.9	4.9	1.7	8.5	3.5	7.6	24.4	13.6	100.0
Germany	13.3	15.0	7.6	4.3	2.1	6.9	4.2	6.2	23.2	17.2	100.0
France	19.3	15.6	7.6	4.5	1.4	8.6	5.6	8.5	16.3	12.9	100.0
Netherlands	9.0	10.1	7.9	3.6	0.7	7.1	12.5	12.2	17.0	20.0	100.0
Korea	7.9	8.2	3.9	4.7	1.6	4.5	5.2	11.0	25.1	28.0	100.0
Taiwan	7.6	13.3	4.1	1.9	1.0	5.7	3.4	11.8	24.3	27.0	100.0
Belgium/ Luxembourg	11.4	14.0	4.0	2.7	0.8	28.3	7.9	10.0	9.5	11.4	100.0

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

suggest the base from which anticipated changes in patterns of regional exports can be measured. Some regions, such as the Great Lakes and the West, export a large dollar volume of a wide variety of goods to many trading partners. Other regions, such as the Plains and Rocky Mountains,

participate much less in export activity. The export data allow state and local policymakers and businesspeople to analyze the characteristics of individual regions in more detail and compare the relative participation of their regions in nationwide manufactured exports.

¹ The information presented in this article is based on quarterly export data by state of origin provided on magnetic tape by the Foreign Trade Division of the Bureau of the Census, U.S. Department of Commerce, from shippers' export documents. The first year these data were available was 1987.

² Total exports by state of origin for 1987 are published in *Highlights of U.S. Export and Import Trade*, U.S. Department

of Commerce, Bureau of the Census, December 1987. See also *Business America*, March 28, 1988, p. 8, and *U.S. News and World Report*, June 13, 1988, p. 71.

³ All tables include a column for manufactured exports with unknown region of origin. The tables, therefore, show the industrial composition and the destinations for these manufactured exports with unknown origin.

Manufactured exports from the Tenth Federal Reserve District

The Tenth Federal Reserve District states—Colorado, Kansas, Missouri, Nebraska, New Mexico, Oklahoma, and Wyoming—overlap three of the regions considered in this article. The Tenth District states comprise parts of the Plains, Rocky Mountain, and Southwest regions. Due to the importance of agricultural exports in these states, the manufactured export data underestimate the overall importance of exports from the district.

The industrial composition of 1987 manufactured exports from Tenth District states is shown in Table B1. The shares of durable and nondurable goods in total manufactured exports from these states roughly equal the U.S. shares. Durable goods account for about 70 percent of manufactured exports from district states, and nondurable goods account for about 28 percent.

The most important categories of durables exports from district states are nonelectrical machinery, electrical machinery, and transportation equipment. The share of transportation equipment exports in district manufactured exports is over five percentage points above the national average, reflecting the importance of automobile and aircraft manufacturing in Tenth District states. District shares of electrical and nonelectrical machinery are closer to average.

The most important nondurables exports in district states are food products and chemicals. The share of food in district manufactured exports is more than twice the U.S. average. The share of chemicals exports in the district states is only slightly below the U.S. average.

The primary destinations of manufactured exports from the Tenth District states are shown in Table B2. Canada is the most important destination of manufactured exports from the district. It receives an above-average share of the district's

TABLE B1
Industry shares of manufactured exports from Tenth District states, 1987
(percent of total)

<u>Industry</u>	<u>Tenth District states</u>	<u>United States</u>
DURABLES	70.52	67.42
Lumber, wood	0.44	1.84
Furniture	0.23	0.26
Stone, clay, glass	0.90	0.97
Primary metals	1.35	2.82
Fabricated metals	2.39	2.93
Nonelectrical machinery	21.44	19.91
Electrical machinery	10.46	12.29
Transportation equipment	25.11	19.98
Instruments	7.76	4.95
Miscellaneous	0.44	1.46
NONDURABLES	28.25	28.35
Food	12.19	5.86
Tobacco	0.00	1.07
Textiles	0.12	0.91
Apparel	0.23	0.72
Paper	0.61	2.65
Printing and publishing	0.99	0.72
Chemicals	10.78	12.21
Petroleum	0.79	2.12
Rubber and plastics	1.89	1.74
Leather	0.65	0.34
UNCLASSIFIED	1.23	4.23
TOTAL	100.0	100.0

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

TABLE B2
Destinations of manufactured exports
from Tenth District states, 1987
 (percent of total)

	<u>Tenth District states</u>	<u>United States</u>
Canada	28.28	23.36
Japan	12.17	10.43
Mexico	4.10	6.20
Great Britain	8.28	5.96
Germany	5.44	4.87
France	3.69	3.28
Netherlands	1.65	3.14
Korea	3.88	2.90
Taiwan	1.76	2.72
Belgium/Luxembourg	1.95	2.48
Total	71.20	65.34

Source: Compiled from "State of Export Series" provided on magnetic tape by the Foreign Trade Division, Bureau of the Census, U.S. Department of Commerce.

manufactured exports. Japan is the second most important destination of goods shipped from the district, also receiving an above-average share of district manufactured exports.

In summary, although manufactured exports are relatively less important to Tenth District states than to states in Great Lakes or coastal regions, the overall industrial makeup of these exports is similar to the makeup of U.S. manufactured exports. Notable exceptions are the larger district shares of transportation equipment and food exports. And the proportion of manufactured exports from Tenth District states shipped to Canada and Japan, the two most important export destinations for district states, is larger than average.

Economic Review
Federal Reserve Bank of Kansas City
Kansas City, Missouri 64198
January 1989, Vol. 74, No. 1