

FEDERAL RESERVE BANK OF KANSAS CITY

Economic Review



Fourth Quarter 1993

*Changing Capital Markets: Implications for Monetary
Policy—An Overview*

*Changing Capital Markets: Implications for Monetary
Policy—A Summary of the Bank's 1993 Symposium*

Was the ERM Crisis Inevitable?

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By Hans Tietmeyer

In remarks prepared for the Bank's 1993 symposium, Hans Tietmeyer examines financial market changes from the perspective of Germany and discusses some of the implications for European monetary integration. He notes two important general implications of recent trends in financial markets. First, while financial markets have become more efficient, they have also become more fragile. Second, monetary policy has become more difficult. Thus, in a number of countries the monetary transmission mechanism has been affected and intermediate targets distorted. In addition, Tietmeyer suggests the effectiveness of policy has been affected by such factors as the expansion of variable rate debt, the ability of banks to avoid the restrictions of reserve requirements, and inflation impulses induced by exchange rate intervention.

Tietmeyer notes Germany has been less affected by changes in the intermediation process than by increased capital mobility. Because of less regulation and a slower pace of financial innovation, German banks have not experienced significant erosion in their position, and the long-run M3 relationship has remained stable. In Tietmeyer's view, however, greater capital mobility has made it more difficult to maintain a fixed exchange rate system in the face of differing domestic policy requirements and has undercut the effectiveness of sterilized intervention.

On issues related to European monetary integration, Tietmeyer favors a European strategy of money supply targeting, which he thinks is necessary for policy credibility. He indicates the recent decision to widen the ERM bands gave European central banks more flexibility but made the task of maintaining long-run anti-inflation policies more difficult.

Changing Capital Markets: Implications for Monetary Policy—A Summary of the Bank's 1993 Symposium

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By Gordon H. Sellon, Jr.

Financial markets throughout the world have changed substantially in recent years as capital markets have become deeper and broader. In many countries, financial intermediation is increasingly carried out directly in capital markets rather than through such traditional intermediaries as commercial banks. Moreover, complex linkages among global financial markets have increased capital mobility to the point where considerable amounts of funds cross national borders each day. These developments have potentially important implications for monetary policy in the United States and other countries.

To explore the implications of these financial market trends, the Federal Reserve Bank of Kansas City invited central bankers, academics, and financial market participants to a symposium entitled "Changing Capital Markets: Implications for Monetary Policy." The symposium was held August 19-21, 1993, at Jackson Hole, Wyoming. Sellon highlights the issues raised at the symposium and summarizes the papers and commentary.

Was the ERM Crisis Inevitable?

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By Bryon Higgins

European currency markets have been subject to recurring periods of turmoil since the summer of 1992, when the United Kingdom and Italy withdrew their currencies from the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS). Understanding the reasons for the ERM crisis is essential for predicting the future course of European economic, financial, and political developments—all of which could affect the U.S. economy into the 21st century.

According to one interpretation, the ERM crisis was caused by a combination of bad luck and bad policy decisions. The bad luck was the timing of the large external shock to European economies resulting from German unification and monetary union in 1990. These strains were exacerbated by inappropriate macroeconomic policy decisions that contributed to high inflation and budget deficits in some EMS countries—especially the United Kingdom and Italy. This interpretation of the ERM crisis leads to a relatively sanguine view that only minor modifications to the ERM system will allow a return to exchange rate stability as a step toward full monetary union in the European Community by the end of this decade.

More skeptical analysts view the ERM as fundamentally flawed. Although not denying that German unification and unsound macroeconomic policies contributed to strains within the ERM, these analysts stress that the design of the system made it particularly vulnerable to such disruptive factors. Fundamental systemic changes would thus be required to achieve exchange rate stability as a precursor to European monetary union. Higgins concludes the ERM was vulnerable and its vulnerability, while not making the crisis inevitable, nonetheless made the system susceptible to crisis.

Opportunities for Rural Community Banks in Farm Lending

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By Marvin Duncan and Richard D. Taylor

Farm lending has been a comfortable growth industry throughout most of the postwar period. From the late 1940s through the early 1980s, farm debt increased fourfold as community banks and other lenders fed a hungry appetite for farm debt. Inflation helped fuel the upward spiral, raising land values and spurring a sharp buildup in real estate debt.

The 1980s brought this growth to a sudden halt and introduced bold changes that have fundamentally reshaped the farm lending business. Buffeted by strong economic forces, the structure of agriculture was pushed rapidly toward fewer, bigger farms. Meanwhile, financial deregulation unleashed forces that created a much more competitive marketplace for rural lenders.

After a decade of painful adjustment, rural community banks that lend to agriculture are just beginning to identify the opportunities of this new marketplace. Duncan and Taylor explain why the future for rural community banks lies in focusing efforts on market niches and building new alliances with other financial institutions, while managing the regulatory burden of the 1990s.

New Estimates of the Natural Rate of Unemployment

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By Stuart E. Weiner

Reducing inflation is one the principal goals of monetary policy. In assessing the outlook for inflation, policymakers try to gauge the amount of slack in the economy. As long as the economy's resources are not pushed beyond capacity levels, inflation tends to remain under control. In labor markets, capacity is measured by the "natural rate of unemployment," which cannot be observed but must be estimated. When the demand for workers is so strong that the actual unemployment rate falls below the natural rate, inflation increases.

The natural rate of unemployment is influenced by many demographic and structural forces. By most estimates, the natural rate has been trending downward over the past decade as the share of young, inexperienced workers in the labor force has declined and the growing number of women in the labor force have gained experience and tenure. But looking ahead, other demographic forces may keep the natural rate high. The share of young workers is expected to stabilize, and the work force will become racially more diverse. In addition, a number of structural forces could boost the natural rate of unemployment, including defense industry cutbacks, higher white-collar unemployment, and a growing gap between high-tech job requirements and low-tech worker skills.

Weiner presents new estimates of the natural rate of unemployment that incorporate these demographic and structural forces. The estimates indicate the natural rate could be 6 1/4 percent or higher in coming years. Thus, the near-term inflation risk may be higher than generally perceived.

Changing Capital Markets: Implications for Monetary Policy—An Overview

Hans Tietmeyer

I would like to contribute some observations on the structural changes in the capital markets and their implications for monetary policy. My remarks deal with the situation in Germany but also touch on questions arising from European monetary integration. Before that, I would like to sum up briefly what I consider to be the essential trends in the financial markets and the monetary policy issues resulting from them. The numerous changes experienced by the financial markets in the past few years can be divided into three distinct trends.

First, the industrialized countries have largely (and in most cases completely) liberalized their international capital transactions. In addition, and this applies particularly to Europe, borders have been opened for financial services, and restrictions on establishment have been reduced. As a consequence, international finan-

cial interdependence has increased dramatically. It is an indicator of this trend that the volume of international bonds outstanding, measured in terms of the GNP of the industrialized countries, has multiplied in the past two decades. The rapid expansion in foreign exchange market transactions points in the same direction. Not least, international *net* capital flows have also risen sharply. Current account deficits and surpluses of a size that would have appeared unimaginable not too long ago have now become sustainable for longer periods of time.

The second major phenomenon among recent capital market trends is represented by the innovations in and the deregulation of financial activities. Even more than the liberalization of capital movements, the wave of deregulation has reflected a reorientation in terms of policy stance. Deregulation in the financial sector has been conceived as a counterpart of supply-side reforms in general economic policy.

As a result of innovations and deregulation, financial market structures have changed in many respects. For example, the banks' customers have been offered interest-bearing cash deposits. In addition, issuing facilities have replaced bank loans (securitization and disintermediation). Furthermore, bonds with special

Hans Tietmeyer prepared this paper for delivery at the Federal Reserve Bank of Kansas City's Symposium on "Changing Capital Markets: Implications for Monetary Policy," Jackson Hole, Wyoming, August 1993. Dr. Tietmeyer is currently President, and at the time of the symposium was Vice President, of the Deutsche Bundesbank. Although Dr. Tietmeyer was unable to be present, his paper was distributed at the symposium and is being published with the proceedings.

terms of issue, such as variable interest rates, have become widespread.

Above all we are experiencing a strong expansion of the markets for derivative financial instruments (such as futures, options, swaps, and synthetic bonds or shares). Technological advances in telecommunications and computers have played a part in this development. They have lowered information and transaction costs for financial products. The improved possibilities of hedging against interest and exchange rate risks, such as are offered by derivatives, have, in turn, given fresh impetus to the globalization of asset holdings.

The third new trend can be seen in the fact that the importance of institutional investors in national markets and international capital transactions has grown considerably. The report of the G-10 deputies on International Capital Movements and Foreign Exchange Markets, published in the spring of this year, sheds some light on this. According to the report, the total cross-border securities holdings of residents of the United States, Europe, and Japan in 1991 came to an estimated \$2.5 trillion. As stated in the report, institutional investors (such as pension funds, insurance companies, mutual funds, trust funds, and hedge funds) accounted for most of the rapid increase in these investments.

It is typical of these operators that they are generally subject to less stringent regulatory standards and supervision than banks. In addition, some of them seem to have a relatively strong tendency to incur open or insufficiently covered foreign exchange positions and to change them rapidly afterwards.

As a consequence of the far-reaching transformation process, the financial markets have doubtless become more efficient. Costs for borrowers have declined, earnings for investors have risen, and the markets have thus been given additional growth stimuli. However, the financial markets have also become more fragile. The stock market crash of 1987, the European exchange

market turbulences of 1992, and the European currency unrest since then have shown that under present conditions it does not take much to trigger off enormous shifts in capital, which may bring about serious disadvantages (in the form of uncertainties for investment and trade) for the countries directly concerned as well as for the world at large. Such undesirable consequences would be carried to an extreme, if disturbances in the financial sector and subsequent exchange rate effects ultimately led to protectionist trade measures. The tail would wag the dog.

Stability of the financial markets must therefore be a primary objective of general economic policy. However, there is a widely held consensus that deliberalization and re-regulation would be inappropriate reactions. Instead, we must persevere in combining economic freedom with appropriate supervisory provisions. Much has already been achieved here under the auspices of the Basle Committee, but more needs to be done. In this respect, disclosure requirements can be helpful in strengthening the internal control mechanisms in the markets. That said, the stability of the financial markets is crucially dependent on gearing monetary, fiscal, and wage policies in all countries strictly toward achieving the generally accepted objective of noninflationary economic growth.

It is also true, however, that the changes in the financial markets have generally made it more difficult for monetary policymakers to fulfill their stability mandate. Several factors are responsible for this.

In a number of countries, financial innovations and deregulation have distorted the intermediate targets used in the conduct of monetary policy and have altered the transmission mechanisms of monetary policy to the real economy. This concerns especially those countries which maintained a comprehensively regulated financial framework for an extended period of time and chose the Big-Bang style of deregulation.

In the countries concerned, the interest-

bearing portion of the banks' liabilities has increased sharply. In addition, near-money investment outside the banking system has risen quickly. Under these conditions, the reasons for holding liquid assets are no longer clearly definable. As a result, the demand for money in relation to interest rates and expenditure has become unstable in these cases, thus undermining the rationale for using monetary aggregates as monetary policy targets.

These difficulties have led in a number of countries to policies based on a broad range of indicators. It seems to be fair to say that these countries have lived in a period of monetary experimentation in recent years. The results, at least, have not been convincing so far. It has become general knowledge that in many countries innovations and deregulation have coincided with temporarily overly expansive monetary policies. The effects of misguided monetary policies have made themselves felt in the inflation and deflation of asset prices and the related cyclical problems.

The asset price cycles, in turn, have had additional distorting repercussions on the monetary aggregates. Owing to falling asset prices, banks in the United States, Japan, and some European countries accumulated substantial amounts of nonperforming loans. As a consequence, the banks concerned were obliged to restrain their lending activities (credit crunch); they had to adjust to their deteriorated capital positions and also to difficulties in attracting deposits. The subsequently reinforced disintermediation of lending has additionally impaired the reliability of the monetary aggregates as leading indicators of expenditure and inflation.

Another major change in the framework for the conduct of monetary policy is the increased potential for putting exchange rates under pressure. Countries which are exposed to capital inflows may therefore be confronted to a much greater degree than before with the problems of intervention-induced inflationary impulses. It

should be noted that in the seven months from June through December 1992, official net deutsche mark sales by European central banks amounted to no less than DM 284 billion, of which DM 188 billion were used to defend exchange rate mechanism (ERM) currencies (as stated in the already mentioned G-10 report). A substantial part of these interventions affected monetary conditions in Germany, especially when such operations involved the Bundesbank. In the course of 1993, the ERM central banks effected further substantial deutsche mark sales. In June/July 1993 alone, approximately DM 110 billion were sold in support of ERM currencies, with about DM 60 billion having to be provided by the Bundesbank for intramarginal and compulsory interventions, which had a corresponding impact on monetary conditions in Germany.

In particular, experience of exchange market pressure has shown that strengthening monetary policy is much more difficult in countries where large amounts of private and public debt are incurred at variable interest rates. It is true that a high indebtedness at floating rates increases the efficiency of monetary policy in terms of restraining the economy, because rising interest rates would affect not only new borrowing but debts outstanding as well. However, such efficiency gains conflict with the deployment of monetary policy for defending exchange rates, such as may become necessary, in particular if the country participates in a fixed exchange rate mechanism like the ERM. In other words, in an environment of variable interest rates, a restrictive monetary policy may have such an impact on the domestic economy that its application for defending exchange rates collides with cyclical policy requirements. According to a recent internal report of the European Community (EC) Committee of Governors, the United Kingdom appears to be the country most affected by this dilemma within the European Community.

It should also be emphasized that the expansion of the Euromarket and other offshore centers

poses problems for those countries which deploy the instrument of minimum reserves. Particularly in phases of structural changes, minimum reserves can exercise an important function as an automatic constraint on money creation. To achieve this, the minimum reserve ratios have to be sufficiently restrictive. However, the higher the minimum reserve ratios, the more the banks will be tempted to evade their obligations by shifting parts of their business activities to reserve-free subsidiaries abroad.

In some respects, German monetary policy has been less affected by the changes in the financial markets than other countries. Since the transition to money supply targeting in 1974, the financial infrastructure in Germany has not changed so profoundly as in many other countries. Liberalization of capital transactions and most of the deregulation of financial markets were carried out much earlier. The abolition of interest rate controls in 1967 was the major final step in this development. Since that time, German investors may resort to time deposits with money-market-related interest rates, and it has also become possible to meet borrowers' demands for interest rate flexibility.

There is yet another reason why the behavior of the monetary aggregates in Germany has been less affected by the general trend toward innovations and deregulation. The Bundesbank has always paid attention to preventing reforms of the financial markets from rocking the foundations of monetary policy.

For example, the Bundesbank did not overcome its reservations about the issue of floating-rate notes and of commercial paper until 1985. In addition, such innovative instruments have not been of major importance in Germany so far. Bonds with variable interest rates account for less than 10 percent of total domestic bonds in circulation. Much the same is true of commercial paper. Although the German commercial paper market has been expanding rapidly, the stock of such paper comes to only about 3 percent of the

short-term time deposits in the banking system. All this suggests that there has been no urgent demand for these innovations.

The Bundesbank has also been extremely cautious with regard to the efficiency of the minimum reserve instrument. In order to make it more difficult to evade the minimum reserve obligation, short-term bank bonds (with maturities of less than two years) are included in the reserve requirements. For the same reason, the Bundesbank has so far been opposed to the launching of money market funds.

All in all, it appears that the Bundesbank's concept of monetary policy is still appropriate. It is noteworthy in particular that German unification has not altered the demand-for-money relationship. The Bank for International Settlements (BIS) confirmed this appraisal in its most recent annual report. I quote from page 141: "It was widely accepted in the past that in contrast to money demand relationships in many other countries, the demand for M3 in Germany was stable. Recent investigations suggest that, perhaps surprisingly, this is still the case. . . . The high rate of growth of M3 in the 1990-92 period thus appears to be well explained by the strength of output in western Germany following unification and by persistent inflationary pressures, rather than a structural shift in the demand-for-money relationship."

I have to admit, however, that more recently special factors have somewhat overstated the expansion of our target aggregate. In the wake of meanwhile rather low long-term interest rates, the growth of M3 was slightly affected by a shift of financial assets from nonmonetary investment to savings and time deposits. Nevertheless, according to our analysis, the *longer-term* relationships between interest rates, M3, and total expenditure continue to be reasonably stable.

The stability of the demand-for-money relationship and the underlying minor importance of financial innovations in Germany are of course also attributable to the previously high purchasing-

power stability of the deutsche mark. Thus, a speedy restoration of price stability in Germany is not least in the interest of safeguarding our monetary policy strategy.

On the other hand, the possibility of sudden large-scale international capital flows actually poses a considerable risk to the success of German monetary policy. As already mentioned, the year 1992 has taught us some lessons in this respect. It is widely agreed that a strengthening of monetary cooperation and crisis management, important though it is, cannot be the major response for coping with such problems. What is desirable, and indeed necessary, is a joint effort by all countries concerned to implement required adjustment measures speedily and to establish the preconditions for long-term price stability. This is particularly crucial for countries which are interconnected through fixed exchange rates. Germany, as the anchor country of the ERM, of course bears a special responsibility in the fight for domestic stability, since otherwise, the stability of the whole system would be at stake. Consequently, the scope for monetary policy cooperation in stabilizing exchange rates finds its limits in the anchor country's domestic policy requirements.

International cooperation is of primary importance, though, wherever a "level playing field" is required. In the area of monetary policy, it remains to be seen if an internationally agreed "middle ground" with regard to minimum reserves can be found. At any rate, the Bundesbank for one has recently reduced its reserve requirements with this intention.

Monetary policy would also benefit if the stability of the international financial system were further strengthened by means of appropriate and coordinated supervisory measures (which, as mentioned before, should not replace market forces but, on the contrary, enhance their disciplinary role, for example, by improving transparency). Each step toward improved prudential standards counteracts the danger of sys-

temic solvency strains and thus protects central banks against political pressure to grant generous liquidity injections. Let me add, however, that such monetary policy risks are less serious in Germany than in some other countries. The German universal banking system has been well able so far to master solvency problems itself. In addition, there is an institutional separation in Germany between monetary policy on the one hand, and banking supervision on the other. This protects the Bundesbank from internal conflicts of aims between monetary policy requirements and potential solvency problems of the banks.

At present, the implications of the changes in the capital markets for monetary policy are also an important subject with regard to the process of European monetary integration. Under the Maastricht Treaty, the planned European System of Central Banks will be established when the third stage of economic and monetary union comes into force, and will then immediately assume full responsibility for monetary policy in the participating countries. At the beginning of 1994, when the second stage of European Monetary Union (EMU) comes into force, a special cooperation agency, the European Monetary Institute, will start its activities. The Institute will primarily have to deal with preparing the ground for a stability-oriented European monetary policy by harmonizing the statistics and the institutional structures (such as the payment systems) and by discussing the guidelines and the required instruments for conducting monetary policy in the envisaged monetary union.

The question of whether monetary aggregates could serve as intermediate targets at the European level as well will have to be examined thoroughly and objectively. The Bundesbank has already submitted a paper for that purpose. It is, of course, ultimately an empirical question how well the stability of the demand-for-money relationship, as a precondition of such an approach, will be ensured in the third stage. A definitive answer, therefore, cannot yet be given. Existing

studies on the stability of the demand-for-money relationship in Europe, however, have had quite satisfactory results. The outcome is in many cases even more favorable for the European Community as a whole than for individual countries. Within the envisaged monetary union, the stability of the demand-for-money relationship would probably even improve, because inflation-induced innovations, which play a major role in some EC countries, will increasingly recede into the background, if the European System of Central Banks complies with its stability mandate.

Although operational problems arising from a European money supply concept cannot be ruled out, it is not least the shortage of convincing alternatives which argues in favor of such an approach. In view of the size of the economic area concerned, a policy which, instead, sets exchange rate targets seems hardly a reasonable option for Europe. On the contrary, a basically floating exchange rate vis-à-vis third currencies appears to be more appropriate. A European policy of money supply targeting would thus be less exposed to disturbing external influences. In principle, such a policy would therefore appear to be even more appropriate for the European System of Central Banks than for today's national central banks.

An interest-rate orientation, as the underlying principle of European monetary policy, would also be very problematic. A policy of fixing interest rates would run the risk of having procyclical effects on economic development, owing to the time lags between interest rate changes and their effects on economic activity. The political risks involved would be even more serious. An interest rate orientation would increase the danger of central banks tending toward monetary policy pragmatism and becoming more responsive to political influences.

There are some other reasons still which argue in favor of a European strategy of money supply targeting. Although from the outset the European System of Central Banks will have a

clear mandate to defend the value of money, it will not be able to point to any successes of its own as regards monetary stability and policy credibility. A clearly defined strategy that can be verified, such as the money supply approach, would therefore help the European System of Central Banks to win confidence in the markets.

Money supply targets could also facilitate decisionmaking within the European System of Central Banks. They would make the relationship between interest rate policy and the final objectives of monetary policy more transparent. This aspect will be of particular importance in Europe, since the members of the decisionmaking body will be influenced by very different national backgrounds.

You have probably gathered from my remarks that, with regard to Europe, we consider the German monetary policy concept as exportable, so to speak. In this sense, let me also quote Wim Duisenberg, the president of the central bank of the Netherlands, who recently said: "It would . . . appear wise if the policy strategy of the European Central Bank were to be modeled closely upon current German monetary policy practice." This appraisal has all the more significance since Mr. Duisenberg is at present also the chairman of the EC's Committee of Governors.

After the recent turmoil in the European Monetary System (EMS) and the decision temporarily to widen the ERM margins from +2.25 percent and +6 percent to +15 percent (except for the Netherlands, which intends to continue to maintain the present margins of +2.25 percent vis-à-vis the deutsche mark), one may, of course, wonder whether the prospects mapped out by the Maastricht Treaty are still realistic. However, at the time of their decision on August 1, the EC member states expressly declared that they intend to abide by the commitments of the Maastricht Treaty, and now that all 12 member states have taken the requisite ratification decisions, the Treaty can be expected formally to enter into force this autumn, unless the German

Constitutional Court at the last moment prohibits the lodging of the German deed of ratification—a turn of events which I do not consider to be very likely. The other EMS regulations and the parity grid likewise basically remain in effect.

Even so, the conditions for monetary policy in Europe have undoubtedly changed as a result of the decision taken on August 1. For one thing, owing to the limited floating of exchange rates, the individual countries now have more room for maneuver on interest rate movements. Such increased flexibility is certainly a gain, since the inflationary risks in the individual countries currently differ. For instance, the Bundesbank, in pursuing its domestic anti-inflation policies in the next few months, will not need to pay as much attention as hitherto to the direct implications for interest rate policy in neighboring countries, although of course a major appreciation of the deutsche mark within Europe is undesirable in the light of German exporters' need to remain competitive. Conversely, the other central banks in the EMS can now carry out interest rate reductions which seem desirable in domestic terms without immediately being faced with intervention commitments and reserve losses.

However, at least in the present situation (complicated as it is by the consequences of German reunification), this gain in flexibility is accompanied by a substantial risk. For a number of countries, the temporary widening of margins involves a temptation prematurely to break off their domestic efforts to achieve price stabilization and, instead, to seek salvation in competitive depreciations. A development of this kind would not only jeopardize the progress made so far toward convergence in Europe, it might actually

endanger the longer-term viability of the single European market. So far, admittedly, this risk has not assumed concrete shape. The exchange rate changes of the last two and one-half weeks have been relatively small up to now.

The next few months will show whether the European countries take due advantage of the new latitude that they have temporarily gained. You may rest assured that the Bundesbank will abide by the anti-inflationary policy stance it has pursued hitherto. That does not rule out the possibility of further small steps of interest rate policy, provided that the trend in the money stock permits it, and that the inflation rate, as expected, declines slightly in the near future. But we in the Bundesbank regard an anticyclical monetary policy neither as acceptable in terms of anti-inflation policy nor as efficient in terms of business cycle policy. The German interest rate level is already exceptionally low anyway in real terms. Long-term interest rates, in particular, are distinctly below the multiyear average in nominal and real terms alike. That reflects a substantial measure of confidence in German anti-inflation policy, which the Bundesbank has no intention of endangering. After all, credibility is a central bank's most important asset.

I very much hope that our European partners, too, know that and take it to heart. The EMS can link up with its earlier successes in the fight against inflation only if all those concerned try harder to ensure the long-term credibility of their anti-inflation policies. The European Monetary Union, which is the longer-run objective, has a chance only if the European Monetary System returns to discipline and more convergent anti-inflation policies before long.

Changing Capital Markets: Implications for Monetary Policy A Summary of the Bank's 1993 Symposium

By Gordon H. Sellon, Jr.

Financial markets throughout the world have changed substantially in recent years as capital markets have become deeper and broader. In many countries, financial intermediation is increasingly carried out directly in capital markets rather than through such traditional intermediaries as commercial banks. Moreover, complex linkages among global financial markets have increased capital mobility to the point where considerable amounts of funds cross national borders each day. These developments have potentially important implications for monetary policy in the United States and other countries.

To explore the implications of these financial market trends, the Federal Reserve Bank of Kansas City invited central bankers, academics, and financial market participants to a symposium entitled "Changing Capital Markets: Implications for Monetary Policy." The symposium was held August 19-21, 1993, at Jackson Hole, Wyoming.

This article highlights the issues raised at the symposium and summarizes the papers and commentary. The first section of the article provides an overview of the main issues and identifies areas of agreement and disagreement among program participants. The remaining sections summarize the viewpoints of the program participants and their policy recommendations.

SYMPOSIUM HIGHLIGHTS

Over the past decade, two significant trends have emerged in financial markets around the world. First, there has been tremendous growth in domestic capital markets in terms of the volume and value of transactions and in the development of new types of securities. Associated with this growth in capital markets has been an apparent decline in the traditional role of commercial banks, as both depositors and borrowers have sought alternative sources for investment and financing. Second, in response to financial market liberalization around the world, international capital mobility has risen dramatically.

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Evidence of the significance of this trend can be found most strikingly in the recent turmoil in the European Exchange Rate Mechanism (ERM) but is also apparent in the increased inflow of investment into Latin America and the volatility of Japan's overseas investment.

As Federal Reserve Chairman Alan Greenspan noted in his introductory remarks at the symposium, both of these trends have important implications for monetary policy. If banks play a smaller role or a different role in the financial system, the monetary transmission mechanism may be altered. If so, monetary policy could become less effective or the impact of policy on economic activity may be different than in the past. In addition, it may become more difficult to implement monetary policy. These financial market changes may distort the information provided by traditional policy indicators such as the monetary aggregates. And, the greater capital mobility resulting from increased linkages among financial markets may make it more difficult for central banks to balance domestic policy considerations against international obligations. Finally, both trends have implications for financial stability. Regardless of whether they tend to enhance or diminish the inherent stability of the financial system, these changes in financial markets may complicate the task of central banks in assessing and controlling systemic risk and in responding to financial crises.

Symposium participants debated the significance of these trends and, in the course of their discussion, reached broad agreement on a range of issues. Most participants felt financial market changes have altered the channels through which monetary policy affects the economy but have not impaired the overall ability of central banks to affect economic activity. At the same time, however, there was general agreement these changes have caused operational difficulties for monetary policy by reducing the usefulness of monetary aggregates and by making it more difficult to operate a fixed exchange rate system.

Participants also concurred that while new methods of hedging risks could promote financial stability, problems of assessing and limiting systemic risk have become more complex.

In contrast to broad consensus on the major issues, significant differences of opinion emerged about the appropriate response of central banks to these challenges. Some participants stressed institutional differences among countries that might require policy responses to be tailored to individual circumstances. Disagreement also surfaced over how the monetary transmission mechanism has changed and how much emphasis should be attributed to bank credit, interest rates, and exchange rates as policy channels. How central banks should respond to the diminished usefulness of the monetary aggregates was a particularly controversial issue. Some participants recommended using a broad set of information variables. Others advocated the use of policy rules. Still others proposed direct targeting of ultimate policy objectives. Views also diverged on how the ERM should be restructured in light of the recent crisis. While there was little support for proposals to restrict international capital mobility to reduce realignment pressures, there was less consensus on whether a broad or narrow set of exchange rate bands is more consistent with further progress toward European monetary union.

THE TRANSFORMATION OF DOMESTIC CAPITAL MARKETS

The first day's sessions focused on significant structural changes in domestic financial markets and their implications for monetary policy. Topics examined included the changing role of banks in the intermediation process, the impact of financial market changes on the channels of monetary policy, the implementation of monetary policy without intermediate targets, and longer run prospects for financial change.

The changing role of banks

According to Franklin Edwards, dramatic changes in financial markets have occurred worldwide since the 1980s. Two developments are particularly noteworthy. First, in the United States and many other countries there has been an apparent decline in the share of commercial banks and other depository intermediaries in the intermediation process. Bank deposits have declined as a share of household assets, and businesses have turned from banks to capital markets to finance their investment spending. Second, nonbank intermediaries, such as pension and mutual funds, insurance companies, and finance companies, have played an increasingly important role in the financial system.

In Edwards's view, this growing institutionalization of savings has been associated with a number of important trends, such as increased trading activity in financial markets, rapid growth in the use of financial derivatives, and increased cross-border equity holdings. Behind these developments are a variety of causes, including greater inflation and interest rate volatility, improvements in information and communications technologies, and the end of capital controls and the advent of flexible exchange rate systems.

Edwards stressed the potential importance of these changes for monetary policy. He noted banks have historically played a key role in the intermediation process. Banks are heavily regulated to promote financial stability and serve as the fulcrum for monetary policy. Thus, it is important to understand whether the changing importance of the banking system undercuts the effectiveness of monetary policy or results in a less stable financial system. In designing possible policy responses, Edwards emphasized the importance of knowing whether these changes were due to the natural evolution of financial markets or to inappropriate financial regulation.

In his discussion of Edwards's paper, Kumi-haru Shigehara indicated he was in general agree-

ment with the analysis and data presented by Edwards, but certain qualifications should be made. In particular, he noted important differences in the form and speed with which financial market changes are occurring. Thus, Shigehara thought Edwards's analysis tended to reflect U.S. events more accurately than changes occurring in other countries. He also thought focusing too heavily on traditional balance sheet measures tended to overstate the decline in banking to the extent that banks were heavily engaged in off-balance-sheet activities. Finally, Shigehara emphasized a second trend of potential concern to policymakers, a trend in a number of OECD countries toward financial conglomeration due to mergers of banks with securities firms and banks with insurance companies.

Implications for the monetary transmission mechanism

Christina and David Romer examined whether these financial market changes have altered the effectiveness of monetary policy or the way that monetary policy affects the economy. They identified three possible channels for monetary policy: an interest rate channel, a bank lending or credit channel, and a "credit actions" channel. That is, central banks can affect the economy by influencing market interest rates, by controlling bank lending through control over bank reserves, or by imposing credit controls or other types of direct restrictions on bank lending.

Based on a historical examination of several episodes of tight monetary policy in the postwar United States, the Romers suggested direct credit actions have played a very important role in the monetary transmission mechanism. They argued, however, the Federal Reserve has become less willing to directly control bank lending in recent years. Apart from direct controls, they found no evidence in their empirical work of a bank credit channel for monetary policy. As a result, they felt

monetary policy would work exclusively through an interest rate channel in the future. In their view, this channel will continue to operate as long as there is a demand for high-powered money. Thus, they concluded structural changes in financial markets are unlikely to affect central banks' ability to conduct monetary policy.

Charles Freedman found the Romers's historical discussion to be enlightening but was critical of their empirical work. He noted that in Canada, as in the United States, direct credit actions formerly played an important role in speeding up the response of bank lending to restrictive monetary policy. He thought both countries placed less reliance on supplemental credit restraints for various reasons: partly because of a belief the market's allocation of credit was superior to administrative allocation, partly because of the increased emphasis on monetary aggregates as policy indicators, and partly because of the rapid growth of nonbank sources of credit.

Citing concerns about the specification of their model, Freedman was not convinced the Romers had accurately measured the impact of credit actions on the economy. In addition, he noted the continued existence of an interest rate channel did not depend on the existence of reserve requirements. Even in the absence of reserve requirements, as long as payment settlement occurs on the books of the central bank, monetary policy will still have leverage over interest rates.

In his discussion of the Romers's paper, Mark Gertler emphasized the importance of a bank credit channel for monetary policy. Indeed, Gertler noted there are actually two bank credit channels: the channel working through reserve requirements which was emphasized by the Romers, and a channel involving a balance sheet mechanism in which borrowers with imperfect access to capital markets (small business) may be differentially affected by tight money. According to Gertler, this second channel does not rely on regulatory restraints and so should be operative

even in the absence of direct credit actions.

Gertler argued the Romers's empirical work did not rule out this latter channel and that, more generally, it was difficult to separate the effects of credit actions from restrictive monetary policy. He also suggested that while central banks may not have lost control over short-term interest rates, financial market changes may have affected their ability to influence long-term rates. At the same time, he complimented the Romers for their attempt to measure the effects of credit actions and suggested that, by ignoring these effects, the existing literature may have overstated the effects of monetary policy on real activity.

Conducting monetary policy amid financial change

In his presentation, Benjamin Friedman suggested financial market changes have profound implications for the operation of monetary policy. Citing considerable empirical evidence of structural changes in the relationship between the monetary aggregates and income and prices, Friedman argued it was no longer possible to implement U.S. monetary policy by following a rule based on a predetermined intermediate target.

In response to this problem, Friedman advocated increased reliance on information variables reflecting changes in real and financial activity. Because any one variable can give false signals, he suggested policymakers should look at a wide range of variables and should exploit the information from these indicators intensively through frequent re-examination of the data.

Friedman also expressed concern over the long-term implications of a changing role for banks. He thought a declining reserve base and increasing importance of nonbank intermediaries could undercut the Federal Reserve's ability to affect asset prices and nonfinancial activity in the future.

In his comments on Friedman's paper, Donald

Kohn indicated the declining reliability of the monetary aggregates has led the Federal Reserve to adjust its policy procedures along the lines suggested by Friedman, that is, to a more frequent use of a broader range of indicator variables. At the same time, Kohn was not as pessimistic about the future use of the aggregates by the Federal Reserve, citing a number of unusual factors affecting their behavior in recent years that might not be present in the future.

Kohn also warned about excessive reliance on either nominal or real interest rates in the policy process, pointing out while interest rates may function as information variables they are not good targets since they do not provide a nominal anchor for policy. Indeed, Kohn felt explicit emphasis on an ultimate goal of price stability was necessary to provide discipline to a discretionary approach to monetary policy. He was less concerned than Friedman that changes in the role of banks will reduce the Federal Reserve's leverage in conducting monetary policy.

Reiner König commented on Friedman's paper from the perspective of Germany, a country that has not experienced significant structural changes in financial markets. He noted Germany's monetary targeting strategy has recently been complicated by such special factors as German reunification and foreign capital flows. Still, the long-run demand for M3 continues to be stable, suggesting it will remain a reliable intermediate target. He pointed out, however, that it would be incorrect to say the German system of monetary targeting is based on a strict rule. Considerable discretion is possible in deriving the target and in permitting short-run deviations from the target in response to changing economic conditions.

As to the usefulness of interest rates as information variables, König stressed that neither the level of nor change in rates is particularly informative. In Germany, as in the United States, there is some evidence that interest rate

spreads have predictive content. He emphasized, however, that because of institutional differences in financial structures, different countries will necessarily come to different conclusions about the choice of specific monetary policy targets and indicators.

In response to Friedman, Allan Meltzer argued that change and uncertainty do not make the case for discretionary monetary policy. He observed that errors in the use of information variables or in economic forecasts could lead to costly, destabilizing policy actions. Instead of discretion, Meltzer advocated the use of an adaptive policy rule. According to Meltzer, an adaptive rule, unlike a discretionary approach, reacts to new information but does not base policy actions on forecasts. It also differs from a fixed rule that ignores new information. In Meltzer's view, use of an adaptive rule would guard against major policy errors, would provide a more stable planning environment by making central bank behavior more predictable, and would assure both reasonable price stability and enhanced exchange rate stability.

The longer term outlook for financial markets

In his luncheon address, Charles Sanford focused on the future evolution of financial markets. Describing his vision of financial markets in the year 2020, Sanford saw the continuation of technological change in communications and information management combined with new developments in financial theory as radically altering the way that financial services are delivered.

According to Sanford, the basic financial functions—financing, risk management, trading and positioning, advising, and transactions processing—will still be present. Traditional financial products, however, such as loans, borrowings, and securities, will be replaced with “claims on wealth” or “financial claims” that

will be actively traded around the clock and worldwide. Banks, as currently structured, will no longer exist, and there will be no need for separate financial branches as individuals become more directly linked to markets and financial service providers. To make this future possible, Sanford indicated further advances in financial theory will be necessary to identify underlying risks and their component attributes, to price these attributes, and to re-bundle the attributes into new investment products.

Sanford also traced out some of the implications of these changes for financial markets and policymakers. While the future financial system would tend to be more efficient in terms of lower transactions costs and better risk management, Sanford thought the task of managing financial institutions will be more complex. In addition, he stressed that to monitor and control systemic risk, central banks will have to understand and adapt to this new financial world.

CAUSES AND CONSEQUENCES OF GREATER INTERNATIONAL CAPITAL MOBILITY

The second set of symposium sessions focused on the growing integration of world capital markets. Topics covered in the presentations and discussion included the causes of increased capital mobility, the extent of capital market integration, and the consequences of greater capital mobility for monetary policy.

The integration of world capital markets

In their presentation, Michael Mussa and Morris Goldstein provided evidence of greatly increased capital mobility. They attributed increases in the volume and range of international financial transactions to a variety of factors including liberalization of capital controls, tech-

nological change, and financial innovation. According to Mussa and Goldstein, integration has proceeded farthest for liquid instruments traded in major financial centers.

At the same time, the authors cautioned it was premature to speak of a world capital market. They noted many countries still maintain capital controls or restrictions on international investments by banks and institutional investors. In addition, they noted evidence portfolios are generally not internationally diversified and investors still exhibit substantial home-country bias. Furthermore, as compared with earlier historical periods, there is less interest rate convergence and relatively small net capital flows.

Still, Mussa and Goldstein suggested integration has proceeded far enough and capital flows are large enough to have significant effects on exchange rate agreements and on domestic policy and reform programs in industrialized and developing countries. In the case of the recent ERM crisis, they argued the lesson to be learned was that greater capital mobility places more demands on participants to coordinate policies or make orderly adjustments in exchange rate parities. They opposed proposals to restrict capital mobility by re-imposing capital controls, suggesting a better approach is to improve market discipline, the understanding and pricing of risks, and supervisory coordination.

In discussing the Mussa and Goldstein paper, Martin Feldstein stressed the imperfect integration of world capital markets. He noted most of the recent increase in capital mobility is short term. In most countries, long-term investment continues to be largely financed by domestic savings. He agreed the increased availability of short-term capital plus the end of capital controls in Europe have made it more difficult to sustain artificial exchange rate levels. He also thought the recent widening of bands in the ERM has made the path to full monetary union more difficult.

Feldstein also emphasized the impact of

greater capital mobility on the monetary transmission mechanism. He argued the effectiveness of monetary policy has been strengthened with the addition of a trade and exchange rate channel to supplement the traditional interest rate channel.

In his discussion, Robert Johnson suggested the responsibility for the recent ERM crisis should not be assigned to speculative capital flows, but rather to flaws in the system. According to Johnson, German reunification required an adjustment in real exchange rates. Over time, financial markets concluded that realignment of nominal exchange rates was the only credible policy option and reacted accordingly. He thought an important part of ERM reform would be to develop a mechanism to preemptively adjust exchange rate parities when faced with similar shocks in the future. He also advocated wider bands than before to increase the cost of speculation and a better means of sharing the burden of maintaining parities among ERM members.

Johnson also identified two other challenges facing Europe and other OECD countries: increasing competition from newly developing countries, and fiscal imbalances resulting in continued growth in government debt. According to Johnson, the first development will cause downward pressures on real wages in industrial economies and industrial restructuring that will require changes in real exchange rates. He noted the continued growth of government debt could lead to concerns about credit risk. Johnson suggested that easier monetary policy may be necessary in many countries to bring about the necessary adjustments in real exchange rates and to support deficit reduction.

Monetary policy implications of increased capital flows

In his presentation, Andrew Crockett examined the implications of greater capital mobility

for three policy issues: the choice of an exchange rate regime, the implementation of monetary policy, and international policy coordination. He argued increased capital mobility has particularly important consequences for the choice of an exchange rate system. According to Crockett, capital mobility tends to exert a stabilizing influence on either a fully flexible or a fully fixed system but may destabilize a fixed but adjustable system, such as the ERM. As a result, Crockett suggested that an important lesson to be learned from the ERM crisis is that a gradual approach to monetary union may not be feasible. Rather, it may be necessary to achieve sufficient convergence of economic performance so that the need for exchange rate adjustments is eliminated before rates are fixed.

Crockett also noted capital market changes have complicated monetary policy by obscuring the meaning of traditional monetary aggregates. He thought adopting purely discretionary procedures put the central bank's credibility at risk. According to Crockett, a better approach is the new UK system of directly targeting the ultimate objective of policy, price stability.

In the presence of the continuing integration of world capital markets, Crockett suggested there may be benefits to increased policy cooperation. He noted, particularly in flexible exchange rate systems, cooperation may be superior to such alternatives as capital controls in response to extreme exchange rate volatility.

Antonio Borges agreed with Crockett's thesis that strong capital mobility and financial market integration make it difficult to maintain a hybrid exchange rate system that attempts to pursue conflicting policy objectives. He emphasized that while capital mobility does not prevent a fixed-exchange-rate system, it does impose serious constraints on policy and requires other objectives to be sacrificed to exchange rate stability. Moreover, he suggested that in the case of Europe, free capital mobility requires quasi-

perfect economic convergence and lower levels of public and private debt as preconditions for monetary union.

Borges also argued the apparent autonomy of monetary policy under floating exchange rates is largely illusory. He suggested, with strong capital market integration, most of the impact of monetary policy in an open economy is transmitted through exchange rates rather than interest rates. Indeed, changes in monetary policy that lead to small interest rate changes can cause large exchange rate changes. Thus, many countries may find it difficult to accept sizable exchange rate changes to get a small amount of policy autonomy.

In his discussion of Crockett's presentation, Alberto Giovannini focused on two issues: the underlying causes of the recent ERM crisis and future options for the ERM. He noted conflicting objectives inherent in the historical development of the ERM in its dual role as an exchange-rate-based stabilization program and as part of a convergence plan to monetary union. Under the former role, exchange rate changes were necessary, while in the latter role parity changes were not permitted because they might undermine convergence and anti-inflation credibility. Giovannini was also critical of the gradual approach to monetary union, suggesting it was not credible and provided the wrong incentives to participants.

As to the future options for the ERM, Giovannini outlined three approaches: returning to narrow bands with new parities, adopting a modified narrow band with a provision to accelerate the pace of monetary union in the face of speculative pressures, and widening the ERM band as proposed by Crockett. Noting that each approach has advantages and disadvantages, he concluded there is no obvious choice. In the absence of a return to narrow bands, however, he pointed out the difficulties for European central banks in conducting monetary policy without explicit exchange rate objectives.

OVERVIEW PANEL

The final sessions provided speakers the opportunity to give their perspective on the broad range of policy issues covered at the symposium.

In his remarks, Hans Tietmeyer examined financial market changes from the perspective of Germany and discussed some of the implications for European monetary integration. He noted two important general implications of recent trends in financial markets. First, while financial markets have become more efficient, they have also become more fragile. Second, monetary policy has become more difficult. Thus, in a number of countries the monetary transmission mechanism has been affected and intermediate targets distorted. In addition, Tietmeyer thought the effectiveness of policy has been affected by such factors as the expansion of variable rate debt, the ability of banks to avoid the restrictions of reserve requirements, and inflation impulses induced by exchange rate intervention.

Tietmeyer noted Germany has been less affected by changes in the intermediation process than by increased capital mobility. Because of less regulation and a slower pace of financial innovation, German banks have not experienced significant erosion in their position, and the long-run M3 relationship has remained stable. In Tietmeyer's view, however, greater capital mobility has made it more difficult to maintain a fixed exchange rate system in the face of differing domestic policy requirements and has undercut the effectiveness of sterilized intervention.

On issues related to European monetary integration, Tietmeyer favored a European strategy of money supply targeting, which he thought was necessary for policy credibility. He indicated the recent decision to widen the ERM bands gave European central banks more flexibility but made the task of maintaining long-run anti-inflation policies more difficult.

Toyoo Gyohten provided insight into recent financial market changes by highlighting Japan's

role in world capital markets. He noted the flow of investment funds from Japan has expanded greatly in recent years and the composition of the investment flows has changed considerably. According to Gyohten, from 1986 to 1990, Japan's trade surplus was financed by an enormous increase in private overseas investment by Japanese investors, partially offset by heavy Euromarket borrowing by Japanese banks. The capital outflow was stimulated by a number of factors, including interest rate differentials, a strong yen, and the boom in the Japanese stock and property markets.

More recently, Gyohten noted, speculative excesses in Japanese financial markets have been unwound and banks have become more conservative, in part, because of higher capital standards. As a result, the private capital outflow has ceased and Japan's trade surplus is being financed primarily by short-term lending by Japanese banks in the Euromarkets. For private capital outflows to increase again, Gyohten stressed the need for a more stable macroeconomic framework in Japan and abroad.

In his overview of issues raised at the symposium, Stanley Fischer offered a longer term perspective on recent capital market changes. He noted the recent liberalization of capital controls and deregulation of financial markets have largely offset restrictions put in place during the 1930s. Thus, while capital market integration has increased in recent years, the degree of integration is similar to that of a century ago.

Fischer suggested the implications of financial market changes for financial stability were unclear. While the development of new markets and financial instruments may be beneficial, he stressed it was important for central banks to have procedures in place to deal with financial crises.

Fischer also thought the financial market changes have more implications for the implementation of monetary policy than for the trans-

mission mechanism. Thus, he argued that in the presence of financial innovations central banks could not follow simple rules. He also disagreed with the view that rules are necessary for credibility. According to Fischer, credibility depends more on the predictability of outcomes than on the predictability of actions.

On the choice of an appropriate exchange rate regime, Fischer suggested the experience of the United States and Canada indicated floating rates are not inconsistent with a move to greater economic integration. He also thought Crockett's approach to the ERM, while logical, was not realistic and further moves toward monetary union in Europe are likely to be accompanied by a progressive tightening of the exchange rate bands.

In his concluding comments, Jacob Frenkel identified a number of consensus policy lessons flowing from the financial market changes in recent years. On regulatory and supervisory issues, he noted there was little support expressed at the symposium for re-regulation or "sand-in-the-wheels" attempts to restrain financial market developments. At the same time, he saw general agreement on the need for strengthened supervision. On monetary policy, he noted the importance of central bank credibility and the need for a nominal anchor to guide policy. Thus, according to Frenkel, while policy discretion is necessary in a rapidly changing world, discretion must be systematic, not erratic.

Finally, while there was no agreement on the choice of an exchange rate regime, Frenkel observed consensus on two exchange rate issues. First, in the presence of capital mobility, foreign exchange market intervention is not a good substitute for fundamental changes in economic policy. Second, countries must reach convergence before pegging exchange rates or must adopt a mechanism for allowing timely adjustment in exchange rate parities as convergence occurs.

***CHANGING CAPITAL MARKETS:
IMPLICATIONS FOR MONETARY POLICY***

A symposium sponsored by the Federal Reserve Bank of Kansas City

August 19-21, 1993

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ROBERT JOHNSON, Managing Director, Soros Fund Management

Monetary Policy Implications of Increased Capital Flows

ANDREW CROCKETT, Executive Director, Bank of England (currently Director, Bank
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Commentary

ANTONIO BORGES, Professor and Dean, INSEAD

ALBERTO GIOVANNINI, Professor, Columbia University and Consultant to Ministry
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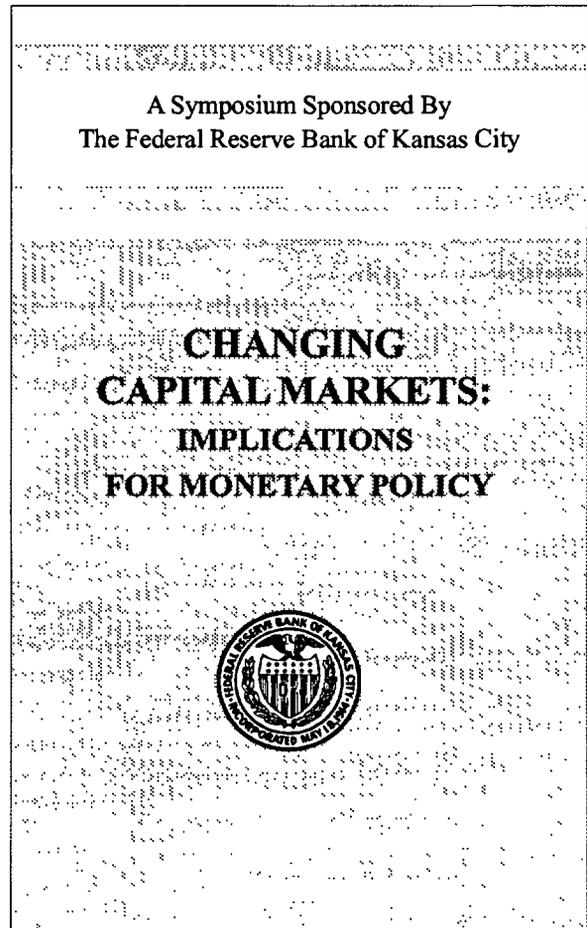
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**CHANGING
CAPITAL MARKETS:
IMPLICATIONS
FOR MONETARY POLICY**

Financial markets throughout the world have changed dramatically as capital markets have become deeper and broader. Financial intermediation is increasingly carried out directly in capital markets, and complex linkages among global financial markets have increased capital mobility—with important implications for monetary policies in the United States and most other market economies. To evaluate such capital market trends, their causes, and their implications for monetary policy, the Federal Reserve Bank of Kansas City hosted a symposium on “Changing Capital Markets: Implications for Monetary Policy,” at Jackson Hole, Wyoming, on August 19-21, 1993. The symposium proceedings will be available soon.

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Was the ERM Crisis Inevitable?

By Bryon Higgins

European currency markets have been subject to recurring periods of turmoil since the summer of 1992. In the first wave of turmoil in September of 1992, the United Kingdom and Italy withdrew their currencies from the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS). In the second wave of turmoil in August of 1993, the ERM temporarily suspended the narrow bands within which exchange rates of remaining ERM currencies were allowed to fluctuate. Understanding the reasons for the ERM crisis is essential for predicting the future course of European economic, financial, and political developments—all of which could affect the U.S. economy into the 21st century.

According to one interpretation, the ERM crisis was caused by a combination of bad luck and bad policy decisions. This interpretation was offered by monetary officials in Europe in their analysis of the reasons for ERM turmoil in 1992 (European Community, Monetary Committee). The bad luck was the timing of the large external shock to European economies resulting from German unification and monetary union in 1990. This shock imposed severe strains on European economies and thus on the ERM because it led to

a divergence between the policy priorities in Germany and those in other EMS countries. These strains were exacerbated by inappropriate macroeconomic policy decisions that contributed to high inflation and budget deficits in some EMS countries—especially the United Kingdom and Italy. This interpretation of the ERM crisis leads to a relatively sanguine view that only minor modifications to the ERM system will allow a return to exchange rate stability as a step toward full monetary union in the European Community (EC) by the end of this decade, as envisioned in the Maastricht Treaty.

More skeptical analysts offer a much less sanguine interpretation of the crisis. They view the ERM as fundamentally flawed. Although not denying that German unification and unsound macroeconomic policies contributed to strains within the ERM, these analysts stress that the design of the system made it particularly vulnerable to such disruptive factors. Fundamental systemic changes would thus be required to achieve either exchange rate stability as a precursor to monetary union within the EMS.

The purpose of this article is to evaluate the reasons for the ERM crisis and the changes necessary to prevent a recurrence. The first section describes why Europeans want exchange rate stability and how they tried to achieve that goal before the new ERM evolved in the late 1980s. The second section analyzes the reasons the new ERM was vulnerable and how that

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vulnerability, while not making the crisis inevitable, nonetheless made the system susceptible to crisis. The final section evaluates prospective changes that might be necessary to reduce the vulnerability of the ERM.

DESIRE FOR EUROPEAN INTEGRATION AND EXCHANGE RATE STABILITY

The ERM crisis has led some to question whether exchange rate stability leading ultimately to monetary union is a feasible goal. Yet most European political leaders continue to express their determination to achieve that goal as soon as possible. This determination grows out of a long standing desire in Western Europe for greater economic, monetary, and political integration. The specific contribution of the ERM was intended to be greater stability of exchange rates among the currencies of EC countries.

Why Europeans want stable exchange rates

Europeans have a long history of trying to stabilize the exchange rates between their national currencies. Exchange rate stability is considered critical by member states of the EC for two reasons: 1) a history of exchange rate instability has led to economic hardship and social disruption, and 2) trade is important for economic performance.

The history of exchange rate instability in 1920s and 1930s has had an enduring effect on Europeans' perspective. Whereas exchange rates had been stable and European economies had prospered under the international gold standard in the third of a century leading up to World War I, exchange rate instability in the interwar period was accompanied by recurring financial crises and extreme economic hardship in Europe and elsewhere.¹ Ruinous inflation and massive unemployment were factors contributing to the rise

of Fascism and thus to the near destruction of Europe resulting from World War II. Both the floating exchange rates of the early 1920s and the managed exchange rates of the 1930s had proven disastrous for European prosperity and social cohesion. The commitment of most European leaders in the second half of the 20th century to exchange rate stability thus grows out of European experience in the first half of the century.²

A second reason Europeans desire exchange rate stability is that the national economies in Europe are highly interdependent. A major element of this interdependence is the extensive international trade conducted within Europe. Nations that rely heavily on imports and exports for prosperity are said to have *open* economies.

The degree of openness for EC countries is extremely high (Table 1). All of the EC member countries rely much more extensively on international trade than does the United States or Japan. For some of the smaller EC countries, their international trade approaches or even exceeds the total output in their economies.

The high degree of openness of European economies makes them very vulnerable to fluctuations in exchange rates. Depreciation in the exchange value of their currencies thus has a much larger impact on their domestic inflation than a similar depreciation of the dollar would have on U.S. inflation. Conversely, currency appreciation does much more damage to their economies, through reducing the competitiveness of firms and workers that produce for export, than a comparable dollar appreciation would have on the U.S. economy. Exchange rate fluctuations more seriously impair economic performance for European countries than for less open economies.

Stability of exchange rates among the European currencies is particularly important for preventing inflation and unemployment. Over half of the total trade of EC countries is conducted with other EC countries. Appreciation of

the German deutsche mark relative to the Belgian franc, for example, would lead to rising unemployment in Germany and rising inflation in Belgium. German firms would have to cut back production and employment because German goods would become more expensive in Belgium, leading to a reduction in Belgian imports from Germany. The higher cost of those German goods that continued to be sold in Belgium would also raise Belgian inflation. Such effects are very large for Belgium and Germany because their economies are highly integrated through extensive trade.³ Moreover, the integration of European economies is likely to increase in the years ahead as the full effect of the "single market" program is realized.

The high and growing interdependence of EC economies thus reinforces the historical experience in convincing many Europeans that exchange rate stability is essential for prosperity in all EC member countries. Exchange rate stability is also viewed in Europe as a prerequisite for full monetary union, with individual national currencies to be replaced by a single currency for use in the EMS as envisioned in the Maastricht Treaty of 1992.

Precursors to the new ERM

The prospect of exchange rate instability in the EC recurred after the breakup of the Bretton Woods system in 1971. The EC, which was established in 1957, set out an agenda for economic and political integration in Europe.⁴ An important element of that agenda was exchange rate stability. This goal was achieved initially by EC members' participation in the Bretton Woods international monetary system established after World War II in order to prevent recurrence of the chaotic economic conditions of the interwar period. The system collapsed in 1971 after the United States, which had provided the U.S. dollar as the anchor of the system, was unable

Table 1

Degree of Openness

(Imports plus exports as a percent of GDP)

Belgium	136
Denmark	66
France	45
Germany	70
Ireland	117
Italy	36
Netherlands	99
United Kingdom	49
Japan	18
United States	22

Source: *International Financial Statistics*, IMF

to meet its commitments.

Without the dollar as an anchor, European monetary officials attempted to stabilize exchange rates within Europe through a system commonly referred to as the "snake." In this system, each country was committed to limiting fluctuations of its exchange rate to 2.25 percent vis-a-vis other member countries. Many major European countries were unable to do so, however. Recurring attempts by France, Italy, and the United Kingdom to stay in the system always failed. Only Germany and a group of small countries surrounding it were successful at stabilizing their exchange rates against each other. Volatility in other European exchange rates persisted.

To bring a halt to this volatility, central banks of EC members agreed in 1979 to form the European Monetary System. All original

members of the EMS other than the United Kingdom also agreed to participate in its Exchange Rate Mechanism. As with the snake of the 1970s, the ERM required that members' exchange rates remain within 2.25 percent (6 percent for the Italian lira) bands against each of the other EMS currencies. According to the terms of the ERM, each central bank was obligated to engage in exchange market intervention whenever market forces threaten to violate any of the bands. If the value of the French franc were to fall to the lower limit of its band against the deutsche mark, for example, both the Bank of France and the Bundesbank would be required to buy French francs as necessary to prevent the franc from breaching its target band relative to the deutsche mark. The consensus among empirical studies of exchange rates is that such intervention under the EMS rules did help stabilize European exchange rates relative to the volatility of the 1970s (Giavazzi and Giovannini).

Exchange rates in the original ERM, however, were far from immutable. Rates were realigned 11 times during the eight years after the formation of the ERM. The currencies involved and the magnitude of exchange rate changes resulting from these realignments are shown in Table 2. Most of the realignments in the early years of the EMS involved a revaluation—an increase in the foreign exchange value of a currency—of the deutsche mark and the Dutch guilder against the other ERM currencies. After 1982, the Belgian franc and Danish krone joined the other two strong currencies that appreciated relative to the weaker currencies of their ERM partners. These revaluations were often accompanied by devaluation—a decline in the foreign exchange value of a currency—of one or more of the weak currencies in the ERM.

Realignments in this period were necessary to compensate for differences in inflation rates among ERM members. Countries in the strong currency zone had much lower inflation throughout the period than did the weak currency coun-

tries (Chart 1). Germany was central to the strong currency zone not only because it was by far the largest of the countries but also because it had the most consistent record of low inflation. This record was largely due to the unquestioned commitment of the Bundesbank to price stability. The German hyperinflation of the 1920s had such disastrous economic and political consequences that the legislative mandate for the Bundesbank makes price stability the preeminent goal of German monetary policy. As a result of this credible commitment and history of relatively stable prices, the strong currency zone essentially includes ERM countries that are able to match the German performance in containing inflation. As explained below, pegging currencies to the deutsche mark is the primary means used in the EMS for “importing the credibility” of the Bundesbank. The strong currency countries can usefully be thought of, therefore, as those successful in staying in a deutsche mark zone of stability—that is, in avoiding the necessity to devalue their currencies relative to the deutsche mark.

For countries with inflation higher than in Germany, realignments were necessary to prevent real exchange rates—that is, market exchange rates adjusted for inflation—of the weak currencies from increasing too much. Such an increase in their real exchange rates would have impaired the competitiveness of goods produced in the weak currency countries. As a result, these countries would have experienced a decline in exports and an increase in imports, thereby producing trade deficits.⁵

While providing greater overall stability in exchange rates, the ERM in its first eight years allowed occasional realignments when necessary to correct for such economic fundamentals as differential inflation rates. This type of exchange rate system is commonly called a “fixed-but-adjustable” rate system. The timing and magnitude of realignments were typically negotiated by all members of the ERM to ensure that countries could not unilaterally devalue their

Table 2

Realignments in the ERM*(Percent change in bilateral central rate)*

Date	BLF	DK	DM	ESC ¹	FFR	IL ²	IP	DG	PTA ³	UKP ⁴
9-24-79		-2.86	+ 2.0	*					*	*
11-30-79		-4.76		*					*	*
3-23-81				*		-6.0			*	*
10-5-81			+ 5.5	*	-3.0	-3.0		+ 5.5	*	*
2-22-82	-8.5	-3.0		*					*	*
6-14-82			+ 4.25	*	-5.75	-2.75		+ 4.25	*	*
3-21-83	+ 1.5	+ 2.5	+ 5.5	*	-2.5	-2.5	-3.5	+ 3.5	*	*
7-22-85	+ 2.0	+ 2.0	+ 2.0	*	+ 2.0	-6.0	+ 2.0	+ 2.0	*	*
4-7-86	+ 1.0	+ 1.0	+ 3.0	*	-3.0			+ 3.0	*	*
8-4-86				*			-8.0		*	*
1-12-87	+ 2.0		+ 3.0	*				+ 3.0	*	*
9-13-92						-7.0				
9-17-92						*			-5.0	*
11-23-92				-6.0		*			-6.0	*
2-1-93						*	-10.0			*
5-14-93				-6.5		*			-8.0	*

Notes: 1. Portugal became a member of the ERM on April 6, 1992. 2. Italy suspended its membership in the ERM on September 17, 1992. 3. Spain became a member of the ERM on June 19, 1989. 4. UK became a member of the ERM on October 8, 1990, and suspended its membership on September 17, 1992.

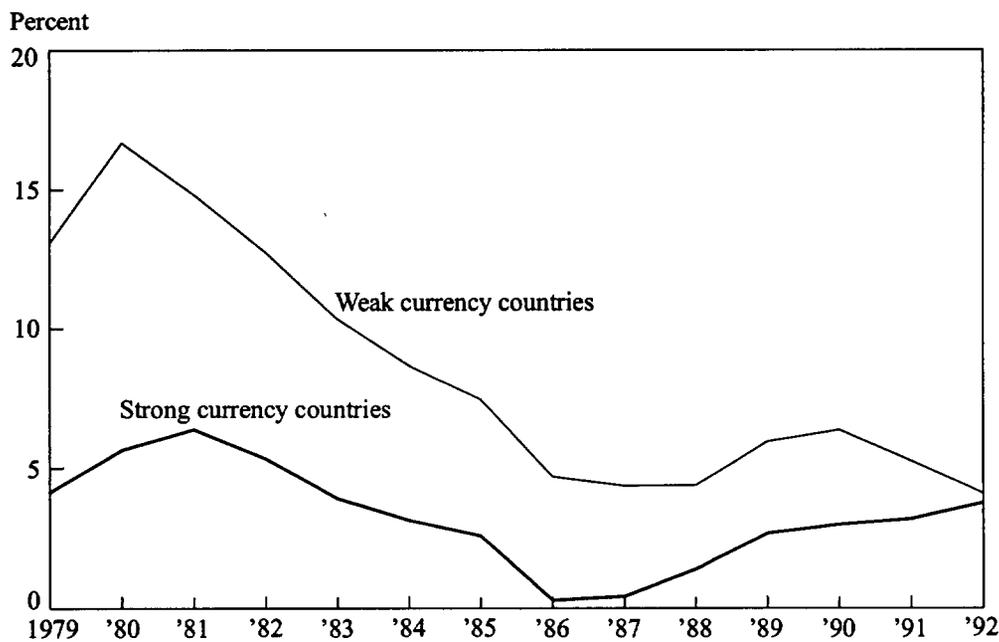
Other dates: ERM took effect March 13, 1979.

Bands: All fluctuation bands are ± 2.25 percent, except IL from March 13, 1979, to January 7, 1990 (± 6.0 percent); ESC, PTA, and UKP (± 6.0 percent). Effective August 2, 1993, fluctuation bands were widened to ± 15 percent for all ERM currencies, except DM and DG, which remain in a ± 2.25 percent band against each other.

Key: BLF = Belgian/Luxembourg franc, DK = Danish krone, DM = German mark, ESC = Portuguese escudo, FFR = French franc, IL = Italian lira, IP = Irish pound, DG = Dutch guilder, PTA = Spanish peseta, UKP = British pound sterling. * = not a member of the ERM.

Source: Computed from data in *European Economy: Annual Economic Report for 1993*, No. 54, Table 51, p. 231.

Chart 1
Inflation Rates in EMS Countries



Note: Strong currency countries are Germany and the Netherlands from 1979 to 1982; Germany, the Netherlands, Belgium, and Denmark from 1983 to 1992.

Source: Computed from International Monetary Fund data.

currencies merely to gain a competitive advantage for their export and import-competing industries. Experience in the 1930s had convinced Europeans that such competitive devaluations invited retaliation that led ultimately to monetary chaos and economic stagnation. Avoiding such devaluations was thus deemed essential to the success of the fixed-but-adjustable exchange rates that characterized the ERM from 1979 to 1987.

THE RISE AND FALL OF THE NEW ERM

The ERM began to change after 1987. By the early 1990s, it had been so transformed that some analysts came to refer to it as the "new ERM."

To understand what led to the ERM crisis in 1992-93, it is necessary to understand the factors that led to this transformation. While not making the crisis inevitable, these factors made the ERM so vulnerable that there was very little margin of safety to protect the system against policy errors or economic shocks.

The rise of the new ERM

Three factors were critical to the evolution of the new ERM: absence of realignments after 1987, removal of capital controls, and a timetable for monetary union.

In contrast to the frequent realignments in the

first eight years of the EMS, there were no realignments from January 1987 through mid-1992. One reason for this change was that inflation rates in the weak currency countries had progressively been lowered toward the lower inflation rates in the strong currency countries, as is evident in Chart 1. Moreover, the ability to reduce inflation in many EMS countries was attributable in substantial measure to the stigma attached to devaluation. The strength of a currency is widely viewed in Europe as a matter of national pride. Conversely, devaluations are seen as a shameful admission of economic weakness and imprudent national economic policies. Since devaluation in the ERM could only be avoided by lowering inflation to the rate in the deutsche mark zone, aversion to devaluation reinforced the commitment of central banks in weak currency countries to accomplish the goal of reducing inflation. Indeed, a commitment to the "franc fort" (or strong franc) became the centerpiece of French economic policy in the latter half of the 1980s. This strategy was so successful that French inflation was reduced from an average rate of over 11 percent in the first half of the 1980s to an average of about 3 1/2 percent in the second half of the decade. Avoiding devaluation relative to the deutsche mark thus became an important means of achieving the low inflation, which in turn would make future devaluation unnecessary. The ERM by the late 1980s had thus evolved from a fixed-but-adjustable rate system into a *de facto* fixed-rate system. This was the first step toward the new ERM of the early 1990s.

The second step toward the new ERM was the removal of capital controls. Capital controls were retained by most European countries until fairly recently. Such controls restrict international financial transactions, including the exchange of national for foreign currencies by individuals or firms. Although gradually liberalized in the 1960s, extensive capital controls were retained in EC countries other than Ger-

many and the Netherlands well into the 1970s. These controls were relaxed at varying rates during the 1980s but remained significant in many EMS countries until recent years. Italy, for example, did not remove most of its capital controls until 1988.

Capital controls were an important element in the success of the EMS during the 1980s.⁶ Limiting international capital flows reduced the downward pressure on the exchange rates of the weak currency countries before they had made enough progress toward lowering their inflation rates. Moreover, controls enhanced the effectiveness of central banks' interventions in currency markets, in part by insulating domestic credit markets from interest rate increases necessary to defend exchange rates. Capital controls were thus an instrument that enabled EMS countries to achieve the dual objectives of limiting exchange rate volatility and achieving a convergence in inflation rates toward that in the strong currency zone anchored by the Bundesbank.

This policy instrument was forfeited altogether in 1990. The Single European Act of 1986 set up timetables for achieving a single market in the EC for goods, services, and capital. The most publicized aspect of the Act was removing all remaining trade barriers within the EC by 1992—the so-called Europe 92 provisions. Less publicized were the provisions regarding the free flow of capital. According to the Act and the implementing EC directive adopted in 1988, all remaining capital controls were to be removed by most EMS members by 1990. The deadline was extended to 1992 for Spain and Ireland, and to 1995 for Portugal and Greece.

Forfeiting this instrument had dramatic implications for monetary policy within the EMS. Economic theory suggests that an economic policy instrument can be used to achieve only one goal. If monetary policy is used to pursue domestic economic goals, for example, it is not available to pursue the goal of limiting exchange rate fluctuations. Some other policy instrument must

be used for that purpose, as capital controls had been by many EMS countries in the 1980s. Eliminating capital controls while retaining fixed exchange rates thus entailed losing the prospective use of national monetary policies in the EMS to achieve the domestic objectives in each member country. Alternatively, without full convergence of national monetary policies toward the low inflation in the deutsche mark zone, exchange rate stability in the ERM could not be maintained. The inevitable tension resulting from this choice between domestic policy objectives and stable exchange rates led to what two economists termed, "The Unstable EMS" (Eichengreen and Wyplosz, 1993a).

Partially in recognition of this tenuous state of affairs, the member states of the EC in 1989 agreed to transform the EMS into a full monetary union with a single currency. In doing so, they accepted the recommendation in the report of a committee headed by Jacques Delors. The Delors Report recommended the need for greater convergence of economic policies and performance during the transition to monetary union: "With full freedom of capital movements and integrated financial markets, incompatible national policies would quickly translate into exchange rate tensions..." (Committee for the Study of Economic and Monetary Union, page 11). The implication of this concern was that the transition period before adopting a single currency should be of limited duration. Although the precise timing would not be known until later, it was generally thought that monetary union would become a reality before the turn of the century.

A timetable for monetary union was the third and final step in the transformation of the ERM to a vulnerable system. This timetable was formally adopted in early 1992 with the signing of the Maastricht Treaty. It stipulated that national currencies of EMS member states would be eliminated in favor of a single currency for all EMS members—with the possible exception of the United Kingdom, which reserved the right to retain

the pound. This move to monetary union was scheduled to occur no later than January 1, 1999.

The short time frame for monetary union had major implications for financial market participants. They had become accustomed to choosing portfolios after taking account of exchange rate risk, requiring a higher yield on securities denominated in currencies that might be devalued. The agreement of EMS members to move rapidly toward monetary union increased the conviction among international investors that devaluations would not occur. Yet interest rates remained much higher in some EMS countries than others. Investors thought they could earn high returns on the high-yield currencies—such as the Italian lira—without incurring exchange rate risk. Because they relied on convergence of economic performance among EMS countries, such investment decisions were termed "convergence plays." According to one estimate, "total capital flows involved in such convergence plays could well have been in the neighborhood of \$200-\$300 billion" (Goldstein and Mussa).⁷ These and other international financial transactions were facilitated by financial innovations and technological improvements that dramatically increased the degree of international capital mobility during the 1980s.

Such massive capital flows added yet greater vulnerability to the new ERM. Funds that flowed in one direction, in response to the belief that there was convergence of economic policies and performance among EMS countries, could just as freely reverse direction if such convergence came to be doubted. Such doubts were in fact major factors leading to the downfall of the new ERM.

The fall of the new ERM

Doubts about convergence arose from two sources. The first was the divergent domestic policy objectives that arose due to German unification. The second was doubts about ratification of the Maastricht Treaty.

The unification of Germany in 1990 led to serious strains in the EMS for a variety of reasons. One important reason was the method of financing the costs associated with unification. The German government chose to finance a large portion of these costs through borrowing. As a result, the German government went from a budget surplus in the year before unification to a deficit of over \$150 billion deutsche marks in the year after (Clausen and Willms). As is often the case, the change in the government budget was mirrored by a change in the balance of trade. The large current account surplus Germany enjoyed before unification was rapidly transformed into a sizable deficit afterward. Such rapid swings in trade balances are typically accompanied by significant changes in exchange rates—as in the United States in the early 1980s. In the German case, there was a need for real appreciation of the deutsche mark against the currencies of its major trading partners, mainly other EMS countries, to produce the current account deficit that was the necessary counterpart to the import of foreign capital needed to finance unification. The German government indeed proposed a realignment in EMS parities to accomplish this objective, with the deutsche mark being revalued relative to other EMS currencies. But Germany's EMS partners rejected this proposal because they had vowed not to devalue their currencies against the deutsche mark. The French were reportedly particularly averse to a realignment, arguing that it would be interpreted as abandonment of the franc fort centerpiece of their economic policy.

Without a general realignment of nominal exchange rates, the only remaining way to accomplish the necessary increase in the real exchange rate for the deutsche mark was for German inflation to exceed that of its trading partners for a while. Indeed, German inflation did accelerate following unification. The higher inflation resulted in part from the sharp swing toward expansionary fiscal policy but was also probably

spurred by a temporary spurt in monetary growth resulting from monetary unification. The Bundesbank responded to the rising inflation threat as it had in the past—by adopting a restrictive monetary policy that caused German interest rates to increase substantially. This came at a particularly inopportune time for many other EMS countries, which were increasingly concerned about recessions in their domestic economies. To maintain their exchange rate parities, many EMS countries were forced to keep interest rates higher than would have been called for by purely domestic economic considerations. This disparity between the policies followed by the Bundesbank and those urged by its EMS partners led many financial market participants to doubt whether some ERM members would be willing to defend their exchange rates with high interest rates. Such doubts further increased the vulnerability of the new ERM.

Doubts also arose at about the same time whether the Maastricht Treaty itself would be accepted. According to the terms of the Treaty, it could go into effect only if approved by all EMS members. In June 1992, the Danish people rejected the Treaty in a referendum. Moreover, opinion polls suggested the French people might do the same in a September referendum. Lack of popular support thus threatened to block the process leading to monetary union. If so, further devaluation would be more likely for currencies that might prove to be overvalued in real terms.

The most vulnerable currencies were those of countries that experienced a deterioration in their competitiveness due to continued high inflation after the last EMS realignment in 1987.⁸ Consumer prices in Italy, for example, had increased 33 percent in the five years since the last realignment, compared with only 13 percent in Germany and 16 percent in France. As a result, the real exchange rate of the lira had appreciated substantially, thereby threatening to perpetuate the large current account deficits Italy had experienced since 1987. Investors who had previously

acquired high-yielding lira assets assuming that the lira would not be devalued suddenly realized that assumption was no longer safe. Unwinding of convergence plays—that is, selling of lira-denominated bonds—thus intensified the downward pressure on the lira on foreign exchange markets in the summer of 1992. Despite heavy intervention and an increase in the discount rate by Italy's central bank, such pressure persisted into September—intensified by speculators who were betting the lira would have to be devalued. Selling pressure also developed on the British pound as investors concluded that it, too, was overvalued. Despite massive intervention by the Bank of England, the British government was forced to withdraw sterling from the ERM on September 16. The Italian government pulled the lira out of the ERM a few hours later, and Spain devalued the peseta. Having discovered the vulnerability of the EMS, financial market participants sold other currencies perceived to be candidates for devaluation. The resulting pressures by May of this year forced Portugal, Ireland, and Spain to devalue their currencies. The ERM was in the first stage of a crisis.

The crisis reemerged in the summer of 1993. The deepening recession throughout most of Europe led to increased calls for central banks to lower interest rates. They could do so without weakening their currencies, however, only as rapidly as the Bundesbank was willing to ease its policy, which was still geared to lowering domestic inflation. In part because of the differential impact of German reunification, the domestic priorities in Germany were very different from those in France and most other EMS countries. Yet fixed exchange rates required that there be a single monetary policy. As unemployment in the EC mounted, popular support for maintaining high interest rates to protect the exchange rate eroded. Even some politicians called for abandoning the exchange rate in favor of focusing on reducing unemployment. Speculators began to bet that domestic priorities would ultimately win

out despite governments' pledges to the contrary.

Exchange rate pressures intensified after the Bundesbank failed to cut its discount rate on July 29. Massive intervention by the Bank of France, the Bundesbank, and other European central banks failed to stabilize exchange rates.⁹ As a result, EC finance ministers meeting in an emergency session the following weekend were forced to give up temporarily in their attempt to keep EMS exchange rates within narrow bands. Instead, currencies remaining in the ERM were permitted to fluctuate in a range of 15 percent of other member currencies. The bands are so wide that some commentators view the current ERM arrangement as a de facto floating-exchange-rate system. Moreover, although the wider bands are described as temporary, there is no agreement on how or when a return to narrow bands might be feasible. Those European officials who advocate early return to the narrow bands presumably believe that the new ERM was fundamentally sound and that reinstating it with only modest changes could therefore avert another ERM crisis.

Those who think the ERM crisis was not inevitable point to alternative policy decisions that might have averted the crisis. The list of such policy actions is both long and varied: Italy and the United Kingdom could have chosen to lower their inflation rates sooner; France could have accepted the German proposal for a realignment in order to cope with the asymmetric effects of German unification; the German government could have limited the inflationary effects of unification by following a less expansionary fiscal policy; or Bundesbank officials could have lowered interest rates more rapidly to accommodate the domestic needs of their EMS partners.

While these and other policy actions would certainly have altered the nature and timing of the crisis, it is less certain that a crisis could have been averted altogether. The new ERM was inherently fragile and thus susceptible to any bad luck or mistaken policy choices. An analogy may

illustrate the point. Assume someone embarks upon a trip with only enough gasoline in the car to reach his destination if weather conditions are ideal. If the car were to run out of gas when a strong head wind is encountered, would the driver be justified in blaming bad luck when he has to walk the last few miles? The driver's misfortune was not inevitable, but it could not be said to be totally unexpected. His plan was faulty in that it allowed no margin of safety.

So, too, was the new ERM faulty. Only if this lesson is learned can the EMS members decide whether and how to proceed to monetary union.

CONCLUSION

Since the new ERM was inherently susceptible to shocks, fundamental changes may well be required to avert future exchange rate crises in the EMS. Problems in the EMS resulted because capital controls were eliminated before EMS countries were willing to surrender the autonomy of national monetary policies, as is required to maintain fixed exchange rates with full mobility of capital across national boundaries. Although there is no consensus on how to reform the ERM, such reform must entail either reducing capital mobility, accepting a single monetary policy for all ERM members, or allowing exchange rates to adjust to the divergent policies and performance among countries.

Perhaps the least attractive of these alternatives in the near future is for ERM members to adopt a single monetary policy—either by returning to narrow bands around fixed parities or by a rapid move to monetary union.¹⁰ Reducing unemployment is likely to remain the overriding goal in most European countries other than Germany for the next few years. For these countries, surrendering the autonomy of monetary policy would require governments to acquiesce in rising unemployment in order to stay on the timetable for monetary union in the Maastricht Treaty,

which is itself increasingly unpopular throughout Europe. Since this has proven to be unpalatable in 1993, there is little reason to believe it would be acceptable in 1994 or 1995. A return to a system with the same flaws as the new ERM might thus invite further exchange rate crises, which some believe would threaten the very existence of the EMS.

Reform of the ERM is more likely to be a combination of greater exchange rate flexibility and some limits on capital mobility. The greater exchange rate flexibility could be achieved in part through France and other ERM countries taking fuller advantage of the current 15 percent bands, allowing their currencies to depreciate temporarily against the deutsche mark. Alternatively, a general realignment—possibly including the pound and lira—might be used to establish a parity grid that would more nearly reflect current circumstances. Appreciation of the deutsche mark relative to other EMS currencies would help Germany achieve its goal of reducing inflation, while also benefiting countries whose primary goal is reducing unemployment. Subsequent realignments could then be used to reflect economic fundamentals after the shock waves of German unification have subsided.

If such realignments were to be accompanied by narrowing of the bands, some modest restrictions on capital mobility might well be necessary. One proposal is to require noninterest bearing deposit requirements for open foreign exchange positions (Eichengreen and Wyplosz, 1993b). Such requirements would raise the cost to speculators and insulate domestic credit markets, thereby enhancing the ability of central banks to defend parities without undesirable effects on domestic credit markets.

If indeed the ERM evolves along these lines, monetary union in Europe by the turn of the century as called for in the Maastricht Treaty seems improbable. But the resulting restoration of stability in the EMS could lay the groundwork for monetary union in the 21st century.

ENDNOTES

¹ The linchpin of the gold standard before the war had been the credibility of governments' commitment to balance of payment equilibrium through adjustments induced by gold outflows or inflows at fixed parities. This commitment was called into question as European and other governments suspended the gold standard under the pressures of war finance and inflation. Moreover, the war wrought fundamental economic, social, and political changes that undermined the credibility of the gold standard. Among the most important was wider dispersion of political power as the franchise was extended to working classes throughout Europe. As a result, reducing unemployment increasingly came to be an important goal of governments in many countries. Because economic policy could no longer be directed solely to balance of payments equilibrium, commitment to the gold standard was increasingly questionable. All of these factors made it impossible to restore the gold standard and the currency parities that prevailed before the war. As a result, exchange rates were allowed to float.

² That experience also helps explain the European view that monetary union and political integration are inextricably linked.

³ The most nearly comparable situation for the United States would be the exchange rate between the U.S. dollar and Canadian dollar. The United States and Canada have extensive trading relationships, too.

⁴ A year after its inception, the EC adopted another policy that also was to have a significant long-run impact. The Treaty of Rome that established the EC committed EC members to a common agricultural market. This market became a reality in 1964 and formed the basis for the Common Agricultural Policy (CAP) in the EC. Because of the details of administering the CAP, exchange rate fluctuations within the EC raised agricultural prices in Europe, thus promoting excess production and higher budget costs for subsidizing agricultural production. In part because exchange rate changes jeopardized the smooth functioning of the common agricultural market, the EC in 1965 stated that, "the task of the Community institutions is now to render internal devaluations and revaluations impossible or unnecessary, instead of merely difficult or unlikely" (Giavazzi and Giovannini, p. 9). With the exception of revaluation of the deutsche mark and the Dutch guilder in 1961, a further revaluation of the deutsche mark in 1969, and devaluation of the French franc in 1969, the task of achieving exchange rate stability in the EC was largely successful throughout the 1960s.

⁵ To see this, assume that the bilateral exchange rate

between the Italian lira and the German mark had been kept at the original 457 lira to 1 deutsche mark ratio when the EMS was formed in 1979. Further assume that in 1979 a bottle of comparable German and Italian wines sold for 30 deutsche marks in Germany or 13,710 lira. If the domestic price of Italian and German wine increased the same as other consumer prices in those countries, by 1987 the price of Italian wine would have risen to 35,577 lira. In contrast, the price of German wine would have increased to only 17,508 lira. Italian wine would thus have become twice as expensive as German wine. Many consumers in Italy (and elsewhere in Europe) would thus start drinking less Italian wine and more German wine because relative prices have shifted in favor of German wine. To prevent such relative price changes from distorting trade and production patterns throughout Europe, the Italian lira must be devalued relative to the deutsche mark to reflect the higher Italian inflation rate.

To fully offset inflation differentials, the exchange rate between the lira and the deutsche mark would have had to rise to 1,059 by 1987. Instead, only part of the differential was offset by the eight EMS realignments involving the lira-deutsche mark exchange rate from 1979 to 1987. As a result of these realignments, the official parities in the EMS following the last realignment in 1987 implied a lira-deutsche mark exchange rate of 721. Even at this exchange rate, the relative price of Italian wine would have increased and provided some incentive to shift consumption toward German wine. The strength of the incentive was not nearly so great as it would have been without any realignments, though. One reason for only partially accommodating inflation differentials through realignments was to ensure that inflation was reduced in weak currency countries. Fully accommodating such inflation would have led to rapid depreciation of the lira, thereby raising the lira price of imports so much that lowering the overall inflation rate would have been even more difficult.

⁶ Giavazzi and Giovannini present evidence that French and Italian controls were indeed successful at insulating domestic credit markets from international financial market pressures in periods before devaluation of their currencies. Under both systems, domestic residents were prohibited from borrowing and lending abroad.

⁷ One possible reason that rates remained higher than might seem justified in some EMS countries is that investors saw the exchange risk as being shifted from private investors to governments. The increase commitment of European governments to avoiding devaluation of their currencies implied a commensurate increase in the commitment to defend parities at all costs—including massive intervention.

Even if ultimately unsuccessful, such interventions could allow investors enough time to sell their high-yield assets before the devaluation occurred. The central banks acquiring the assets would then bear the losses rather than the private investors. In retrospect, this belief that governments bore the currency risk rather than private investors seems to have been justified.

⁸ The United Kingdom did not join the ERM until 1990. However, government policies from 1987 to 1990 were geared toward maintaining sterling exchange rates relatively stable relative to other EMS currencies, especially the deutsche mark.

Other currencies that "shadowed" the ERM without being members also experienced serious problems in the summer of 1992. In particular, the Finnish markka and Swedish krona came under attack due to market participants' views that prevailing exchange rates were unrealistic in light of the shocks their international trade positions experienced after the dissolution of the Soviet Union. Both currencies were ultimately allowed to float—the markka on September 8 and the krona on November 19. According to a survey of foreign exchange traders, however, the developments related to these currencies were peripheral to the ERM crisis (Eichengreen and Wyplosz, 1993a, pp. 95-98).

A full account of the events surrounding the September 1992 ERM crisis is given in "World Economic Outlook," IMF, 1993.

⁹ The precise amount of the intervention is not known. That it was massive, perhaps even unprecedented, is clear though. The Bundesbank alone reports having expended DM 60 billion during July 1993 for exchange market intervention, mostly to support the French franc (Deutsche Bundesbank, *Monthly Report*, August 1993).

¹⁰ There are two additional reasons to rule out a rapid move to monetary union. First, few if any EMS countries will be able to meet the strict criteria for monetary union laid down in the Maastricht Treaty in the near future. According to these criteria, a country joining the European monetary union must have low inflation, budget deficits, debt, and long-term interest rates and must have kept its currency within its narrow ERM bands for at least two years. None of the EMS countries currently meets all of these criteria.

Second, the institutional and logistical framework for monetary union is not in place. This framework is to be developed by the European Monetary Institute (EMI), which is to begin work January 1, 1994. Such thorny issues as the design of the notes and coins that will constitute the common currency will have to be worked out before monetary union could become a reality. One particularly nettlesome issue in this regard is which and how many languages will be printed on the new European currency units. The EMI is the precursor to the European Central Bank, which will conduct the monetary policy for all members of the monetary union.

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Opportunities for Rural Community Banks in Farm Lending

By Marvin Duncan and Richard D. Taylor

Farm lending has been a comfortable growth industry throughout most of the postwar period. From the late 1940s through the early 1980s, farm debt increased fourfold as community banks and other lenders fed a hungry appetite for farm debt. Inflation helped fuel the upward spiral, raising land values and spurring a sharp buildup in real estate debt.

The 1980s brought this growth to a sudden halt and introduced bold changes that have fundamentally reshaped the farm lending business. Buffeted by strong economic forces, the structure of agriculture was pushed rapidly toward fewer, bigger farms. Meanwhile, financial deregulation unleashed forces that created a much more competitive marketplace for rural lenders.

After a decade of painful adjustment, rural community banks that lend to agriculture are just beginning to identify the opportunities of this new marketplace. The future for rural commu-

nity banks lies in focusing efforts on market niches and building new alliances with other financial institutions, while managing the regulatory burden of the 1990s. This article identifies opportunities for community banks that lend to agriculture and discusses strategies for seizing those opportunities.

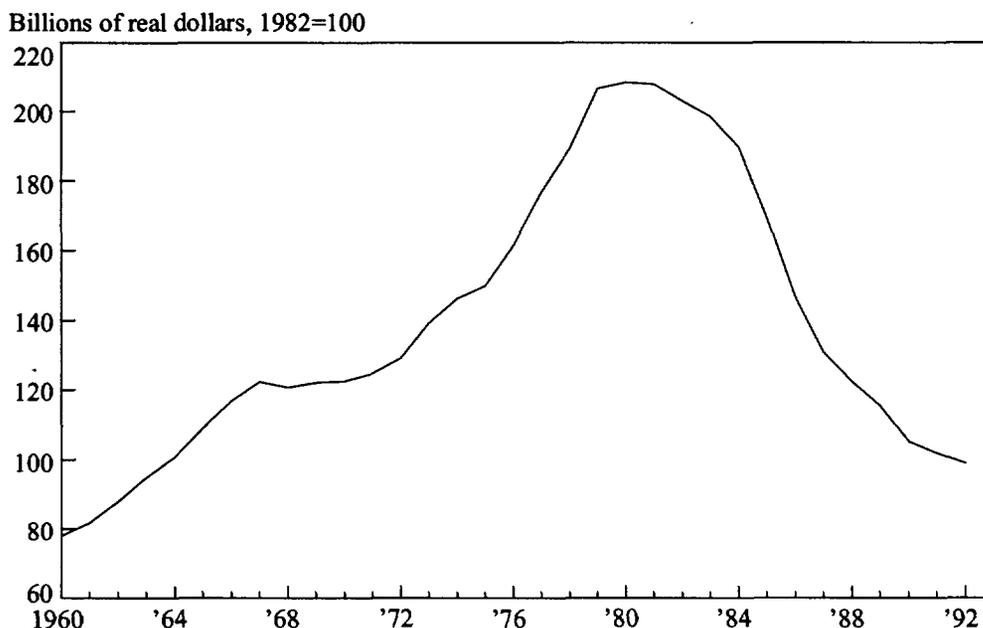
CHANGES IN THE RURAL CREDIT MARKETS

With the 1980s behind them, agricultural banks face a new marketplace. Today's farmers are astute business managers who understand the capacity of their businesses to carry debt. As a consequence, farmers now have an aversion to excess leverage. They seem willing to grow their businesses through equity investment and would rather rent or lease production assets than borrow to own them. Since the mid-1980s, inflation-adjusted agricultural debt has been cut in half (Chart 1).

Today's farm lenders also are more cautious. Across the agricultural heartland, lenders look at a debt-to-asset ratio of 40 percent as the upper end of a long-term comfort zone for farm businesses. No longer are lenders willing to count on rising farmland values to make weak loans stronger. Indeed, real agricultural land values

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Chart 1

U.S. Agricultural Debt

Source: *Economic Report of the President*, various years; *Agricultural Income and Finance*, various issues.

today are just above their 1960 value (Chart 2). And real land values are not expected to rise in the immediate future.

In today's changing world of agriculture, rural community bankers are being forced to cope with three new realities. They must cope with increasing risk exposure, a changing rural population and farm structure, and a more competitive lending environment.

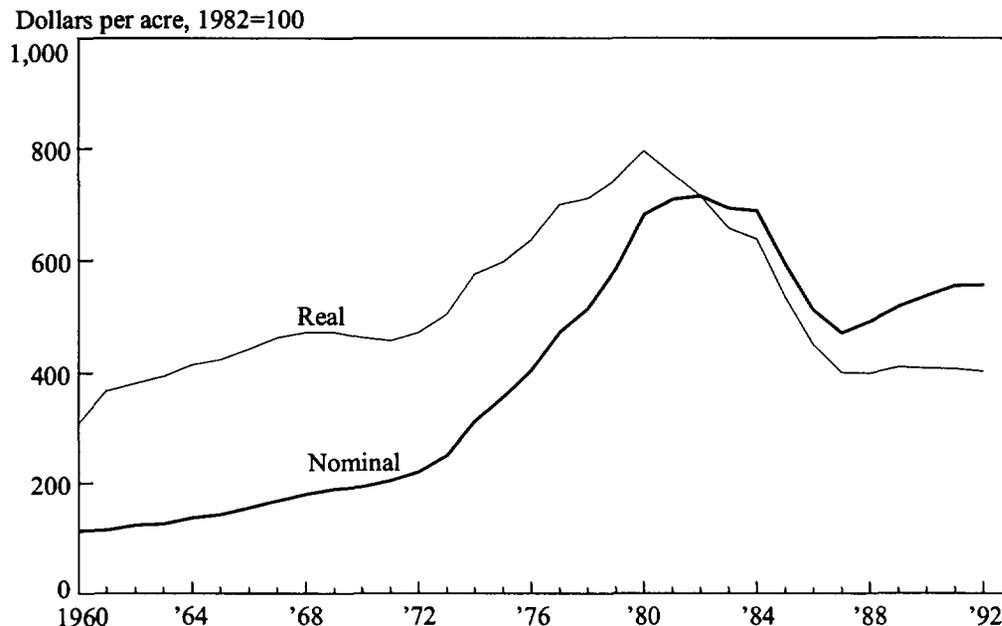
Increased risk exposure in agriculture

Agriculture's twin pillars of stability, strong growth in farm exports and steady-to-rising farm subsidy levels to commercial crop agriculture, have both come into question. Export tonnage

and sales have flattened, real sales have declined substantially, and increased government assistance has been needed to maintain sales at about the recent peaks (Chart 3). Sluggish economic growth has certainly dampened import demand in many countries. Moreover, privatization and democratization in the former Soviet Union and in Eastern Europe promise to turn former U.S. farm commodity customers into competitors before the end of this century as performance of their agricultural sectors improves.

In the United States, changing demographic patterns and rising federal budget stress have shaken the previously unassailable federal subsidy support for agriculture. Today, only 70 of 435 congressional districts represent rural/agricultural areas. Consumer and environmental issues now

Chart 2

U.S. Agricultural Land Values

Source: *Farm Real Estate Market Developments*.

seem closer to the center of agricultural policy debate. Indeed, farm interest groups are in danger of becoming minority players in crafting the 1995 farm program legislation. Amid continuing federal budget stress and shifting national priorities, it will be difficult to contain reductions in federal farm subsidy programs, much less to increase subsidy levels.

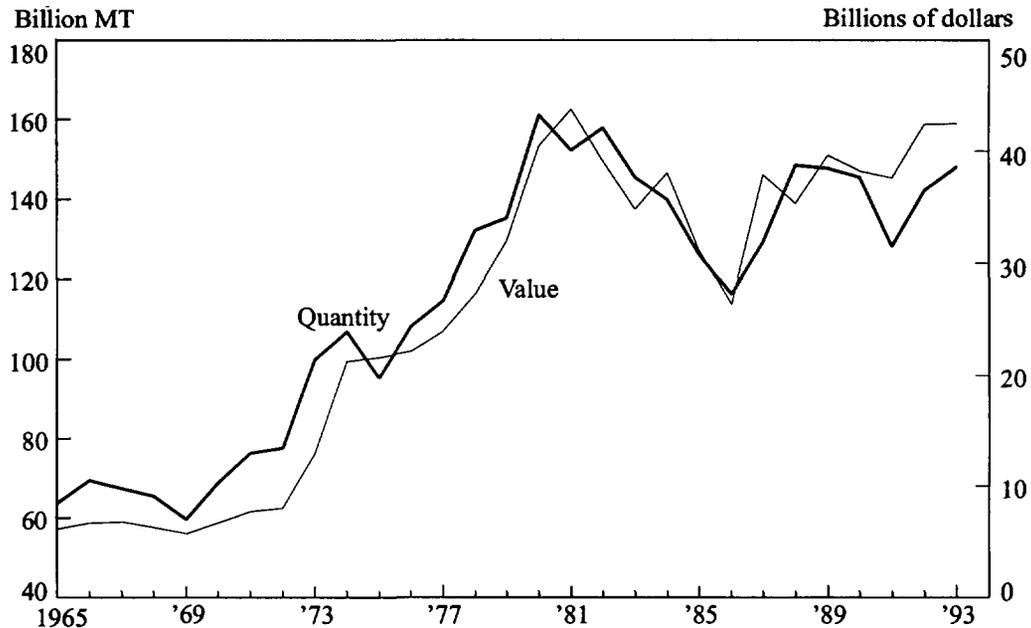
Changing population and farm structure

Population and structural change are both undermining the rural community bank's traditional marketplace. Many smaller rural communities are declining markets as both population and business numbers decline. For example, 73

percent of North Dakota's 366 incorporated places lost population in the past decade—66 percent of these places lost 10 percent or more of their population. At the same time, 89 percent of North Dakota's counties lost population—66 percent of the counties lost 10 percent or more. Indeed, the rural population is not only waning, but it is often aging, too. Moreover, rural population is not growing wealthier.

While the rural community's hold on its population weakens, so does its hold on business. Restructured retail and agribusiness firms are migrating toward county seat or regional centers. In North Dakota, eight county seats or regional centers are located on mainline railroads. Wal-Marts, Kmarts, Menards, co-op supply firms, health care providers, and implement dealerships

Chart 3

U.S. Agricultural Imports

Source: Agricultural Statistics.

flock to these centers. The story is similar across most of the Midwest and Great Plains.¹

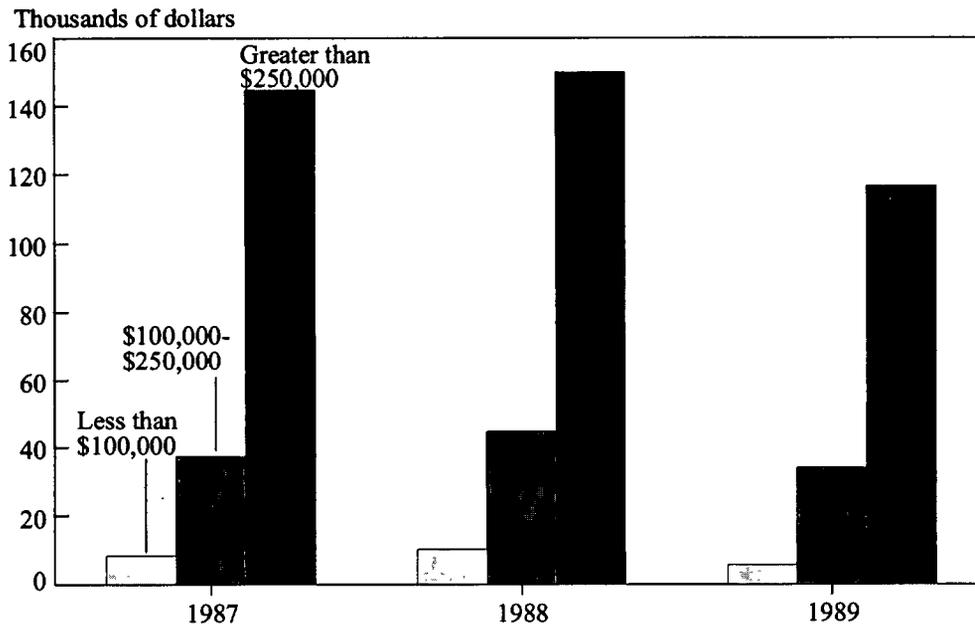
In the past, bankers could follow a “one-size-fits-all” strategy to service their agricultural customers, but not anymore. Nationally, average farm size has grown, while the number of farms has fallen. Moreover, the distribution of farms has become bipolar. At one end of the spectrum, many small farms have operators who generate more nonfarm income than farm income. At the other end, a few large farms reap most of the nation’s agricultural profits (Chart 4). In North Dakota, farm numbers fell 15 percent during the 1980s, compared with a decline of 13.8 percent in the 1970s, 15.5 percent in the 1960s, and 16 percent in the 1950s. By contrast, farm size has increased 33 percent since 1970 to an average of

1,224 acres. The trend is similar across the Midwest and Great Plains.

One of the reasons that farm size has increased is the need to maintain an adequate family income. In the nation’s heartland, typically only about 10 percent of gross farm marketings can be withdrawn for family living expenses without jeopardizing the farm’s long-term financial vitality. As a result, many lenders now believe that a financially viable commercial farm must have \$500,000 or more in annual sales.

As farms grow larger and more complex, so do their requirements for financial services. Financing of mergers, acquisitions, and export sales is increasingly required. Financial management, business planning, trust, and tax services take on increased importance. Strategies to

Chart 4

U.S. Agricultural Profit/Farm: By Sales Category

Source: "Financial Characteristics of U.S. Farms," ERS, *Ag Information Bulletin*.

control business resources through gaining access to the right kinds of debt and equity financing become critical. Needs such as these are in addition to the traditional needs for checking, lending, and insurance. But many of the newer services have been considered too specialized for community-based banks, and some of the services are not permitted under bank charter authority.

More competitive lending environment

Another change of great importance is a more competitive lending environment. New investment opportunities for bank depositors, such as money market mutual funds and NOW accounts, directly challenge rural community

banks for the market in transactions services and thus for a low-cost deposit base. Most rural community banks now offer interest on transactions balances, but that change has come slowly. The performance and product diversity edge that non-deposit institutions have over rural community banks suggests some continued erosion of the deposit base in rural America and an even greater dependence on purchased loan funds by rural community banks, much of it at competitive rates.

To remain competitive, rural community banks must widen the spectrum of financial products they offer. In the past, banks have augmented profits by selling various kinds of insurance to their customers, such as hail insurance, and Federal Crop, auto, casualty, and liability

insurance. To fully exploit that market, banks must be more aggressive in consumer and business lending. But small banks are not holding their own against credit purchases of consumer goods and lending by nontraditional sources, such as GMAC and John Deere, who are also prepared to sell insurance. Moreover, that formerly "on the mat" competitor, the Farm Credit System (FCS), is growing financially strong and offering an array of insurance and other financial products.

Size is also critical to bank survival. Economies of scale exist in banking as in farming. The fixed cost of back office activities can readily be spread over many more customers. Larger institutions tend to enjoy access to more complex products, services, and linkages usually unaffordable to small bankers. Also, technological changes that encourage large-scale livestock and crop production often present credit demands that exceed the lending limits of community banks.

By comparison, Great Plains states represent a microcosm of banking in small rural communities.² There, 88 percent of all agricultural banks are smaller than \$100 million in assets. Of those below that threshold, the average size is \$32 million, and \$29 million in North Dakota. These banks will have problems serving their customers and lending support to business development as the size and complexity of loan requests grow.

In this more competitive environment, regional banks, the FCS, and such specialized and nontraditional lenders as farm input suppliers are all competing with community banks for the best and most profitable customers. In many situations they may be better prepared than the community bank to provide the requested service. This competitive situation promises to place stress on pricing spreads and on managing the risk profile of the community bank's loan portfolio.

The array of competitors providing credit services is likely to grow larger, and the competitors may become more aggressive. The FCS institutions will be most important among them.

Financially stronger, well managed, and with unlimited and preferred access to financial markets to raise loan funds, FCS institutions are formidable competitors. Their cost of funds in the agency market is often only a few basis points higher than that experienced in the U.S. Treasury debt market. With lower costs and a renewed appetite for broadened charter authority made possible through consolidation, they remain powerful in rural U.S. credit markets.

Input suppliers and product marketers, such as John Deere, Pioneer Hi-Bred, and Farmland Industries, will be increasingly active in the credit marketplace, offering hassle-free credit lines to bankers' best customers. These firms frequently use credit services as a marketing tool and a means of cross-selling a broader range of products to the borrower. Credit is used to facilitate and cement customer relationships. Credit is also used to manage sales volume, to smooth production line flows, and to contain manufacturing input costs. Increasingly, however, credit activities will be viewed as a profit center and a course of business growth within these firms.

Electronic technology will speed the growth of competition among all providers of financial services and in the collection of deposits. Most nontraditional lenders already purchase nearly all of their lendable funds at competitive rates. Competition for deposits likely will cause this pricing to move toward a regional equilibrium, as opposed to prices that clear a local market. Eventually, these market rates will reflect international market pressures. Thus, commercial banks that lend to agriculture will pay market rates for more of their deposit base.

Electronic technology will also bring banking services directly to the customer. Convenience for the customer in the local mall or on the home computer will be critical. Cash management and bill payer services will become more common. Some lenders are beginning to put loan officers on the road with notebook computers and phone modems. With so many

choices readily available to customers, banks will have to stress relationship banking and customer service.

CHALLENGES AND OPPORTUNITIES FOR RURAL COMMUNITY BANKS

Despite a daunting array of challenges posed by the changing agricultural marketplace, substantial opportunities also await rural community banks. As the needs of agricultural borrowers have become more specialized, new market niches have spawned. How well banks prepare to serve those niches will determine whether the banks survive and prosper. Banks must also learn to navigate the rising tide of financial regulation.

Capture niche opportunities by forging new alliances

Rural community banks must broaden their menu of specialized deposit accounts to meet customers' needs. Many deposit products can be offered by the bank itself. But because most community banks are too small to create and offer their own money management and investment services, the successful bank must access such services on a customer's behalf. That usually requires creating new alliances to broaden the range of services the bank can offer. Money center and super regional banks, banker trade associations, and nonbank firms all provide such specialized, franchised, or branded services to community banks.

The alliances that rural community banks must forge depend on the marketplace niches that the banks intend to serve. Three primary niches have emerged for community banks in the heartland: larger and more sophisticated customers, small to midsize farms, and agribusiness and rural business.

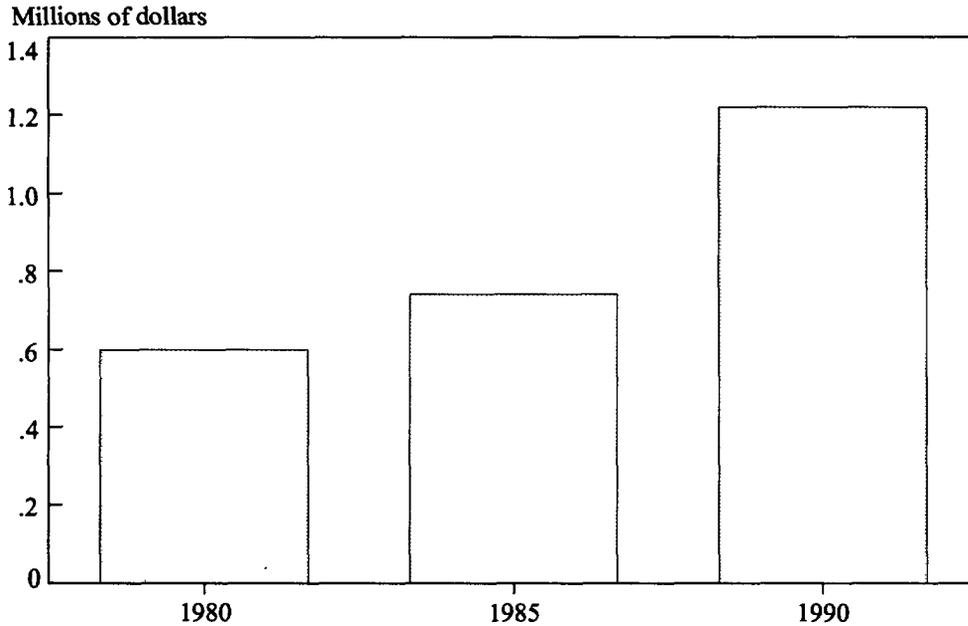
Niche 1: Larger and more sophisticated customers. Gone are the days when a banker who understood the business of one customer understood them all. Today, rural community banks increasingly lend to fewer but much larger farms or business firms. These firms are differentiated by farm enterprise mix, production systems, and ownership patterns.

Serving larger agricultural customers poses two operating challenges for community banks. First, today's larger farms require a new capital structure. More and more kinds of capital are needed to fund larger operations. Agriculture no longer has the capacity to recapitalize itself each generation without great hardship and risk for new entrants. The path to farm ownership and operatorship is being re-invented, as farms search for new ways to gain control of equity and debt capital, create a successful financial structure, and achieve coordination and management of business functions. Large farms frequently have greater specialization of, and probably separation among, the various activities of asset control, production, processing, and marketing of agricultural products. Coordination among farm business activities will increase.

To help large farms build their new capital structure, rural community banks can act as a catalyst to bring together an array of outside capital sources. For example, agricultural equipment leasing has doubled in the last ten years (Chart 5). As lease financing and equipment rental services grow, community banks may choose to deliver sophisticated financial leasing services on behalf of one or more vendors. Equipment manufacturers, independent lessors, and bank leasing subsidiaries offer three potential alliances.

Many states now provide specialized credit assistance to new farmers or start-up businesses. While the programs vary substantially, most include interest-rate buy downs and partial credit guarantees for a time. These may also include limited equity or quasi-equity funding. Marshal-

Chart 5
U.S. Agricultural Equipment Leasing



Source: "The Capital Markets For Farm Firms," by Dean W. Hughes, *Equipment Leasing Today*, July/August 1991.

ing a workable mix of equity and debt capital remains an unsolved problem for startup businesses in rural America—a service that rural community banks may be able to provide.

A second challenge facing rural community banks stems from the need for more seasoned management skills by the operators of large farms and agribusinesses. Professional farm managers are emerging, and commercial farm businesses increasingly require top-flight management. These businesses will not survive the learning curve mistakes of a new entrant. Thus, it is increasingly likely that commercial farms will involve more than one generation. With a succession of owners over time, these farms must help new entrants acquire the superior management skills they need to become senior

managers.

The need for seasoned and specialized management support will be important to rural community banks. Management subsidiaries or trust departments that provide specialized services represent growth opportunities for these banks. The management teams on commercial farms will be demanding customers, but ready to acquire information, marketing, financial management, and coordination services from a range of vendors that should include rural community banks.

Much of what occurs in American agriculture will require financial services that are beyond the capacity of the community-based bank. For that reason, a variety of partnering and alliances across financial institutions is likely. Unless regulatory changes to create a truly equal

charter across institutions make the issue moot, much of that partnering could occur across unlike institutions, each bringing its unique capability to fill financial services demands. If rural community banks are to reach their business potential, they must have greater linkages to regional banks, nonbank financial services firms, and quite likely the Farm Credit System institutions.

Niche 2: Small to midsize farms. Not all farms will grow larger and more complex. Many farmers and rural residents would prefer to retain a large number of small to midsize farms to add vitality to rural community life. The likelihood of retaining substantial numbers of these farms, however, depends on the success of agribusinesses, nonagricultural manufacturing, and service businesses in rural America. Part-time and full-time off-farm employment opportunities hold the key to retaining small and midsize farmers in their communities. Such economic development also happens to be critical to the survival of many community agricultural banks.

These farms will typically not be large enough to capture the scale economies associated with major field crop production. The economies that genetic, nutrition, and environmental control now bring to livestock production are likely to escape most small and midsize farms as well.

Many of these farms, however, will develop agricultural production for niche and specialty markets. That production will be very diverse, ranging from seasonal vegetables and exotic livestock to recreational products, such as horseback riding or camping. The special production and marketing requirements for these enterprises will stretch the skill and knowledge of commercial bankers as they develop credit products and other financial products to serve such customers.

Yet, since these farms may have more labor-intensive enterprises than large-scale agriculture—and will in some cases be very profitable—they represent a credit and financial services market that bankers can ill afford to dismiss. Labor-intensive production, if profitable, promises a

larger community economic impact that will benefit community-based commercial banks. Many of these specialty and niche market products have a higher likelihood of value-added processing close to the source of production than do major field crops. Thus, the payoff from this type of agricultural development could be larger local community payrolls.

Midsize farms often represent a transitional business size. The farms will either grow smaller and become part-time operations or will grow larger to commercial size. Those farms in the process of growing to commercial size represent a long-term opportunity for community bankers. By successfully underpinning a growing business with needed financial services, banks can build a life-long business relationship with the farm operator. Achieving such a relationship requires the lender to understand the farmer's business and growth plans, to be innovative in packaging financial services, and to assume some degree of risk in supporting the customer's business aspirations. Community banks often do this effectively.

Not all small and midsize farms will grow to commercial farm size. Many will remain rural residences or sources of part-time employment—provided that nonfarm employment for their operators is within reasonable commuting distance. For small and midsize farmers to remain productive members of the rural community—and good customers for many of a bank's financial services—agricultural processing and nonagricultural employment are critical. Thus, community banks can play a key role in keeping small to midsize farmers productive by supporting general economic development.

Niche 3: Agribusiness and rural business. Agricultural and consumer lending alone are unlikely to satisfy the range of financial service demands of rural communities. Nor can agricultural and consumer lending by themselves support growth in rural community banks. Commercial banks must also provide financial services to

value-added processing in agriculture and non-agricultural businesses. To serve these segments of industry, rural community banks must forge alliances with different-sized and often unlike financial institutions. Several institutions may join forces on large, complex, and higher risk loans. For example, large-scale loans to startup agricultural cooperatives might combine community banks, regional banks, and banks for cooperatives in the financing package. At the other end of the financing spectrum, the largest agribusiness firms will issue commercial paper, shifting their bank credit demand to longer term maturities and more specialized credit/financial services products.

The typical rural community bank can neither analyze nor successfully fund complex agricultural agribusiness or other business projects. More complex loan activity requires broader business and analytical skills than most small banks are able to provide. Still, rural community banks can identify such opportunities and bring together the skills necessary to help accomplish the tasks. For the rural community bank, managing the customer relationship, perhaps on a fee basis, represents an excellent opportunity for growth. Doing so not only helps develop new customers and increases business volume, but also offers attractive rates of return.

In all three niches of agriculture and rural economic development, government credit guarantees or other debt enhancement will continue to be important. Significant numbers of bank customers will not qualify for credit based on their own financial strength. For such firms, government credit guarantee programs, such as those offered by the Farmers Home Administration (FmHA) and the Small Business Administration (SBA), will be critical to survival. Community bankers need to be familiar with and willing to use these programs, both in direct and guaranteed lending, as important business development and support tools for their customers and for the banks themselves. Guaranteed portions

can be resold, fees can be earned for loan service, and attractive rates of return can be earned by the bank.

Within each local banking market, there is room for a few banks that specialize in processing guaranteed loans and make a market in the sale and purchase of guaranteed and unguaranteed components of the loans. Beyond that, however, participation in these programs can be a critically important business development strategy for the bank. The programs can be essential in expanding nonfarm business opportunities where risks preclude access to adequate traditional debt capital. FmHA and SBA loan guarantees will be important in securing participation of commercial credit and venture capital to capitalize startup businesses.

Manage the regulatory burden

Managing regulatory requirements is a growing burden for rural community banks. But regulatory issues are so important to a bank's success that they merit serious attention.

Environmental risk, if not managed properly, can be a business killer. Once a loan is made, both it and the collateral can become worthless to the bank if significant environmental problems are found. The bank may walk away from loan collateral rather than foreclose and risk becoming the "deep pockets" in an environmental pollution/cleanup situation. Whether due to disposal of farm chemicals, leaking fuel storage tanks, or animal waste runoff into streams or aquifers, the cost of environmental cleanup can be catastrophic. Few lenders will, or should, lend on real estate without an environmental audit by a competent specialist. If evidence of problems is found, a more detailed and costly analysis is called for.³

Larger lenders are more likely than small, local lenders to have ready access to environmental services. Many argue statutory or regu-

latory changes are needed to protect lenders. Currently, however, a competent environmental audit is necessary should any environmental question arise.

Regulators have discouraged broad-based lending outside a community bank's trade area. Community bankers have been comfortable staying within their primary market area when lending, but doing so may no longer provide sufficient risk dispersion in their loan portfolios. Staying so close to home may not provide a sufficiently large or a growing customer base either. Thus, the ability to achieve desired risk dispersion and loan growth may require lending over a broader market area—or creating alliances that achieve that result through other lenders.

If authorities further relax charter and regulatory restraints, commercial banks could become more active in a broader array of financial services functions. Larger commercial banks continue to dismantle the "Chinese Wall" between investment and commercial banking created by the Glass Steagall Act. Foreign banks operating in the United States are often able to use broader charter authority in their home country to help service customer needs. The likelihood of community banks offering their own services, however, as opposed to acting on behalf of another financial services firm, is probably remote.

Regulators will need to change their practices, as well. Too often regulators remain rooted in a traditional mode of operation, focusing on the availability of collateral to support the loan rather than on the performance of the firm and the loan. Despite functioning in an electronic information age, regulators still like to flip loan files. Banks are increasingly automating their business systems, including loan files. Electronic information systems now make more off-site regulatory monitoring possible. This can also be done at a lower cost than traditional examinations.

Regulators' willingness to permit more creative lending is likely to be linked to their capacity

to monitor electronically lenders' information systems on a continuing basis. Better information management systems in a bank will yield a better managed and a more profitable bank—and one with less costly regulatory oversight. Lenders and regulators can cooperate to further the objectives of each other.

SUMMARY

Agricultural lenders in the 1990s face sweeping changes in their traditional marketplace. The structure of agriculture has been altered as today's farms have become larger and fewer, and today's farmers have been forced to plan for waning government subsidies. At the same time, competition in the marketplace has become fierce. Regulatory changes and rapid technological advances have pitted small rural banks against an array of larger, more sophisticated lenders.

To remain competitive, rural community banks must broaden the spectrum of services they offer and lend more aggressively. Three primary market niches have emerged in the heartland: larger and more sophisticated customers, small to midsize farms, and agribusiness and rural business. Most community banks are too small to create and offer their own money management and investment services to all of these customers. But small rural banks can offer access to such services by creating new alliances with money center and super regional banks, banker trade associations, and nonbank firms.

While meeting the competition head-on, rural community banks must pay close attention to the mounting regulatory burden. To survive and prosper, banks must manage the environmental risks attached to agricultural loans. Banks must broaden their product lines as regulations may permit. And banks must develop automated information systems, both to permit more efficient regulatory monitoring and to give banks a more sophisticated management tool.

ENDNOTES

¹ Urban and retirement growth in the Arkansas/ Missouri/Oklahoma Ozarks region and in New Mexico and Colorado run counter to the trend. These retirees bring both income and population, benefiting a range of business activities and the public tax base. But even in those states, declines continue in nonurban and nonretirement areas.

² The Great Plains states include North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, Texas, New Mexico, Colorado, Wyoming, and Montana.

³ Questions have even been raised about potential liability to a lender who finances cattle in a feedyard if the yard is a polluter.

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New Estimates of the Natural Rate of Unemployment

Stuart E. Weiner

Reducing inflation is one of the principal goals of monetary policy. In assessing the outlook for inflation, policymakers try to gauge the amount of slack in the economy. As long as the economy's resources are not pushed beyond capacity levels, inflation tends to remain under control.

In labor markets, capacity is measured by the "natural rate of unemployment." A theoretical concept, the natural rate is defined as that rate of unemployment at which there is no tendency for inflation to change. When the demand for workers is so strong that the actual unemployment rate falls below the natural rate, inflation increases. While the natural rate of unemployment is inherently difficult to estimate, many analysts believe it currently is about 5 3/4 percent. Thus, with today's actual unemployment rate nearly a full percentage point higher, there would appear to be little immediate risk of a surge in inflation.

The natural rate of unemployment is influenced by many demographic and structural forces. By most estimates, the natural rate has been trending downward over the past decade as the share of young, inexperienced workers in the

labor force has declined and the growing number of women in the labor force have gained experience and tenure. And there is some reason to expect this downward trend to continue in the future. Baby-boom workers continue to mature, and women continue to be further assimilated into the labor force. At the same time, there are possible offsetting demographic forces. The share of young workers is expected to stabilize, and the work force will become racially more diverse. In addition, a number of structural forces could boost the natural rate of unemployment, including defense industry cutbacks, higher white-collar unemployment, and a growing gap between high-tech job requirements and low-tech worker skills.

This article presents new estimates of the natural rate of unemployment that incorporate these demographic and structural forces. The first section provides an overview of the natural rate concept and discusses the various demographic and structural forces at work in the 1980s and 1990s. The second section incorporates these forces into estimates of the natural rate. The estimates suggest that the natural rate of unemployment is currently near 6 1/4 percent and could move even higher depending on the extent and persistence of structural disruptions. Thus, the near-term inflation risk may be higher than generally perceived.

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OVERVIEW

The natural rate of unemployment is a key concept in macroeconomic theory and policy. It represents the lowest possible unemployment rate that is consistent with stable inflation. Because the natural rate reflects imperfections in labor markets, it is not immutable and will change in response to labor market developments. Several demographic and structural forces have been impacting labor markets in recent years.

The natural rate

When the economy is at the natural rate of unemployment, inflation tends to be constant from one year to the next. Individuals come to expect this inflation rate and base their decisions on it. For example, as labor contracts expire and new ones are negotiated, workers and firms will find it unnecessary to adjust wages.

Any attempt to use monetary or fiscal policy to reduce unemployment below the natural rate ultimately results in higher inflation. Under such a scenario, aggregate demand increases, prices rise, but wages initially lag behind. As a result, firms have an incentive to hire more workers to produce more output and the unemployment rate declines. The decline in unemployment is temporary, however, because workers eventually demand higher wages. The increase in inflation, in contrast, is permanent.

There is nothing “natural” about the natural rate of unemployment. The term is a misnomer.¹ For example, it is misleading to think of the natural rate as full-employment unemployment. It is equally misleading to think of it as optimal unemployment. Indeed, the relatively high level of the natural rate reflects several labor market imperfections.

One set of imperfections involves worker-job mismatches. Job vacancies may exist but go

unfilled because available workers lack the required skills. Alternatively, workers may have the required skills but live in the wrong locations. Or they may have the required skills and live in the right locations but are unaware of the vacancies due to poor information flows.

A second set of imperfections might be termed institutional barriers. Included are various laws and social practices that prevent labor markets from operating as efficiently as possible. Three examples are minimum wage laws, overly restrictive regulations, and racial and sexual discrimination.

A third, final set of labor market imperfections involves workers’ preferences. The disincentives associated with various public transfer programs comprise one subset. An individual receiving unemployment compensation or welfare payments may have little incentive to search for or accept a job paying only a marginally higher income.² Excessive wage demands constitute a second subset. When workers’ real wage demands exceed productivity gains, firms may have an incentive to substitute away from labor.

While all unemployment at the natural rate inherently reflects imperfections in labor markets, some of this unemployment is nevertheless beneficial. This component, the frictional component, represents normal turnover and job search, two key ingredients in a dynamic economy. But an unemployment rate in the vicinity of 5 3/4 percent—where many estimates of the natural rate currently cluster—clearly exceeds this frictional level. At a natural rate this high, valuable human resources are wasted and valuable output is lost.³ Unfortunately, demographic and structural forces are unlikely to lower the natural rate in coming years.

Demographic forces

Shifts in the composition of the labor force have a powerful effect on the natural rate of

unemployment. As groups with relatively high unemployment rates become more prominent in the work force, the overall unemployment rate consistent with constant inflation rises. For example, most analysts believe the natural rate rose in the 1960s and 1970s as a growing share of women and youths entered the labor market.

Since 1980, however, demographic trends on balance have been favorable due primarily to a sharp decline in the share of youths in the labor force. In 1980, young people aged 16 to 24 accounted for nearly 24 percent of the labor force (Table 1). By 1992, their share had fallen to 16 percent. Because young workers traditionally have higher unemployment rates than older workers, the decline in their relative share would be expected to lower the natural rate.

Why do youths have higher unemployment rates than older workers? Part of the reason is that their frictional unemployment rates tend to be higher. Young workers are more likely to be entering the labor force for the first time and, as such, may want to take some time to explore their employment opportunities. But young people may also be more vulnerable to some of the underlying labor market imperfections. Newly entering youths, for example, are more likely to face minimum wage barriers. And because they have not had an opportunity to receive on-the-job training, they are more likely to face skill mismatch problems.

At the same time the labor force has been aging, its racial composition has been changing. In 1980, nonwhites accounted for 12.5 percent of the work force. By 1992, their share had risen to 14.5 percent. Because nonwhites traditionally have higher unemployment rates than whites, the increase in their relative share would serve to raise the natural rate. However, any increase would likely have been more than offset by the much sharper decline in the youth labor force share.

The disparity between white and nonwhite unemployment rates remains something of a

Table 1

Labor Force Shares

	1980	1992	2000*
Men 25+	44.7	46.0	45.0
Women 25+	31.6	37.9	39.5
Youths 16-24	23.6	16.1	15.6
White	87.5	85.5	84.2
Nonwhite	12.5	14.5	15.8

* Projected

Source: U.S. Department of Labor.

mystery (Weiner 1984; Stratton). Some of the difference can be attributed to differences in mean characteristics. For example, studies indicate that, at least for some sample groups, nonwhites on average tend to have less education, less experience, and lower skill levels, all of which could contribute to heightened worker-job mismatch. But differences in mean characteristics explain only a portion, in some cases a very small portion, of the disparity. Other factors must be at work. Possibilities include discrimination and differences in family background, quality of education, and job information networks.

Whatever their sources, white-nonwhite unemployment rate differentials are unlikely to disappear in coming years. And they are likely to have a greater negative impact on the natural rate. According to U.S. Department of Labor projections, the share of nonwhites in the labor force will rise 1.3 percentage points by the end of the decade.⁴ At the same time, the share of youths will essentially stabilize, falling only 0.5 percentage point. Thus, demographic trends will do little to lower the natural rate.

Structural forces

The natural rate is not likely to be lowered by structural forces, either. Defined as factors that alter the natural rate of an existing set of workers (as opposed to demographic factors, which alter the set of workers themselves), structural forces have probably raised the natural rate in recent years. And they may continue to do so in the future.

One potential source of a rise in the natural rate is the changing industrial mix of U.S. jobs. From 1980 to 1992, the share of employment in goods-producing industries fell from 29 percent to 23 percent, continuing a long-term shift toward services. To the extent goods-producing employees have been displaced and possess skills that are not transferable, skill mismatch has increased. Especially vulnerable are adult men, who account for a disproportionate share of goods-producing employment.⁵

Similarly, a widening gap between high-tech job requirements and low-tech worker skills may be contributing to a higher natural rate. Firms in all industries are intensifying their automation and computerization efforts. Many are upgrading their job skill requirements and reducing their demand for low-skilled workers (Cappelli; Juhn and others). Unfortunately, there is little evidence that the overall quality of the U.S. work force is increasing commensurately. Recent reports on adult illiteracy, for example, are discouraging (National Center).

A third, related structural force likely raising the natural rate of unemployment is "downsizing" by firms. Many U.S. companies have been aggressively trimming their work forces in recent years. Indeed, this phenomenon has become so widespread and so widely reported that the terms "business restructuring" and "white-collar unemployment" have entered the popular parlance. The reasons for this downsizing are many. In some cases, firms have come under stiffer foreign competition. In others, deregulation has in-

tensified competitive pressures. And in still others, the defense wind-down has had a major impact.

A common factor running throughout this downsizing is the interaction between rising labor costs and technological advances. Despite moderation in wage and salary increases, labor costs have remained high because of the escalating expense of employer-funded medical benefits. According to one study, the cost of labor has more than tripled relative to the cost of capital since the mid-1980s (Harper). As a result, firms have had an added incentive to take advantage of new, labor-saving technologies and to be conservative in adding new employees.⁶

Some or all of these structural forces are presumably reflected in the rise in permanent joblessness in recent years. Permanent job loss as a percent of total job loss has been trending upward since 1980 (Chart 1). It currently stands at a series high.⁷

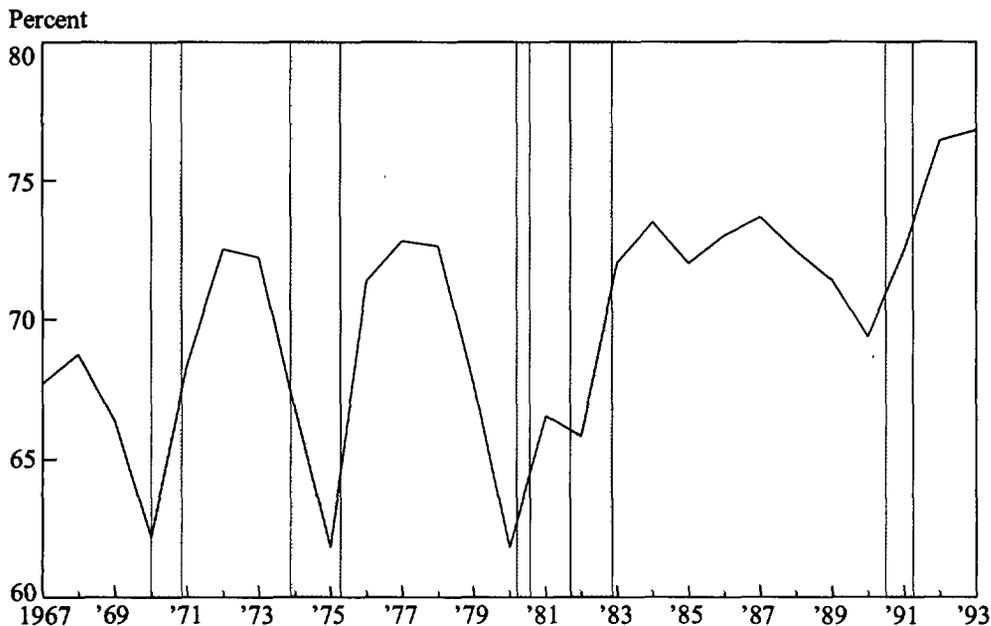
ESTIMATES

The natural rate of unemployment cannot be observed but must be estimated. This section presents estimates through the end of the decade. Demographic and structural forces are incorporated sequentially. As anticipated, the results point to the natural rate remaining at a high level.

Estimation approach

A four-step procedure is followed in estimating the natural rate of unemployment. First, a statistical equation relating inflation to labor market slack—a so-called "Phillips curve"—is estimated. Labor market slack is measured by the unemployment rate of a reference group, married men. Second, the natural rate of unemployment for married men is calculated. This is accomplished by solving the estimated Phillips curve

Chart 1

Permanent Job Loss as a Percent of Total Job Loss

Note: Recessions are shaded. Data for 1993 are through September.

Source: U.S. Department of Labor.

for the unemployment rate for which inflation is not changing. Third, based on regressions relating the unemployment rate of married men to the unemployment rates of 20 different population groups disaggregated by age, sex, and race, the natural rates for these other groups are calculated. Fourth, these disaggregated natural rates are then weighted by labor force shares to construct an overall natural rate series.

Details of the estimation technique are provided in Appendix A. Two points are worth noting. First, in estimating a Phillips curve, it is desirable to have a measure of labor market slack that is consistent over time. The overall unemployment rate is not consistent—it is too sensitive to changes in the composition of the labor force. Hence, this study follows Blanchard

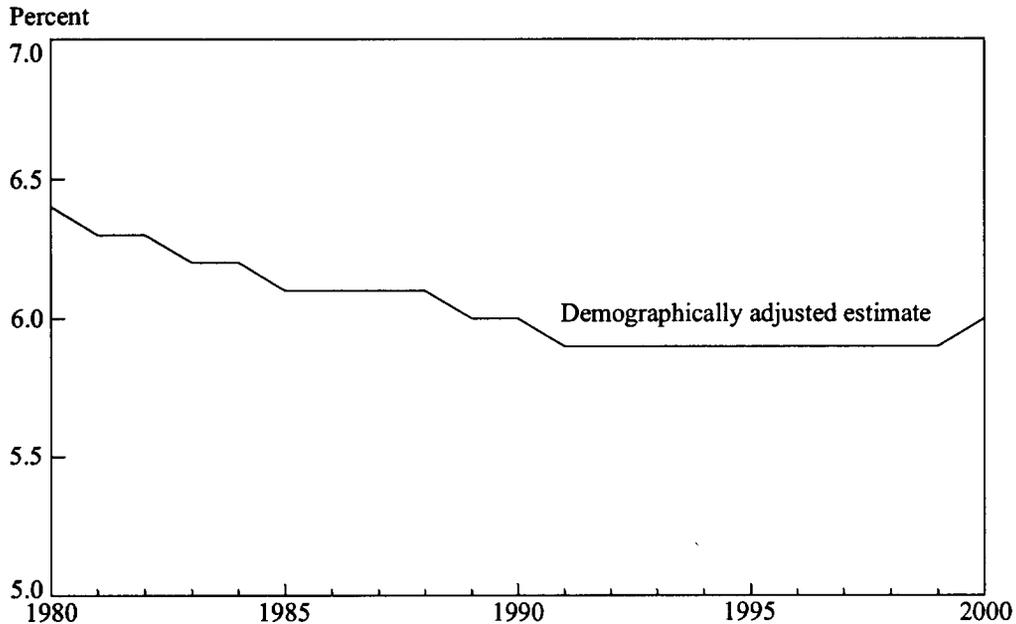
(1984) and Kahn and Weiner (1990) in using the unemployment rate of married men.⁸ Second, it is important to recognize that all natural rate estimates are subject to statistical imprecision. Prudence suggests that any given estimate be viewed as the midpoint of a range of reasonable estimates.

Demographically adjusted estimates

The first set of estimates controls for demographic changes. Plotted in Chart 2, these estimates indicate that the natural rate is currently 5.9 percent.

This demographically adjusted series is derived from a single Phillips curve estimated over

Chart 2
Natural Rate of Unemployment



Source: Derived by author; see text.

the period from 1961:Q2 to 1993:Q2.⁹ The 20 disaggregated unemployment rate regressions are estimated over the same period. The underlying natural rate for married men is calculated to be 3.5 percent.

The natural rate movements in Chart 2 are consistent with the qualitative discussion of the previous section. The natural rate drifted downward through the 1980s and early 1990s as the share of young people in the labor force declined sharply. With the projected leveling-off of the youth share and the continued rise in the non-white share, the natural rate is expected to remain at current levels for next few years before rising slightly toward the end of the decade.

The estimated natural rates of the various population groups are reported in the first col-

umn of Table 2. Again, the results are consistent with earlier discussion. Young workers have higher natural rates than older workers. Non-white workers have higher natural rates than white workers. And adult women on average have higher natural rates than adult men. These estimates are all reasonable and, as noted above, yield an overall estimate of 5.9 percent currently.¹⁰ Such an estimate is completely in line with typical estimates of 5 3/4 percent or so.

This demographically adjusted series suffers from a potential shortcoming, however. It implicitly ignores structural changes. Because the Phillips curve and the unemployment rate regressions are estimated over the entire sample period, only one natural rate is estimated for each individual population group. As a result, changes

Table 2

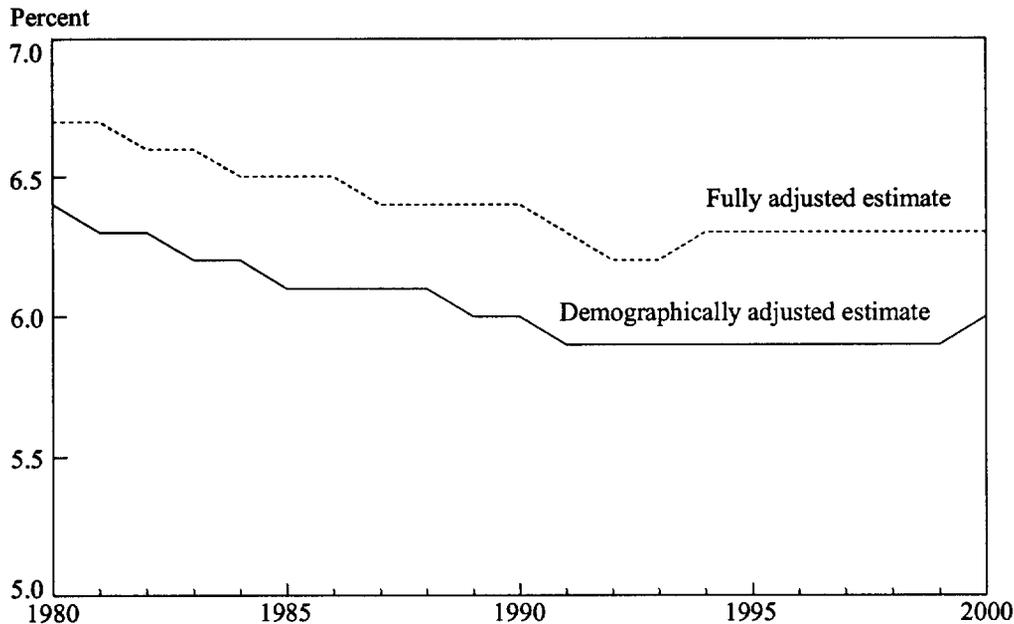
Natural Rate of Unemployment Estimates

Population group	Demographically adjusted estimate (percent)	Fully adjusted third- period estimate (percent)
White male		
16-19	15.2	15.8
20-24	8.6	9.0
25-54	3.7	4.5
55-64	3.5	3.7
65+	3.1	2.5
Nonwhite male		
16-19	31.2	33.7
20-24	17.3	20.0
25-54	7.7	9.2
55-64	5.9	6.4
65+	6.2	5.7
White female		
16-19	14.4	13.9
20-24	7.9	7.7
25-54	4.8	4.6
55-64	3.4	3.2
65+	3.3	2.9
Nonwhite female		
16-19	34.1	32.5
20-24	19.3	20.0
25-54	8.7	9.2
55-64	4.4	4.4
65+	3.9	4.6
<i>Addenda:</i>		
Married men	3.5	3.9
Men 25+	4.2	4.9
Women 25+	5.2	5.1
Youth 16-24	11.4	11.7
White	5.1	5.3
Nonwhite	10.4	11.4
Total	5.9	6.2

Note: Nonaddenda and "Married men" estimates are independent of labor force shares; remaining Addenda estimates are computed using 1992 labor force shares.

Source: Derived by author; see text.

Chart 3

Natural Rate of Unemployment

Source: Derived by author; see text.

in the overall natural rate reflect only changes in labor force shares. In effect, any structural changes are assumed to offset each other. Fortunately, the estimation procedure can be generalized to accommodate possible structural shifts.

Fully adjusted estimates

The second set of estimates controls for structural changes as well as demographic changes. Plotted in Chart 3, these fully adjusted estimates indicate that the natural rate currently is 6.2 percent.

This fully adjusted series is derived from the same Phillips curve as used above with one important difference: dummy variables are in-

cluded to test for structural change over the three periods 1961:Q2-1972:Q4, 1973:Q1-1979:Q4, and 1980:Q1-1993:Q2. Similarly, the disaggregated unemployment rate regressions are run separately over each of the periods. The periods were chosen, in the case of the Phillips curve, to examine the effect on the married male natural rate of the oil shocks and productivity decline in the 1970s and any additional structural changes in the 1980s and 1990s and, in the case of the unemployment regressions, to test for changing relationships among the married male unemployment rate and the unemployment rates of the 20 population groups.¹¹

The results strongly support the view that the natural rate is sensitive to structural forces. Formal tests indicate that, statistically, the second-

period and third-period Phillips curves are indistinguishable from each other but together are different from the first-period Phillips curve.¹² Accordingly, the natural rate for married men is calculated to be 3.0 percent in 1961-72 and 3.9 percent in 1973-93. Formal tests of the disaggregated unemployment rate regressions generally indicate that all three periods are distinguishable.¹³ As a result, each of the 20 age/sex/race groups is computed to have different natural rates in each of the three periods.

Two features stand out in Chart 3. First, like the demographics-only estimates, the fully adjusted estimates drift lower in the 1980s and early 1990s on favorable demographic trends and then level off. Second, the fully adjusted estimates are a quarter percentage point above the demographics-only estimates, suggesting the continuing influence of one or more negative structural forces. The full series is presented in Appendix B.

The second column of Table 2 provides disaggregated detail on the fully adjusted, third-period estimates (1980:Q1-1993:Q2). As with the demographically adjusted estimates in the first column, young workers have higher natural rates than older workers, nonwhite workers have higher natural rates than white workers, and adult women on average have higher natural rates than adult men. Important differences emerge, however, in comparing the fully adjusted and demographically adjusted estimates.

In particular, male/female patterns diverge across the two sets of estimates. For nearly all male groups, the fully adjusted estimates are higher than the demographics-alone estimates. For example, for prime-aged (25-54) white men, the estimated rates are 4.5 percent, fully adjusted, versus 3.7 percent, demographically adjusted. Similar increases are recorded by prime-aged nonwhite men (9.2 versus 7.7 percent) and by total men aged 25+ (4.9 versus 4.2 percent). A majority of female groups, in contrast, have *lower* natural rates when recent structural forces are taken into account. For example, for total

women aged 25+, the estimate declines from 5.2 to 5.1 percent. This divergent pattern suggests that men have borne the brunt of 1980-93 structural change.¹⁴

The fully adjusted estimates appear quite reasonable. On the basis of the discussion in the first section of the paper, one would expect both demographic and structural forces to be influencing the natural rate. The fully adjusted estimates bear this out.

As a further check on the reasonableness of the fully adjusted estimates, one can compare the estimates with actual unemployment rates over a period of inflation stability. According to natural rate theory, natural rates of unemployment will prevail when inflation is unchanged from one year to the next. The years 1987 through 1989 apparently were such a period: by many measures, inflation was essentially unchanged.¹⁵ Table 3 compares fully adjusted third-period estimates to actual unemployment rates over the 1986-88 period—the comparison period is lagged one year, from 1987-89 to 1986-88, to account for the historical lag between changes in labor market slack and changes in inflation. The numbers line up very closely, providing support for the accuracy of the fully adjusted estimates.

Prospects

What are the prospects for the natural rate over the remainder of the decade? The fully adjusted estimates for 1994 to 2000 are constructed on the assumption that third-period group rates remain in place. In other words, they assume that net structural forces over the next several years will be unchanged from the average 1980-93 experience. Available evidence supports this view. But this view could also prove overly optimistic.

Estimation of recent “rolling Phillips curves”—Phillips curves estimated over successive ten-year periods ending with the 1983:Q3-

Table 3

Natural and Actual Unemployment Rates

Population group	Fully adjusted third- period estimate (percent)	Actual 1986-88 average unemployment rate (percent)
White male		
16-19	15.8	15.3
20-24	9.0	8.4
25-54	4.5	4.4
55-64	3.7	3.5
65+	2.5	2.6
Nonwhite male		
16-19	33.7	32.8
20-24	20.0	19.4
25-54	9.2	9.0
55-64	6.4	6.6
65+	5.7	4.7
White female		
16-19	13.9	13.5
20-24	7.7	7.4
25-54	4.6	4.4
55-64	3.2	3.0
65+	2.9	2.5
Nonwhite female		
16-19	32.5	32.1
20-24	20.0	20.4
25-54	9.2	9.1
55-64	4.4	4.6
65+	4.6	4.2
<i>Addenda:</i>		
Married men	3.9	3.8
Men 25+	4.9	4.8
Women 25+	5.0	4.9
Youth 16-24	12.6	12.2
White	5.5	5.4
Nonwhite	11.8	11.7
Total	6.4	6.2

Note: Nonaddenda and "Married men" estimates are independent of labor force shares; remaining Addenda estimates are computed using average 1986-1988 labor force shares.

Source: Author's derivations; U.S. Department of Labor.

1993:Q2 period—detect no change in the natural rate of married men.¹⁶ This is reassuring because it suggests that structural forces have been stable. However, even the latest regression is dominated by 1980s data, so a more recent shift cannot be ruled out.

Certainly on qualitative grounds one might expect the natural rate to move higher than indicated by the fully adjusted estimates. The list of structural forces potentially raising the natural rate is daunting. The list includes factors already cited: continued defense cutbacks, continued white-collar displacement, continued skill mismatch.¹⁷ In addition, structural forces in some instances will interact with demographic forces to exacerbate labor market problems. The U.S. Department of Labor, for example, has noted that, while the fastest growing occupations in coming years will be those occupations that historically have required relatively higher levels of education, the composition of the labor force will be shifting toward groups that typically have attained lower levels of education (Kutscher). An overall natural rate of 6 1/2 percent or higher

does not seem out of the question.¹⁸

At present, however, the fully adjusted series represents the best available estimates of the natural rate of unemployment. At 6.2 to 6.3 percent the next several years, these estimates are, from a societal standpoint, quite high enough.

CONCLUSION

This article has presented estimates suggesting that the natural rate of unemployment currently is near 6 1/4 percent. Estimates could go even higher in future years depending on the impact of structural change.

An important implication is that the near-term risk of higher inflation may be larger than generally perceived. If the natural rate is near 6 1/4 percent, limited slack remains in labor markets, and wage and salary pressures may soon begin to build. As a result, policymakers will need to carefully monitor labor costs in the period ahead.

APPENDIX A

Methodology

This appendix describes the procedures used to generate the demographically adjusted and fully adjusted estimates of the natural rate of unemployment.

Phillips-curve equations

Phillips-curve equations were estimated using seasonally adjusted quarterly data. The equations, based on a specification used previously by Kahn and Weiner (1990), took the form:

$$(1) \quad p_t = a_0 + \sum_{i=1}^8 b_i p_{t-i} + \sum_{i=0}^4 c_i \log u_{t-i} + e_t,$$

where p_t represents inflation and u_t represents unemployment. The equation was first estimated over the full sample period, 1961:Q2 to 1993:Q2.¹⁹ The resulting estimated coefficients formed the basis for generating the demographically adjusted series. The equation was then estimated over the three periods 1961:Q2-1972:Q4, 1973:Q1-1979:Q4 and 1980:Q1-1993:Q2. F-tests supported a structural break after the first period.²⁰ Accordingly, estimated coefficients from equations estimated over the first period (1961:Q2-1972:Q4) and an extended second period (1973:Q1-1993:Q2) formed the basis for generating the fully adjusted series.

Inflation was measured by the annualized change in the log of the fixed-weight personal consumption expenditure deflator (PCE) net of food and energy.²¹ Unemployment was measured by the married male unemployment rate. To permit solution of the married male natural rate, the sum of lagged coefficients on inflation was constrained to be one.²² Estimation was by ordinary least squares. Estimated coefficients are reported in Table A1.

Married male natural rate

The estimated Phillips curves were then inverted to solve for the married male natural unemployment rate (u_{mm}^N), the unemployment rate keeping inflation constant:

$$(2) \quad u_{mm}^N = \exp \left[\frac{-a_0}{\sum_{i=0}^4 c_i} \right]$$

For the Phillips curve estimated over the full sample period, u_{mm}^N was calculated to be 3.5 percent. For the Phillips curves estimated over the 1961:Q2-1972:Q4 and 1973:Q1-1993:Q2 periods, u_{mm}^N was calculated to be 3.0 and 3.9 percent, respectively.

Group natural rates

Next, natural rates were calculated for 20 different population groups disaggregated by age, sex, and race. The first step was to estimate, using seasonally unadjusted quarterly data, OLS regression equations of the form:

$$(3) \quad \log u_{j,t} = a_0 + \sum_{i=1}^3 a_i QTRi + b_1 \log u_{mm,t} + e_t,$$

where $u_{j,t}$ represents the unemployment rate of group j , $u_{mm,t}$ represents the unemployment rate of married males, and the $QTRi$ terms represent quarterly dummy variables.²³ For the demographically adjusted series, one equation of type (3) was estimated for each population group, the sample period being 1961:Q2-1993:Q2. For the fully adjusted series, three equations of type (3) were

Table A1
Phillips Curve Regression Equations
Dependent Variable: Inflation Rate

Independent variable	Sample period		
	1961:Q2- 1993:Q2	1961:Q2- 1972:Q4	1973:Q1- 1993:Q2
Constant	-3.06 (3.00)	-2.64 (1.29)	-7.79 (4.14)
Sum of coefficients on log unemployment rate *	-.91 (3.05)	-.75 (1.35)	-2.40 (4.16)
Sum of coefficients on inflation †	1.00	1.00	1.00
Standard error of regression	.99	.91	.97

* Current and four lagged values.

† Eight lagged values; sum constrained to be one.

Note: Absolute value of t-statistics are in parentheses.

estimated for each population group, the sample periods being 1961:Q2-1972:Q4, 1973:Q1-1979:Q4, and 1980:Q1-1993:Q2; for most groups, F-tests supported structural breaks after both the first and second periods.²⁴ The second step was to calculate natural rates (u_j^N) for each group by substituting the corresponding married male natural rate into these equations, that is,

$$(4) u_j^N = \exp \left[a_0 + \frac{a_1 + a_2 + a_3}{4} + b_1 \log u_{mm}^N \right].$$

Thus, in constructing the demographically adjusted series, each age/sex/race group was assigned one natural rate over the 1961-93 period, and this rate was assumed to prevail as well over the 1994-2000 period. In constructing the fully adjusted series, each group was assigned three natural rates corresponding to the three periods 1961-72, 1973-79, and 1980-93 (where the latter

two each incorporated the 1973:Q1-1993:Q2 married male rate), and the 1980-93 rate was assumed to prevail as well over the 1994-2000 period.

Overall natural rate

Finally, the overall natural rate series were generated by weighting the group natural rates by annual labor force shares:

$$(5) u_t^N = \sum_{j=1}^{20} (u_j^N) (s_{j,t}),$$

where u_t^N represents the overall natural rate in year t , u_j^N represents the natural rate of group j and $s_{j,t}$ represents the labor force share of group j in year t .²⁵

*APPENDIX B**Estimated Natural Rate of Unemployment, 1961-2000*

<u>Year</u>	<u>Percent</u>	<u>Year</u>	<u>Percent</u>
1961	5.1	1981	6.7
1962	5.1	1982	6.6
1963	5.1	1983	6.6
1964	5.1	1984	6.5
1965	5.2	1985	6.5
1966	5.3	1986	6.5
1967	5.4	1987	6.4
1968	5.4	1988	6.4
1969	5.4	1989	6.4
1970	5.4	1990	6.4
1971	5.5	1991	6.3
1972	5.5	1992	6.2
1973	7.1	1993	6.2
1974	7.2	1994	6.3
1975	7.2	1995	6.3
1976	7.2	1996	6.3
1977	7.2	1997	6.3
1978	7.3	1998	6.3
1979	7.3	1999	6.3
1980	6.7	2000	6.3

Note: Rates are fully adjusted estimates, as derived and discussed in text.

ENDNOTES

¹ Friedman (1968), who coined the term “natural rate unemployment,” makes the point that the natural rate is natural only in the sense that it reflects real forces as opposed to monetary forces.

² For an overview of the mixed evidence linking transfer payment disincentives to a high natural rate, see Blank and Freeman.

³ For a more extensive discussion of the natural rate, including an analysis of potential remedies for underlying labor market imperfections, see Weiner 1986.

⁴ Detailed age/sex/race labor force projections data were kindly provided by Howard Fullerton of the Bureau of Labor Statistics, U.S. Department of Labor. For a discussion of projected trends, see Kutscher and Fullerton.

⁵ In 1992, for example, men accounted for 72 percent of goods-producing employment but only 47 percent of service-producing employment. For further discussion of sectoral shifts, see Brainard and Cutler.

⁶ For a discussion of recent labor-saving efforts by U.S. firms, see Myers, Meckstroth, and Kahn.

⁷ Permanent job losses are those for which there is no expectation of recall. For further discussion, see Meckstroth and Nardone and others.

⁸ An overall unemployment rate of 7 percent today, for example, represents a slacker labor market than it would have 15 years ago, when youths (with their relatively high unemployment rates) made up a much larger share of the overall labor force. Other researchers, for example, Gordon, Braun, and Motley, use alternative labor-market slack measures. Perry was one of the first to address this issue.

⁹ “Demographically adjusted” is used here to convey incorporation of demographic changes, not (as, for example, in Motley) to convey constant labor market slack.

¹⁰ Disaggregation by race, an innovation of this study, makes a difference. Over the 1990-2000 period, for example, disaggregating by age and sex alone yields estimates of the overall natural rate that are roughly 0.1 percentage point lower; the same is true of the “fully adjusted” estimates discussed in the next subsection.

¹¹ The periods match the three productivity regimes identified by Braun. However, any evidence of structural instability can be interpreted much more broadly, as reflect-

ing any number of possible structural changes.

¹² The associated p -values on the F-tests are 45 and 6 percent, respectively. As further evidence, rolling Phillips-curve regressions—Phillips curves estimated over successive ten-year periods—yield a married male natural rate series that rises in the mid-1970s and stays elevated in the 1980s and early 1990s (see also note 16). One interpretation of these results is that the oil shocks and poor productivity performance of the 1970s initially raised the married male natural rate, and assorted other structural shifts have kept it high since then.

Regarding oil and productivity shocks, when such shocks occur, the cost of producing a given amount of output increases, with the result that firms desire to produce less and to hire fewer workers. To the extent these workers stay in the labor force, unwilling to work at the now-lower equilibrium real wage, the natural rate rises. Such a rise is presumably temporary, however, since reservation wages would eventually be expected to decline. For an insightful discussion of productivity’s treatment in Phillips curve estimation, see Braun. See also Gordon.

¹³ F-tests indicate that 15 groups experienced structural breaks after both the first and second periods, while five groups experienced a structural break after one of the first two periods. Of the 40 F-tests run, 29 had p -values of 1 percent or lower, three had p -values between 1 and 5 percent, three had p -values between 5 and 10 percent, and five had p -values over 10 percent.

¹⁴ With a constant married male natural rate over the 1973-93 period, these results are being driven in part by changing unemployment rate relationships over the 1980-93 period. The natural rate of women still remains marginally above that of men (5.1 versus 4.9 percent). But the narrowing of the differential as compared with the demographically adjusted estimates (and the fully adjusted second-period estimates, not reported) is striking. One likely contributing factor is the maturation of women’s job skills following women’s heavy labor force entry and reentry in the 1970s.

¹⁵ Respective December/December inflation rates for 1987, 1988, and 1989 were: (i) CPI: 4.4, 4.4, 4.6; (ii) core CPI: 4.3, 4.6, 4.4; (iii) PCE deflator: 4.6, 4.5, 4.7; (iv) core PCE deflator: 4.7, 4.8, 4.6.

¹⁶ The ten most recent rolling regressions—those commencing with the 81:Q2-91:Q1 period and ending with the 83:Q3-93:Q2 period—yield natural rate estimates for married men ranging from 3.71 to 3.82 percent, compared with the extended second-period estimate of 3.89 percent.

¹⁷ For example, Saunders estimated that, as of April 1993, only about one-third of the expected defense-related employment cutbacks had occurred, with the remainder still to come. Gardner reported that displacement rates for white-collar workers increased markedly in the most recent (1987-91) sample period.

¹⁸ For example, if the married male natural rate were to rise by only 0.2 percentage point, to 4.1 percent, the overall natural rate would rise to 6.6 percent by the end of the decade.

¹⁹ The starting date was determined by data availability and the lag structure of the estimated equations.

²⁰ See note 12.

²¹ The PCE deflator was chosen rather than the CPI because of widely recognized measurement errors in the CPI. The fixed-weight PCE deflator net of food and energy was chosen to avoid accounting for food and energy price inflation which, over the short run, is little influenced by slack in the

economy. For further discussion, see Kahn and Weiner.

²² This constraint could not be statistically rejected for the full sample (1961:Q2-1993:Q2) and extended second-period (1973:Q1-1993:Q2) equations but could be rejected for the first-period (1961:Q2-1972:Q4) equation. Experimentation with longer inflation lags in the first-period equation yielded lower F-values (at 17 lags, for example, the constraint could not be rejected at the 10 percent level; the implied married male natural rate was 2.7 percent), but at the expense of a shorter estimation period. The eight-lag estimates were used in the paper.

²³ Wachter follows a similar approach.

²⁴ See note 13.

²⁵ Labor force shares are actual through 1992, projected in later years. Projections were furnished by Howard Fullerton of the Bureau of Labor Statistics, U.S. Department of Labor (see note 4).

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