FEDERAL RESERVE BANK OF KANSAS CITY

Economic Review

Second Quarter 1994

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Should We Throw Sand in the Gears of Financial Markets?

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By Henry Kaufman

In a speech delivered this spring to the Board of Directors of the Federal Reserve Bank of Kansas City and to the CS First Boston Corporation Global Banking Conference in New York City, Henry Kaufman predicted that the latest swings in bond and stock prices are likely to be merely a prologue to much greater volatility in the years ahead. This potential for financial trauma is a by-product of radical changes in the structure of financial institutions and markets that over time are leaving the system without an adequate institutional buffer and, therefore, more susceptible to sharp oscillations in the flows of investment credit.

Kaufman stressed that while new financial excesses cannot be totally prevented, proper action can mitigate their adverse consequences to some extent. To accomplish that, however, we must be willing to acknowledge the risks that lie ahead, to take them into account in the formulation of monetary policy, and to make some fundamental changes in the structure of official oversight and regulation of financial institutions and markets.

Should We Throw Sand in the Gears of Financial Markets? 17

By Craig S. Hakkio

The volatility of financial markets in recent years has led to increased concern. As trading of financial assets on organized exchanges and over-the-counter markets has grown, events such as the 1987 stock market crash and the 1992 Exchange Rate Mechanism crisis in Europe have raised fundamental questions about the role these markets play in the economy. In particular, there is concern that much of the increased trading of financial assets is of a short-term, speculative nature that adds little value to the intermediation process and in the extreme case may distort the efficient functioning of financial markets.

This view has led some economists to advocate a securities transaction tax. Such a tax, it is argued, when applied to a broad range of financial transactions, would raise the cost of short-term speculative trading, reduce financial market volatility, and improve the efficiency of financial markets. This type of tax might also raise substantial revenue that could help reduce the federal budget deficit. The revenue potential has not gone unnoticed in Washington, where recent budget proposals by both the Bush and Clinton administrations have included an STT.

Hakkio explores the pros and cons of a securities transaction tax. He concludes that the proponents have overstated the likely benefits of a securities transaction tax and underestimated the potential costs.

Will the Shift to Stocks and Bonds by Households Be Destabilizing? *31*

By Donald P. Morgan

In the last decade, households have tended to shift out of bank deposits and money market funds and into stocks and bonds. Some analysts and journalists worry that the shift could be destabilizing to the economy and financial markets. Consumption spending, it is argued, might fluctuate more because households have invested in riskier stocks and bonds. Financial markets also could be more volatile because households might behave as short-sighted novices who will sell assets in panic at the first dip in the market. In addition, the pension and mutual funds through which households invest tend to trade more actively than households. The increasing role of such heavy traders, it is feared, might increase financial market volatility.

Morgan argues that these concerns, though understandable, are exaggerated. Households appear to be saving for retirement and are therefore likely to ride out short-term bumps in the market. Moreover, the market role of institutional investors has been trending up for 30 years without any accompanying trend in volatility.

Causes of the Recent Increase in Bank Security Holdings *45*

By William R. Keeton

While bank security holdings have increased sharply in recent years, there is widespread disagreement about the significance of the increase. Some analysts argue that the increase is not a cause for concern because it results from temporary factors such as the business cycle. Others argue that the increase represents a permanent shift in bank portfolio preferences from loans to securities, which could cause banks to look more like mutual funds. If the latter view is true, small firms that rely on banks for credit may be unable to fund new investment. Moreover, monetary policy may be less able to influence total spending in the economy by affecting bank lending.

Keeton seeks to determine how much of the surge in bank security holdings can be explained by temporary factors. He discusses possible explanations for the recent increase in bank security holdings and presents empirical evidence based on the aggregate behavior of bank portfolios over the previous 30 years. He concludes that more than half the increase in security holdings cannot be explained by temporary factors, suggesting that bank portfolio preferences may have permanently changed.

A New Agricultural Policy for a New World Market 59

By Alan Barkema and Mark Drabenstott

A new farm bill will be enacted in 1995, and the debate over it has already begun. With farm bills being renewed just once every five years, the 1995 bill provides a propitious opportunity to re-evaluate the current bill in light of fundamental changes to the marketplace since the adoption of the 1990 bill. One of the most important changes since then has been in the world food market. Selling successfully in world markets is vital to U.S. agriculture because it produces far more food than domestic consumers require. Thus, while the upcoming farm bill will spawn debate on many issues, few will be more important than reconciling U.S. agricultural policy with a new world food market.

Recent developments in the world food market reflect basic changes in two key market features. The market for finished food products is much stronger than for bulk commodities. And the food market has been growing more rapidly in Asia and North America than in Europe. If these trends persist, will current farm policy be in step with the world food market of the future? Barkema and Drabenstott examine the factors likely to shape the world market and conclude that agricultural policy must be overhauled if U.S. agriculture is to excel in tomorrow's marketplace.

Structural Changes in the Financial Markets: Economic and Policy Significance

By Henry Kaufman

Over the recent weeks, we have gotten an eye-opening, though relatively brief, preview of how profound changes in the structure of world financial markets have magnified the potential for extreme market volatility that can reverberate across the global financial system. Today, I want to speak to you about those structural changes, the new financial risks they will almost certainly spawn, and how these serious financial risks should be contained. For it is undeniable that we have moved into a more hazardous environment in which new financial excesses are practically unavoidable. The reason is that certain defects are already deeply imbedded in the genes of our financial condition. These defects will contribute to progressively greater fluctuations in the prices of stocks, bonds, and currencies, to bouts of turbulence in the credit markets, and possibly to a plunge in financial asset values that will dwarf what we have experienced so far this year.

Indeed, from a longer perspective, the latest swings in bond and stock prices are likely to be merely a prologue to much greater volatility in the years ahead. This potential for financial trauma is a by-product of radical changes in the structure of financial institutions and markets that over time are leaving the system without an adequate institutional buffer and, therefore, more susceptible to sharp oscillations in the flows of investment and credit.

While new financial excesses cannot be totally prevented, proper action can mitigate their adverse consequences to some extent. To accomplish that, however, we must be willing to acknowledge the risks that lie ahead, to take them into account in the formulation of monetary policy, and to make some fundamental changes in the structure of official oversight and regulation of financial institutions and markets.

I suspect that to many it seems incongruous that market volatility has burst forth in a dramatic way at the very time when the financial positions of American households, corporations, and financial institutions themselves were on the mend. Financial rehabilitation in the United States has, in fact, proceeded at a very good pace. Debt burdens have been reduced sharply and capital posi-

Henry Kaufman is president of Henry Kaufman & Company, Inc. *This speech was delivered to the Board of Directors of the Federal Reserve Bank of Kansas City on March 9, 1994, and to the CS First Boston Corporation Global Banking Conference, New York City, on April 25, 1994. The views expressed in this speech are those of the author and do not necessarily reflect the views of the Federal Reserve Bank of Kansas City or the Federal Reserve System.*

tions have increased significantly for financial institutions and businesses.

But there is a dark side to financial rehabilitation. A sense of financial well-being—and the capacity of aspiring demanders of credit to tap into the resources of willing lenders and investors—is a necessary condition for incubating *new* financial excesses. Thus, it would be wrong to become complacent about what might follow as the economic expansion matures. Sooner or later, credit demands of businesses and households will begin to pick up momentum, and stronger financial institutions will be in a position to readily meet those demands. Monetary policy will switch, first, from accommodating to neutral as it has already started to do in the last few months and, eventually, toward overt restraint. Somewhere in this sequence of events, the structural changes in the financial markets will have a far more profound impact on securities values than the gyrations that occurred in recent months.

FUNDAMENTAL CHANGES IN FINANCIAL INSTITUTIONS AND MARKETS

I particularly want to call attention to three structural changes that keep the financial system vulnerable to excess.

First, in the United States, traditional lending and investing institutions are playing a diminishing role in determining the composition of investment and the response to market developments, whereas the household sector, mainly through the vehicle of the mutual fund, is playing an enormously expanded and still unfolding role.

Second, the global financial markets are undergoing what I would call the "Americanization of finance." This encompasses (1) increasing deregulation of markets and institutions, (2) rapidly increasing securitization, (3) much greater use of new financial instruments and trading techniques, especially incorporating financial derivatives, and (4) the growing presence in the markets of an expanding group of "high-octane" portfolio managers who are free to roam throughout the financial sphere, in and out of currencies, equities, bonds, commodities, and related derivative instruments with primarily a very near-term focus and no particular loyalty to any national marketplace.

Third, both in the United States and in most of the major industrial countries, a tremendous infrastructure has been put in place to promote credit creation. Most of the newcomers operate outside the conventional banking system and therefore largely outside the purview of central banks. But conventional depository institutions, now with rebuilt capital positions, are also in a position to lend. Thus, the potential for rapid increases in credit is high. Add these three structural changes together and we have a lush environment for cultivating financial excesses.

Let me try to put some dimensions on each of these three elements.

MUTUAL FUNDS AND DIMINISHED ROLE OF TRADITIONAL INSTITUTIONAL INVESTORS

For nearly three decades—that is, from the early 1960s until the beginning of the 1990s—the archetypal institutional investor was the pension fund of a major multinational corporation or of a state and local government entity. Supplanting insurance companies, which had been the preeminent institutional investor in prior decades, these funds grew over this period by almost $2 trillion, or about two-thirds of the total increase in institutional net financial assets. But by the onset of this decade, that electrifying growth had already begun to taper off, mainly as a by-product of corporate restructuring. As the corporate giants, one by one, moved to shed business lines and employees, and as defined contribution plans began to supersede the defined benefit plans of yesteryear, pension fund growth started to flatten.

By comparison, almost overnight, mutual funds boomed. One of the most interesting aspects of the mutual fund phenomenon is how long the vehicle existed before truly significant amounts of money were invested in them. As recently as the end of 1984, the combined total of equity and bond mutual funds in the United States amounted to only a little over $100 billion, less than 2 percent of total financial net worth of households. Since then, mutual funds have mushroomed and now substitute for conventional bank deposits. Of that total, $1 trillion is owned directly by households, representing almost 10 percent of household financial net worth.

Perhaps even more significant are the following facts: Since the stock market crash of October 1987, equity mutual funds have swelled from about $180 billion to some $700 billion through a combination of fresh inflows of funds and capital gains. What this means is that the average investor in equity mutual funds has never experienced a prolonged bear market. Neither has the average investor in fixed-income mutual funds. From the onset of the secular bull market in bonds which began in 1982, the assets of bond mutual funds increased by a factor of 35 times, from a minuscule $20 billion to over $700 billion. Up until last fall, only a minority of individuals had much personal memory as investors of what happens to bond prices—and consequently mutual fund net asset values—when interest rates start a protracted cyclical rise.

The fact is that we do not know how the ordinary investor in mutual funds will react when equity prices and bond prices continue to display spasms of volatility, instead of the highly agreeable upside volatility to which most had grown accustomed. Probably the sternest test will come as the economic expansion matures, credit demands start to lift, and short-term interest rates move persistently higher. At some point, after repeated bouts of volatility in the stock and bond markets, interest rates on CDs or other money market instruments, which will have moved higher, will no longer be looked at contemptuously by many investors, new inflows into mutual funds will dry up, and many individuals may become net sellers. The managers of mutual funds have no really viable alternative but to pass through these sales into the market. They cannot take a view apart from their investors; they cannot leverage mutual fund portfolios to take advantage of what they might think will be a temporary downward price correction. They will have to sell regardless of the impact on prices and regardless of whether other buyers of equities and bonds step forward quickly to buy.

I understand that there are valid differences of opinion on how the individual investor will behave under such circumstances. Some recall the transitory nature of the October 1987 stock market break and say that individuals generally will be slow to act, essentially riding out sharp contractions in equity and bond prices and thereby providing a buffer against more proactive traders. Perhaps. But that assumption of sluggishness on the part of the ordinary citizen proved to be conspicuously wrong in the case of the mortgage market. Homeowners were not at all sluggish in taking advantage of lower interest rates to refinance existing mortgages. On the contrary, they acted with an alacrity that utterly confounded the vast statistical models run by market professionals. As prepayments surged, holders of mortgage securities who were operating under the flawed assumption of household inertia were badly burnt.

Drawing an analogy from that episode, I conclude that it is a potentially grievous error to assume that individual investors will always be slow to react to sudden, highly visible setbacks in stock prices, bond prices, or both—certainly not in a world when all an investor has to do in order to switch from an equity or bond fund into a money market fund is to go to the telephone and push a sequence of buttons. The technology is in place for a cascade of selling by investors in mutual funds.

Consequently, I am even more seriously concerned now than a year or two ago when I began

calling attention to this lurking problem—namely, that excesses originating in the mutual funds area may be the source of an economic shock should an asset price bubble be suddenly burst. An abrupt, substantial drop in financial net worth can easily have a powerful impact on consumption decisions, leading to a postponement or even abandonment of spending on homes, cars, and other big-ticket items. Such a wealth effect may swamp other, more conventional determinants of household expenditure. In extreme cases, it could be large enough to precipitate an economic contraction. In principle, the central bank could offset this contractionary impact by easing monetary policy, but in practice that might be a hard thing for the Federal Reserve to do, since the shift out of equity and bond mutual funds and into money funds and bank deposits will naturally swell the monetary aggregates. Because this whole chain of events is most likely to occur at a time when the central bank is already engaged in a process of tightening money and credit conditions, it is not impossible to suppose that there will be at least some delay in making the decision to engineer such an abrupt about-face in policy.

It seems to me that not enough thought has gone into the question of how mutual funds should be regulated and supervised. This is not meant to be critical of the Securities and Exchange Commission (SEC), which is the official institution charged with overseeing the U.S. mutual fund industry. But the time has come when we have to be concerned not only with the issues of fraud and abuse, which is the conventional focus of the SEC, and consider the systemic implications of the explosion of mutual funds. We need to evaluate two things: First, the consequences for the American economy and for the financial markets of a potential sudden sell-off of mutual fund shares and, secondly, how to limit the impact of such shocks by putting in place a waiting period for fund sales in order to drive home to investors that equity and bond funds are not to be considered close substitutes for money funds and bank CDs. In a sense, this would be the functional equivalent of the circuit breakers installed by the stock exchanges and the futures exchanges, which were designed to introduce some delay when the market is stunned by a surge in volatility. The question of how to shield the system from a collapse of confidence in mutual funds is one more reason why comprehensive reform of financial regulation is badly needed, going well beyond the narrow industry focus of proposals now on the table.

AMERICANIZATION OF GLOBAL FINANCE

The second area of profound structural change in finance is what I have earlier referred to as the "Americanization" of global finance. This involves progressive deregulation of financial markets. It means a greater access of borrowers to different types of credit products, therefore greatly expanding credit availability to both businesses and households. In addition, Americanization entails a significant extension of securitization to many other capital markets in the world. In the all-important markets for government securities it entails a gradual adoption of many of the practices that first developed in the American government securities market, such as repurchase agreements, scheduled auctions, and increased participation of foreign investors. Greater securitization means that over a period of time, more and more financial assets will be marked to market, and fewer assets will be sheltered from potentially volatile price changes, as is the case when loans are held on the balance sheets of traditional lenders. Americanization also involves the broadening of professional portfolio management, usually with a very short-term investment horizon and the widespread use of performance measurements which more deeply ingrain this behavior.

In practical terms, the implications of Americanization are far-reaching: To begin with, virtually all major industrial countries are now living

within the confines of a more or less deregulated financial system, wherein financial entrepreneurs are the principal players reshaping this system. Granted, a handful of depository institutions, particularly in Japan, but also in the United States and even in Western Europe, are operating under greater official scrutiny because the memories of recent excesses are still vivid. But a whole host of other banks, together with unregulated or lightly regulated financial institutions, are engaged in pushing their own risk-taking in new directions, and sometimes to unaccustomed limits. The common denominator is to try to jump into any market niche where returns appear to be greater than average, regardless of the long-term compatibility of that line of business to the underlying experience and strengths of the firm. As a result, we can expect to see some significant missteps by at least a few of the more hard-driving competitors.

Moreover, high-octane portfolio managers are expanding in number and in the magnitude of funds they deploy. The ultimate evolution of the risk-taking financial entrepreneur is the portfolio manager who can go long or short in any market, in any currency, and on a leveraged or an unleveraged basis—and who often can do this in a tax-advantaged off-shore vehicle, with minimal, if any, official supervision. When full leverage is employed by this new breed of managers, I suspect that they can command portfolios totaling upwards of $500 billion, although no official statistics are kept by any national or international agency—which itself is a matter for concern.

Why is this class of investor a potential incubator of the next round of financial excess? After all, if they make a misjudgment on the market, their contributing investors will merely lose money, and since those investors are by definition highly sophisticated, as well as wealthy, they can afford the hit. The reason has to do with human behavior. When the managers of large high-octane portfolios go into the market to build sizable risk positions, others inevitably follow, since it is practically impossible to disguise these substantial positions completely. The hangers-on have benefited handsomely when the leaders have been right. But experience teaches that no one is clairvoyant, however astute technically or financially. The leaders also get it wrong from time to time, and while their investors might tolerate the resulting losses, others may not be so fortunate.

Finally, the growing use of financial derivatives is itself another manifestation of Americanization. What are some of the concerns that this development poses? I would cite the following:

(1) The current high profitability in financial derivatives will inevitably pull in a greater number of market participants. This will eventually generate excess capacity, depressing profit margins and inducing many to move to the marginal edge of risk-taking where competition is least and fees are most lucrative.

(2) Another set of concerns in financial derivatives involves the matter of exposure to credit risks. No one knows whether adequate credit evaluations are possible, especially when they relate to exposures resulting from transactions with new types of organizations, such as leveraged funds for which conventional credit ratings are inapplicable, or with subsidiaries of non-financial corporations which may have a complex and not entirely unambiguous relationship with the parent. This type of problem was apparent in the recent difficulties encountered by Germany's Metallgesellschaft. I, along with others, have concerns about an erosion of credit standards as competition in the marketplace increases.

(3) As for the potential for market disruption, I question whether market risks in financial derivatives can always be managed and whether any open position can always be covered before it goes hopelessly wrong. Experience has shown that whenever there is even the slightest chance of trading halts or of the abandonment of market-making by leading dealers, normal market access shrinks. As a result, new hedges cannot be put on when essentially everybody in the market is trying to do the same thing at the same time. Thus,

volatility can balloon by orders of magnitudes, defeating even the best planned hedging strategy.

(4) A related problem for hedging risks is the danger of basing hedging strategies on statistical models relying on past behavioral patterns. The structural changes alone in financial markets are bound to cause significant deviations from past relationships. There is no way in which these differences can be adequately incorporated in risk modeling.

(5) A final source of concern about these markets is simply this: Financial derivatives permit greater leverage in the system, allowing marginal borrowers to stay in the market longer than would otherwise be possible.

While I raise this concern in the context of financial derivatives, my worry is actually a broader one. As I mentioned in my introductory remarks, financial rehabilitation, while essential for creating the conditions for a strong revival of business activity, has a dark side. It is that the infrastructure for vigorous credit expansion has not only been rebuilt but has been enlarged in the process. Let me turn now to the implications of this development.

INFRASTRUCTURE FOR CREDIT CREATION

I suppose that the late Sidney Homer and I, back in the 1960s, were the first to coin the term "credit crunch" to describe an abrupt discontinuity in the flow of credit that may set severe contractionary economic forces in motion. In fact, both before and since, the history of business and financial cycles has been punctuated by sharp discontinuities in the channels of credit creation. Those disruptions have had varying causes—ranging from quantitative rationing in decades past engendered by such devices as Regulation Q ceilings, to the credit quality rationing that characterized the financial crunch of the latest cyclical episode. But regardless of origin, these discontinuities had similar effects: they set in motion a sequence of events that eventually was responsible for terminating a period of economic expansion by choking off credit availability to important segments of the economy.

Today, when memories of the most recent financial crunch are still fresh in our minds, it may come as a surprise to hear me warn of the unprecedented infrastructure for *credit creation* that is now in place in the United States and soon will be in other major financial centers. Commercial banks and many thrift institutions have shifted from a position of capital insufficiency to capital surfeit. They show a renewed appetite for lending and are in a position either to issue CDs or to liquefy securities holdings to finance new lending. But the nonbank financial institutions and open credit markets, which have successfully wrested considerable market share in lending to businesses and households away from the depository institutions are not about to disappear. Instead, they are in a position to move even more aggressively to make use of their considerable capacity to lend.

Moreover, the infrastructure in place to support extensive securitization is available for branching out into new markets. Securitization of mortgages, credit card receivables, and auto loans is just the beginning of the process, not the end of it. Domestically, home equity loans will be securitized to an increasing degree. What will probably follow will be widespread securitization of ordinary commercial loans, with or without the establishment of government sponsored entities to lubricate the process.

Internationally, securitization is advancing quickly, with discordant results. For example, we have experienced the rather extensive securitization of Less Developed Country (LDC) debt, which has effectively transferred the great bulk of the previously outstanding bank loans by repackaging them either as conventional bonds or as debt obligations that trade like bonds. This has been the product not only of the elaborate debt restructuring exercises supported by the United States and

other industrial country governments, the International Monetary Fund (IMF), and the banks, but it also reflects the substantial new issuance of securities on behalf of LDC borrowers. An estimated $75 billion of such new securitized assets have been absorbed by the public markets in the past five years, with a growing portion of the investment flows coming from the mutual funds and other commingled funds. This whole process has done a great deal to solve one problem, namely extricating the major commercial banks from their past credit misjudgments, only to introduce new and potentially formidable risks. In recent weeks, the market for the debt of emerging countries has undergone truly extraordinary turbulence, with price fluctuations averaging three to four times those of U.S. Treasuries. Consider how much greater volatility may become if one or more of the large emerging countries run into economic difficulties and cannot service the bonds. Reschedulings will turn out to be even harder to negotiate in a world of securitized obligations than they were during the bleakest days of the LDC debt crisis of the 1980s, since bondholders, with no ancillary business to protect, are unlikely to be as cooperative as bankers—and in retrospect the cooperation of those bankers was not entirely enthusiastic, either.

From a broad economic policy perspective, securitization will have far-reaching consequences. In such an evolving world, the degree of credit restraint in operation at any particular time will not be measurable by standard money supply or even bank credit indicators. Other time-honored rules of thumb, such as the notion that financial intermediaries are in the business of borrowing short and lending long, will be turned on their heads. Finance companies engaged in active securitization may be borrowing long and lending short, while hedging their exposure to interest rate movements through a series of transactions in financial futures and options. Surges in credit demand therefore may not have the conventional effect of flattening the yield curve; the impulses may be quickly transmitted up and down the yield curve through the actions of the new lending originators. This will indirectly impart greater volatility on intermediate and longer term bond markets, with corresponding effects on equity markets.

As a consequence, in the emerging financial world of high-octane, high credit availability finance, restraint will come more from unprecedented asset price variation and less from squeezes on short-term credit availability or cost. This world will have striking implications for monetary policy, for the financial supervisors and regulators, and for various market participants, including commercial banks. Let me discuss each in turn beginning with implications for monetary policy.

IMPLICATIONS FOR MONETARY POLICY

Central bankers throughout the industrial world are struggling with a dilemma. On the one hand, they have achieved an extraordinary independence in the formulation and execution of monetary policy. The Bundesbank, the Federal Reserve, and the Bank of Canada already had a substantial measure of independence. But now the central banks of France, Italy, and even Japan are operating with considerably more independence than ever before. Only the Bank of England is formally subordinate to the UK Government, but I suspect it is only a matter of time before that will change and a form of independence compatible with British constitutional traditions will be crafted.

On the other hand, there is no longer any reliable analytical guidepost on which to direct monetary policy. The vast structural changes in the financial system that I have described make it impossible for any central bank to anchor policy to any monetary or credit target. There is no alternative but to fall back on judgment. But judgment exercised toward what objective? Significant differences of view now exist on what the basic objectives of monetary policy should be, especially

among politicians, academics, and financial market participants, although perhaps less so among central bankers themselves.

Let me state my own view up front. I believe that the primary objective of a central bank should be to maintain the financial well-being of society in the broadest sense. That means establishing stable financial conditions by exercising careful oversight over financial markets, institutions, and trading practices, anticipating potential problems, and taking remedial action before they can do widespread damage. Thus, it means pursuing monetary policy actions what will over a period of time provide the foundation for the successful achievement of sustainable economic growth with minimal inflation, and with minimal risks of financial shocks that could disrupt the economy.

Therefore, I do not go along with the line of thinking that maintains that the central bank should have only the most single-minded of objectives: specifically the pursuit of price stability, perhaps defined as a target range for the inflation rate. In my view, the logic for enshrining such a narrow objective—namely, that an environment of low inflation is both a necessary *and* sufficient condition for economic growth and financial market stability—is flawed, and in practice such a price-stability objective will rarely, if ever, be faithfully pursued.

Indeed, I would argue that because it fails to give precedence to maintaining the financial well-being of society, it is a deceptive objective, for the following reasons:

First, low inflation, while obviously desirable in and of itself because it does contribute to a sturdy framework for a nation's economic prosperity, is nonetheless no guarantee against the emergence of financial excesses. History proves this conclusively. The classic case for the United States was the decade of the 1920s, when inflation remained low, but financial excesses developed both in the equity market and in commercial real estate. In recent times, we also have the vivid example of the mid-1980s. Inflation performance was exemplary; the rise in the consumer price index in 1986 was one of the lowest in the entire postwar period. But within the fabric of our financial markets there was developing some of the worst financial excesses of this century, a process that would eventually lead to massive financial failures, huge taxpayer costs, and a largely unforeseen credit crunch that would aggravate the business downturn and constrain the subsequent economic recovery. Arguably, low inflation is a *necessary* condition for financial well-being, but it surely is not a *sufficient* condition for financial well-being. That requires a more complex set of economic and financial circumstances grounded not only by a central bank's monetary actions but also by its role as the institution entrusted with assuring the safety and soundness of the financial system as a whole.

Second, an obsession with achieving low inflation at all costs carries other risks. Long-lasting economic stagnation can bring about a potentially large and highly undesirable redistribution of wealth. Thus, the approach can over a period of time undermine public support for free markets. This may eventually be manifested in a swing toward a narrowly nationalistic posture on international trade and thus can do considerable damage to important principles.

Third, the alternative to a sole central banking objective of low inflation is not indifference to the rate of inflation. Central banks that have acquiesced in, or abetted, high inflation are practicing a form of financial corruption that eventually destroys national unity and ends up in financial ruin. But for a central bank that has built up a reputation of integrity and devotion to stability, there is a powerful case for looking beyond the inflation situation at any particular time and anticipating how the inflation rate will evolve in reaction to changing economic circumstances. This means that such a central bank will be able to pursue an accommodative monetary policy even in the face of a lingering rate of inflation which is higher than the expected rate that will eventuate over a long

time period. This ability to craft a policy on the basis of sound analysis of future trends, rather than moving in lockstep with available data that necessarily record only what has already happened, is the hallmark of sensible effective monetary control.

As I see it, the proper responsibility of the central bank—assuring the financial well-being of society—requires an intimate involvement in financial supervision and regulation. In fact, I have long believed that it is only the central bank, among the various regulatory agencies which share responsibility in this area, that can represent the perspective of the financial system as a whole. This should be the central organizing principle behind any comprehensive reform of financial regulation and supervision in the United States.

TOWARD A COMPREHENSIVE FRAMEWORK FOR FINANCIAL REGULATION

The danger of a new round of financial excesses presents a clear challenge to the official supervisory and regulatory structure for financial institutions. I have argued over the years for a serious effort to reform in a fundamental way the convoluted system of financial regulation we have stumbled into. I have also supported efforts to forge a better international harmonization of supervisory, regulatory, accounting, and trading standards and practices. In both realms, the domestic and the international, much work is left to be done.

Recently, the U.S. Treasury put forward a proposal for reform of one relatively circumscribed, though no doubt important, part of the regulatory structure—consolidating bank examinations in one agency so as to eliminate a good deal of duplication of effort and expense in the current system. On its face, it is a legitimate goal, but the benefits of reducing duplication need to be weighed against the costs of restricting the Federal Reserve's direct role in financial supervision and regulation. On this issue, once the public relations phase of the bureaucratic tug-of-war has run its course, I would expect a reasonable compromise can be worked out.

The main reason why I am not an enthusiastic supporter of the Treasury proposal is that it is too narrow. It misses most of the key structural changes in domestic and global financial institutions and markets that I described earlier in my talk. What is really needed is a comprehensive overhaul of regulation and supervision. That would involve a number of elements.

One, we need to bring together banking, securities, and insurance regulators to reach agreement on *standards*—accounting standards, disclosure standards, and trading standards, and on minimum capital requirements. This should also include nonbank institutions such as finance companies, which are now effectively unregulated. At the present time, there are large differences from country to country and within countries from one type of financial institution to another. They are out of touch with the realities of how markets now work and how business is being done. Harmonization is essential to ensure fairness in the marketplace and to avoid the lowest common denominator outcome as institutions practice what is known as "regulatory arbitrage." I might add that the Internal Revenue Service and its counterparts in other countries also ought to be included in this process, so that tax considerations do not unduly influence the location and form of financial activity.

Two, in order to reduce the danger of sharp setbacks in bond and stock prices that would endanger economic growth, I propose that investors in bond and stock mutual funds be required to give 60 to 90 days' withdrawal notice. This condition would be roughly analogous to the long-standing requirement that applies to Certificates of Deposit and time deposits at banks and thrifts. It would reinforce the notion that mutual funds are not cash equivalents and should be approached as a serious investment. It would have the desirable effect of forcing investors to become more aware than they

appear to be at the moment of the risks they are exposing themselves to through investment in such funds and will introduce a useful brake on exaggerated reactions to abrupt price movements. Since it is a significant departure from existing procedures, this measure should be phased in gradually beginning with net new investments.

Three, these and the many other issues that inevitably flow from the greater internationalization and complexity of finance cannot be dealt with reasonably and in a timely way without an ongoing institutional capability. I have long believed that the most promising approach would be to establish a new international institution to serve as the focal point for regulatory harmonization. A "Board of Overseers of Major International Institutions and Markets" should be established, consisting of central bank and other governmental agencies. It should also include members drawn from the private sector. It should be empowered to set mutually acceptable minimum capital requirements for all major institutions, to establish uniform trading, reporting, and disclosure standards for open credit markets, and to monitor the performance of institutions and markets under its jurisdiction.

OUTLOOK FOR FINANCIAL MARKETS AND INSTITUTIONS

Let me conclude by highlighting seven key implications that arise from the intersection of the structural changes in financial markets and institutions and the cyclical condition of the U.S. and foreign economies.

First, volatility in financial markets is bound to increase significantly further in the period ahead. The increased importance of risk "pass through" institutions, notably mutual funds, which merely transmit the investment decisions of their investors and take no risks of their own, and the diminished role of traditional financial institutions that take risks onto their own balance sheets magnifies the danger of wide swings in equity and bond prices. This volatility will also be enhanced by the continued rapid growth of securitized assets and the more subdued increase in nonmarketable assets, as the practice of marking to market becomes the norm rather than the exception. Moreover, as we move from a period of secular rise in equity and bond prices to a more unsteady future, the likelihood of episodes of sudden asset price declines will increase. Financial markets are better equipped to shift risk from one participant to another, especially through the use of financial derivatives. But that reallocation of risk does not materially lessen the danger of a period of disorderly trading in the vent of an unforeseen shock. Those financial institutions that have been unduly complacent about their capacity to insulate themselves by supposing that they can always go into the market to hedge risks are the most vulnerable to an adverse surprise.

Second, in the new financial environment, the Federal Reserve may find it impossible to flatten the short-to-long yield curve, let alone invert it. The reason is that conventional rules of thumb about the impact of monetary policy actions on the financial markets no longer apply in a financial world dominated by mutual funds and other risk "pass through" institutions. Also of importance for monetary policy, the decline in segmented financial markets, wherein financial institutions used to be able to count on making moderate profits without straining to deal with fierce competition, combined with the move toward a mark to market requirement, will make it far more difficult for affected institutions to take the longer view that might otherwise justify holding onto long positions in stocks or bonds through a financial storm. Consequently, at the next cyclical peak in interest rates, short-term rates—such as on three-month Treasury bills—may reach close to 7 percent while the yield on long U.S. Governments may trade somewhere in the 9 percent to 10 percent range.

Third, for well-managed commercial banks involved in traditional lending and investing with

floating rates of return on assets and variable rate liabilities, the persistence of a positively sloped yield curve will continue to be highly beneficial. They will also benefit from a further consolidation in banking, improving their capacity to maintain a profitable pricing structure.

Fourth, the greatest threat to the stability of the system will probably come through more aggressive and more lightly regulated participants in the marketplace or through banks that seek to exploit the new vogues.

Fifth, central banks will be compelled to move away from a strategy of gradualism and give greater weight to actual and prospective conditions in financial markets in conducting monetary policy. Gradualism gives the appearance of prudence and caution, but actually imparts considerable risks onto the economy and the financial markets. In a period of deteriorating economic conditions, when excess productive capacity emerges and the private sector faces financial difficulties, gradualism prolongs distress and inhibits economic and financial rehabilitation. The central bank must be willing to act before the inflation rate has had a chance to respond to the emergence of slack and the weakening of demand pressures in the economy. By contrast, in a period of improving economic conditions and under a changed financial system with powerful entrepreneurial participants that can breed new financial excesses, gradualism in moving toward a less accommodative monetary policy — and eventually to a policy of restraint — carries the risk of encouraging financial bubbles that will force economic setbacks. What is needed is a more flexible monetary policy that can be quickly adapted to changed circumstances, even if that means reversing course on a few occasions when false signals intrude. Giving greater weight to conditions in financial markets is a necessary ingredient of such a flexible approach, since changes in asset prices have a powerful effect on the net worth of the private sector, influencing consumption and investment decisions, and borrowing intentions.

Sixth, before the end of this decade, the financial markets of many emerging countries, which have flourished in recent years, will be hit with substantial turbulence, far beyond the gyrations that occurred in the last few months. This is because renewed economic growth in the industrial world a few years from now will generate enlarged credit demands and will reduce liquidity in the industrial countries, limiting the availability of funds for developing countries. Moreover, securitized markets and the interwoven linkages of international markets will expedite the flight of capital whenever prospects appear to deteriorate.

Finally, I am more convinced than ever that we will have a thoroughgoing overhaul of the structure of official supervision of financial markets and institutions, both nationally and internationally. The question is "When?" Will such a new framework come about in an orderly manner, after an intensive and relatively expeditious discussion of alternatives? Or will it only come about after a major financial crisis, in an attempt to repair the damage? No one, least of all the American Administration, wants a new financial crisis, but more importantly the American economy cannot afford one. That is why I conclude that the answer to the question "When?" is right now, when there is still containable volatility in financial markets — a condition that cannot be taken for granted a few years hence, if nothing is done to improve the structure and capabilities of our official supervisory and regulatory institutions.

Should We Throw Sand in the Gears Of Financial Markets?

By Craig S. Hakkio

The volatility of financial markets in recent years has led to increased concern. As trading of financial assets on organized exchanges and over-the-counter markets has grown, events such as the 1987 stock market crash and the 1992 Exchange Rate Mechanism crisis in Europe have raised fundamental questions about the role these markets play in the economy. In particular, there is concern that much of the increased trading of financial assets is of a short-term, speculative nature that adds little value to the intermediation process and in the extreme case may distort the efficient functioning of financial markets.

This view has led some economists to advocate a securities transaction tax (STT). Such a tax, it is argued, when applied to a broad range of financial transactions, would raise the cost of short-term speculative trading, reduce financial market volatility, and improve the efficiency of financial markets. This type of tax might also raise substantial revenue that could help reduce the federal budget deficit. The revenue potential has not gone unnoticed in Washington, where recent budget proposals by both the Bush and Clinton administrations have included an STT.

Craig S. Hakkio is an assistant vice president and economist at the Federal Reserve Bank of Kansas City. Timothy J. Schmidt, a research associate at the bank, helped prepare the article.

The proposal of an STT, however, is highly controversial. Opponents doubt that an STT would reduce financial market volatility. According to these analysts, throwing even a little sand in the gears of financial markets is not benign—it would damage the markets by reducing liquidity and raising the cost of capital for U.S. business. Opponents also doubt an STT would yield substantial revenue gains because investors could avoid the tax by shifting to tax-exempt activities or moving transactions outside U.S. markets.

This article explores the pros and cons of a securities transaction tax. The article first presents a brief introduction to securities transaction taxes. The article next presents the case for introducing a small securities transaction tax which rests on the assumption of large potential benefits from the tax. The article then presents the case against a securities transaction tax, including the prospective costs incurred by imposing the tax. The article concludes that the proponents have overstated the likely benefits of a securities transaction tax and underestimated the potential costs.

INTRODUCTION TO SECURITIES TRANSACTION TAXES

A securities transaction tax is levied on the sale of securities, such as stocks, bonds, options,

or futures. The tax is paid each time a security is sold. As such, a number of operational issues are involved including which security transactions are taxed and at what rate.

Economists advocating an STT tend to favor a broad-based tax. A broad-based tax would apply to all marketable securities—stocks, bonds, options, futures, and other financial derivatives. Such a tax was considered, but not adopted, in the negotiations on the Omnibus Budget Reconciliation Act of 1990. Over the years, a number of prominent economists, including John Maynard Keynes, Lawrence Summers (now Undersecretary of the Treasury), and Joseph Stiglitz (now a member of the President's Council of Economic Advisers) have supported a broad-based STT.

More narrow taxes have been proposed in Congress and by the Bush and Clinton administrations. The narrow taxes could, for example, be levied only on trading in derivative markets. Congress, the Bush Administration, and the Clinton Administration have considered taxes on futures trading or options on futures trading. More specifically, various Bush Administration budgets included fees on futures trading: an 11 cent fee (in 1991), a 13 cent fee (in 1992), and a 15 cent fee (in 1993). The Clinton Administration proposed a fee of 14 cents on futures and options on futures (1994).[1]

Another kind of narrow transaction tax has been proposed by Eichengreen and Wyplosz. They recommend an implicit tax on foreign exchange transactions to reduce the likelihood of speculative attacks against European Monetary System (EMS) currencies. The tax is implicit because it would require financial institutions that purchase foreign exchange to make a non-interest bearing deposit with the central bank. If financial institutions are forced to make a deposit equal to 0.1 percent of the transaction and the interest rate is 10 percent, then the tax would be 1 percent of the transaction. As interest rates rise, so would the tax rate.

While the idea of an STT is somewhat novel in the United States, many industrial countries already have some form of a securities tax. Table 1 shows the wide range of securities taxed by different countries and the wide range of tax rates. Transaction tax rates differ according to the type of financial instruments affected (equities are typically taxed at a higher rate than derivatives), the location of trade (on or off an exchange, at home or abroad), and the identity of the buyer or seller (domestic or foreign resident, market-maker or general trader).

To focus on the economic arguments that support an STT, this article considers a broad-based 0.5 percent tax applied to the sale of stocks, bonds and other debt instruments, options, futures, and other financial securities. Since most countries and proposals exempt government securities, this article assumes that Treasury securities are exempt. And while the tax could be applied to the sale of new issues, the analysis in this article applies the tax only to transactions in secondary markets.

An STT of 0.5 percent would increase transaction costs considerably, as an example from the New York Stock Exchange (NYSE) makes clear. Commission fees for large institutions on the NYSE are about $0.13 per share, and the average bid/asked spread is about $0.25 per share (Hubbard, p. 997). Therefore, transaction costs are about $0.38 per share in the absence of taxes. Applying a 0.5 percent tax to an average share price of $34.10 would increase transaction costs $0.17 per share to about $0.55, a 50 percent increase in transaction taxes.

THE CASE FOR AN STT

Proponents argue that an STT would provide three important benefits. An STT would (1) reduce excessive financial market volatility, (2) reduce the amount of wasted resources in financial markets, and (3) substantially increase government revenue.

Reduce excess volatility

Most advocates believe that financial markets

Table 1

Transaction Taxes in the OECD

Country	Tax size 1993 (percent)	Description	Notes
Australia	.30	Transaction tax	
Austria	.15	Transfer tax	May be avoided ex country
	.06	Arrangement fee	May be avoided ex country
	.04-.09	Courtage fee	May be avoided ex country
Belgium	.03	Stock market fee	May be avoided ex country
	.17	Stamp tax on buys and sells	May be avoided ex country
Canada		No taxes	
Denmark		No taxes for nonresidents	
Finland		No taxes	
France		No taxes for foreign investors	
Germany	.06	Courtage tax (official broker fee)	May be avoided by trading off the exchange
Greece	.30	Transfer tax	For registered shares only
Ireland	1.00	Stamp duty on purchases	
Italy		No taxes	
Japan	.30	Tokyo stock exchange sales tax	May be avoided ex country
Netherlands		No taxes	
New Zealand		No taxes	
Norway		No taxes	
Portugal	.04	Stock exchange levy	
	.05	OTC levy	
Spain	.15	Clearing	Stock exchange fees
Sweden		No taxes	
Switzerland	.075	Stamp tax	May be avoided ex country
	.010	State tax	May be avoided ex country
	.005	Exchange fee	May be avoided ex country
Turkey		No taxes	
United Kingdom	.50	Stamp duty	Assessed on purchases only
	(£2)	PTM levy	Assessed on trades above £10,000
United States	($.01)	SEC fee	Assessed on sales per $300 of value

Note: Data for Iceland, Luxembourg, and Yugoslavia were not available.

Source: Union Bank of Switzerland, UBS Global Research, *Guide to Global Equity Markets*, 4th ed., January 1994.

are too volatile. By raising the cost of trading, an STT would reduce short-term trading, which is thought to be a principal cause of excess volatility. The expectation is that prices would better reflect fundamental values and that the cost of capital would fall.

Since the STT is paid each time a security is sold, it would have a greater effect on short-term trading than long-term trading. Consider the effect of a 0.5 percent tax on an investment yielding a 4.0 percent return (see appendix for details on calculations). In this example, the tax on one-day trading is 282.7 percentage points, while the tax on five-year trading is only 0.1 percentage points. The key is that the tax must be paid whether the security is held for one day or five years. For a one-day trade, a 0.5 percent tax becomes an annualized cost of 282.7 percent. For a five-year trade, a 0.5 percent tax is a 0.1 percent tax per year. Since the tax is higher on short-term trading strategies than long-term trading strategies, short-term trading would be discouraged more than long-term trading. With short-term trading reduced, the average holding period would increase.

Before discussing why an STT might reduce excess financial market volatility, it is important to understand why volatility may arise. Volatility has two components—fundamental volatility and excess volatility. Fundamental volatility reflects the fact that security prices change when the fundamental value of the security changes. In contrast, excess volatility occurs when security prices change for reasons unrelated to the fundamental value.

Fundamental volatility is part of a well functioning financial market. When the fundamental value of a security changes—such as when the expected future stream of income changes—the price of the security also changes. But new information about future income streams can be volatile. As a result, the volatility of expected future income streams can cause considerable volatility of prices. Such changes are called fundamental volatility.

The economy benefits from prices reflecting fundamental values because investment funds go to their most valuable uses. Companies with good investment opportunities have high fundamental values, while companies with poor investment opportunities have low fundamental values. Therefore, if prices reflect fundamental values, companies with good investment opportunities will be able to sell their stock at a high price, allowing them to raise funds at lower expense than companies with poor investment opportunities.[2]

Many analysts believe that financial market volatility can also be excessive (Summers and Summers; Stiglitz). As evidence of excess volatility, analysts point to October 1987. It is hard to identify any fundamental changes that occurred then to justify a 22 percent crash in the stock market. As further evidence, analysts recall a 1981 study by Shiller, who found that stock prices were more volatile than would be predicted by the actual volatility of dividends.

The condition of excess volatility is said to reflect "irrational" investor behavior. Irrational behavior reflects waves of optimism or pessimism, or in Keynes' words, "animal spirits" possessed by traders. Economists now use the term "noise trader" to describe investors who exhibit such waves of optimism or pessimism. The distinguishing feature of noise traders is that they buy and sell securities based on something other than fundamentals. Since these animal spirits come and go, seemingly at random, stock prices are more volatile than if they reflected only economic fundamentals.

The proponent's view of an STT is that it reduces excess volatility by reducing short-term trading. According to this view, noise traders are primarily short-term traders. Therefore, by reducing short-term trading, an STT would reduce noise trading—the primary cause of excess volatility.

Reducing excess volatility could have two benefits. First, less excess volatility could spur investment spending. With less volatility and therefore less risk, the cost of capital would be lower because the risk premium on an investment would fall. A lower cost of capital would make it

cheaper to raise funds in the stock market, causing investment spending to rise.

Reduced volatility could also lead to a more efficient allocation of existing investment spending. With excess volatility, prices can move away from their fundamental value. For example, if traders are bearish, they may sell stocks because they think the price is going to fall, even if the fundamental value has not changed. To the extent that an STT drives noise traders out of the market, prices would more closely track fundamental values. As result, not only would investment spending rise, but the existing spending would be allocated more efficiently.

Reduce wasted resources

A second potential benefit of an STT is that fewer resources would be wasted on financial markets. Tobin, Summers and Summers, and Stiglitz believe that too many resources are spent on trading paper assets rather than on creating wealth. For example, James Tobin, the winner of the 1981 Nobel Prize in economics, wrote:

> What is clear is that very little of the work of the securities industry, as gauged by the volume of market activity, has to do with the financing of real investment in any very direct way. Likewise, those markets have very little to do, in aggregate, with the translation of the saving of households into corporate investment (1984, p. 11).

Undeniably, the cost of operating our financial markets is high. Summers and Summers (p. 27) estimate that the cost of operating our securities markets was over $75 billion in 1987, or one-fourth of total corporate profits and close to half of corporate net investment.

But is the cost of operating our financial markets too high? A purpose of financial markets is to channel household saving into creating wealth—building new factories and making people healthier. If too many of the people who work in financial markets are short-term speculators, rather than creators of wealth, they simply are acting to reallocate claims to wealth. Moreover, financial institutions spend considerable time and money creating and trading new and exotic financial instruments, such as financial derivatives. While derivatives allow financial institutions and speculators to earn lots of money, some analysts do not believe derivatives create wealth. According to this view, short-term speculation is a waste, and many of the new and exotic financial instruments are overkill.

As a clarifying example, suppose a speculator learns—before anyone else—that a pharmaceutical company plans to announce a cure for diabetes. By buying shares of the pharmaceutical company now, and selling the shares after the public announcement is made, the speculator can make a great deal of money. The result of the trade is that ownership of the pharmaceutical company has changed, but no wealth has been created. Proponents of an STT believe much of the $75 billion currently used to operate financial markets is not used to create wealth, but rather simply reallocates claims to existing wealth resulting in a waste of resources.

Increase government revenue

A third potential benefit of an STT is the revenue it might raise. Without knowing the precise form of the tax, estimating the amount of revenue collected is difficult. The Congressional Budget Office, however, has estimated that a broad-based 0.5 percent STT would raise $57.7 billion in the first five years. An alternative estimate can be obtained by looking at the amount of revenue raised in other countries. While the taxes differ among countries, revenues raised in 1985 ranged from 0.04 percent of GNP in Germany to 0.48 percent of GNP in Switzerland. Applying these percentages to the United States implies that an STT could raise between $2.6 billion and $30.6 billion in 1993.

THE CASE AGAINST AN STT

Opponents of an STT argue that (1) the benefits of an STT are overestimated, (2) an STT would have harmful side effects, and (3) the tax is likely to be ineffective.

Overestimated benefits

The case for an STT rests on the assumption that prices are excessively volatile—that prices deviate from fundamental values. Opponents of an STT are not convinced that financial markets are excessively volatile. Moreover, even if markets are excessively volatile, opponents doubt that an STT would reduce excess volatility. Opponents further doubt that an STT would save resources currently wasted in financial markets.

STT and excess volatility. Deciding whether volatility is excessive is complicated by the difficulty of determining the fundamental value of a security. Fundamental value is inherently unobservable. Financial analysts may be able to estimate what they call a fundamental value, but it is obviously an estimate with a margin of error. But without such knowledge, it is impossible to determine whether prices are excessively volatile.

There may be ways, however, to examine volatility without knowing the fundamental value of a security. For example, many people believe excess volatility increased with the introduction of financial derivatives. If true, and if fundamental volatility did not change with the introduction of derivatives, then measured volatility should have increased in the 1980s as derivatives became more prevalent.

The evidence on whether volatility increased in the 1980s is mixed. Schwert (p. 23) found that volatility on broad portfolios of New York Stock Exchange common stocks was not unusually high in the 1980s, except during brief episodes such as the October 1987 crash.[3] Therefore, if derivatives caused excess volatility to increase, the data do not obviously support the argument.

But even if excess volatility is a problem, an STT may not be the solution. Neither economic theory nor empirical evidence strongly supports the idea that transaction taxes would reduce excess volatility.

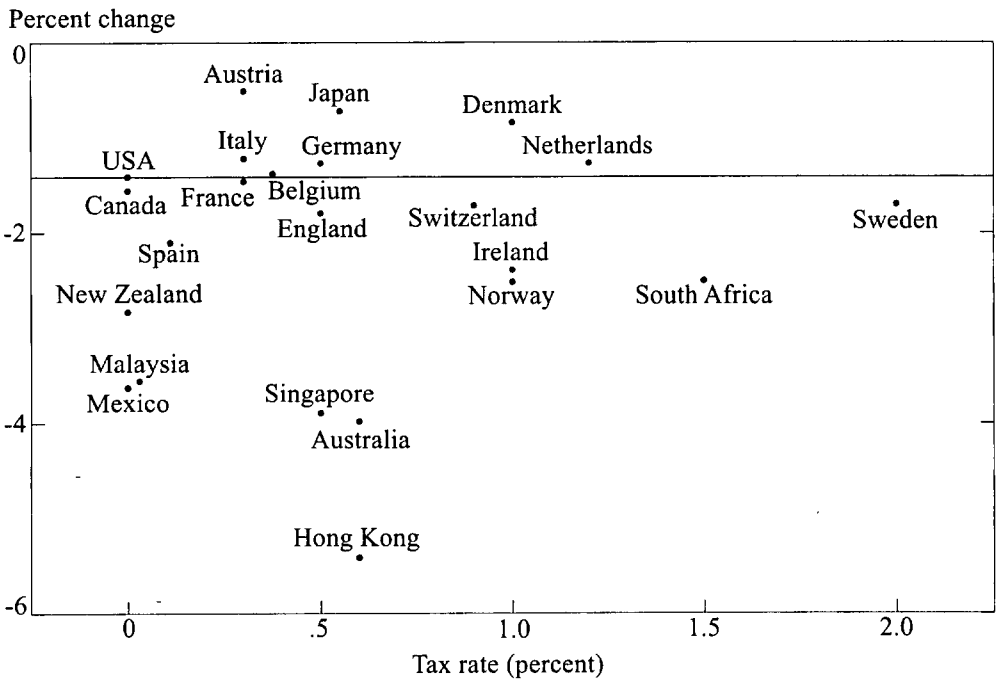
Economic theory suggests that transaction taxes could either increase or decrease excess volatility. For example, assume there are two kinds of traders—informed traders and noise traders. Informed traders assess the fundamental value of a security, then buy when the price is low and sell when the price is high. By increasing the cost of trading, an STT reduces the amounts of both noise trading and informed trading. The effect on excess volatility then depends on which group of traders is hit harder. If the tax reduces the amount of noise trading more than informed trading, excess volatility would fall. However, if the tax reduces informed trading more than noise trading, excess volatility could rise.

Since economic theory is silent on whether an STT would reduce excess volatility, perhaps empirical evidence can shed light on the issue. Opponents believe empirical evidence contradicts the idea that an STT would reduce excess volatility.

Security transaction taxes do not appear to have alleviated the worldwide stock market crash of October 1987. While most industrialized countries have an STT, all countries experienced a stock market crash. Moreover, the evidence does not suggest that countries with an STT experienced a less severe crash. Chart 1 shows the relationship between the tax rate and the average daily percentage change in stock prices in 23 countries for the period one week before the beginning of the crash on October 19 to two weeks afterward. The average percentage decline in U.S. stock prices, -1.4 percent, is indicated by the horizontal line on the chart. Of the 19 countries with an STT, 12 (63 percent) had greater declines and seven (37 percent) had smaller declines than the United States. In addition, there does not appear to be a significant relationship between the decline and

Chart 1

STT Rates and the October 1987 Decline in Stock Prices



Note: The vertical axis is the percent change in stock prices for the period one week before the October 1987 stock crash to two weeks after the crash. The horizontal line is the average percentage decline in U.S. stock prices.

the tax rate. The rank correlation between the tax rate and average decline is 0.03, which is insignificantly different from zero.[4]

In a 1989 study of 23 industrial countries, Roll found no evidence relating stock price volatility to stock market price limits, margin requirements, and transaction taxes. Roll studied the periods January 2, 1987, to October 9, 1987, and November 2, 1987, to March 31, 1989. Finding that transaction taxes are inversely but insignificantly correlated with volatility across countries, he concluded: "The effect is too questionable for taxes to be used with confidence as an effective policy instrument" (p. 241).

In a 1993 study of the Swedish experience with STTs, Umlauf surprisingly found that "all else being equal, taxes increase volatility" (p. 228).[5] Thus, the weight of empirical evidence casts doubt on the claim that an STT would reduce excess volatility.

STT and wasted resources. Opponents of an STT believe that neither speculation nor the creation and trading of financial derivatives are wasteful—indeed, both provide many benefits to society. While derivatives may not directly create wealth, they meet investor needs by reducing risk (Becketti). Moreover, derivatives allow firms to operate internationally without exposing themselves to undue risk from exchange rate changes. Therefore, it is not surprising that these new

instruments are valued highly. Furthermore, there is little evidence that on balance too many resources are devoted to creating and trading financial derivatives.

Moreover, say opponents, the STT advocates have only asserted the benefits of derivatives do not justify the cost—they have not proven their assertion. It would be helpful if the proponents could point to specifics rather than to generalities. The presumption in market economies is that if a firm is willing to pay for a product—such as an exotic derivative to hedge its foreign exchange risk—then the product is worth the amount the firm is willing to pay. Kiefer, in writing for the Congressional Research Service of the Library of Congress, gave shape to this idea:

> Such a standard would be inherently judgmental. ... If some measure other than value determined in the market is to be used as the measure of "social value," then it is not clear what that measure is. Such an approach would have broad implications and could result in labeling many activities as economically wasteful. Does the "social value" of theme parks equal their cost, for example? What about luxury homes and automobiles? First-class airline and hotel accommodations? Pet rocks? (p. CRS-24).

Harmful side effects

In the eyes of opponents, not only are the STT benefits overestimated, but an STT would have harmful side effects. For example, an STT would penalize all investors, not just short-term traders, noise traders, or speculators. In addition, the cost of capital could actually rise, reducing investment—the opposite of the effect claimed by advocates.

STT penalizes all investors. Even though an STT is a tax on rapid turnover, all investors would indirectly feel its effects. An STT increases the bid/asked spread. That is, all traders—not just short-term traders—pay more each time they trade. In addition, although most households are not short-term traders, the mutual funds that people use as a vehicle for saving would be adversely affected by an STT. Furthermore, since stock prices are likely to fall following the adoption of an STT, everyone who owns stocks would feel its effects.

All investors would be penalized by an STT because all must pay the bid/asked spread. Dealers profit by selling securities at a higher price than they bought them. The price a dealer is willing to pay is called the "bid" price, and the price a dealer is willing to accept is called the "asked" price. Therefore, by setting the asked price greater than the bid price, a dealer makes money. If an investor buys and immediately sells a security, he has to pay the difference, or spread, between the bid and asked price.

Since an STT increases the operating and hedging costs of dealers, an STT would increase the bid/asked spread paid by all investors. By increasing the bid/asked spread when their costs rise, dealers can continue to operate and cover their costs. The bid/asked spread depends on the number of trades over which dealers can spread their fixed costs, such as a seat on the New York Stock Exchange. But since an STT would reduce the volume of trading, dealers would have fewer trades over which to allocate their fixed costs; thus, the bid/asked spread would rise. The bid/asked spread also depends on the cost of hedging risk. Dealers hold an inventory of securities which are vulnerable to price changes. Dealers manage their risky inventory positions by using derivatives such as futures and options (Schwert and Seguin, p. 32). If the STT is imposed on futures and options, then the cost of managing a dealer's risky inventory would rise, causing the bid/asked spread to rise.

An STT would also penalize anyone who owns shares in a mutual fund. Approximately 27 percent of U.S. households in 1992 held shares in mutual funds.[6] The average mutual fund shareholder is 46 years old and earns $50,000 per year. While individuals seldom make trades themselves, their mutual funds trade frequently. For example, the average holding period for their

securities ranges from two months for the Strong Municipal Bond fund to 4.8 years for the Vanguard Windsor fund (Lo and Heaton, p. 10). Since the tax is paid each time a security turns over, an STT could significantly reduce returns from investing in mutual funds.

Another way that everyone would pay an STT is that stock prices would fall after an STT is imposed. Hubbard (p. 23) estimated that a 0.5 percent STT on stock prices would cause them to decline 2.3 to 5 percent. The reason for such a decline is that the price of a security depends on the current and future stream of income. If an investor chooses to sell the security at a later date, he must take into account the tax he must pay when selling the security. Furthermore, the price at which he can sell the stock will be reduced because the next investor will also take into account the tax she must pay when selling the security. Each investor must take into account the tax paid on all future sales.[7] Since the average holding period on the New York Stock Exchange is two years, an STT would have to be paid every other year.[8]

In Sweden, stock prices fell following the announcement of an STT. Umlauf (p. 231) reported that stock prices fell 2.2 percent on October 24, 1993, the day the initial tax was announced, and fell an additional 0.8 percent on March 11, 1986, the day an increase in the tax rate was announced. These declines probably reflect only part of the full effect of the tax, since the tax was anticipated. During the month before the official announcement of the tax, stock prices fell 5.3 percent.

STT and the cost of capital. Another harmful side effect of an STT would be an increase in the cost of capital. With falling stock prices, it would be more costly for firms to raise capital through issuing stock. Under reasonable assumptions, an STT could raise the cost of equity capital by as much as 70 basis points.[9]

Such an increase in the cost of capital would reduce the amount of business fixed investment. McCauley and Zimmer reported that in 1988 the cost of capital for equipment and machinery with a life of 20 years was 11.2 percent for the United States, 7.2 percent for Japan, 7.0 percent for Germany, and 9.2 percent for the United Kingdom. An increase in the cost of capital would make it more expensive to raise funds in the stock market. As a result, there would be fewer investment projects that could justify such a high cost of capital, ultimately lowering productivity and living standards.

Ineffective tax

The final argument against imposing a tax on securities transactions is that such a tax would likely be ineffective. The tax could be avoided and would be difficult to administer. As a result, its effects on raising revenue are probably overestimated.

Avoiding STT. According to opponents, an STT would be easy to avoid. In designing tax policy, it is important to remember that investors will always try to avoid taxes. Judge Learned Hand, writing in 1934, put it this way:

> Anyone may so arrange his affairs that his taxes shall be as low as possible; he is not bound to choose that pattern which will best pay the Treasury; there is not even a patriotic duty to increase one's taxes.[10]

By advocating a broad-based tax, proponents of an STT have attempted to meet the first rule of tax policy: tax products that have few substitutes. When a good is taxed, there is an incentive to buy close substitutes that are not taxed. For example, a tax on navel oranges would not be good tax policy because it could be avoided by switching to juice oranges, orange juice, or apples. It is for this reason that a broad-based tax is generally preferred to a narrow tax.

However, individuals could avoid even a broad-based STT by changing what and where they trade. Investors could change what they trade by switching, to the extent possible, from securities that are taxed to securities that are not taxed. They could also switch from securities that are highly taxed to those that are lightly taxed. Furthermore,

it is likely that financial firms would design new securities that are exempt from the STT. Given that the tax would be a large share of the transaction costs of participating in financial markets, there would be an incentive to introduce securities that are not taxable.

Avoidance of such a tax is not just a theoretical possibility, it has happened before. Many past financial innovations appear to be the market's response to government regulations. For example, Hester studied seven major innovations in the 1960s and 1970s, and concluded that "the innovations reduced distortions that arose from interest rate ceilings, reserve requirements, and other regulations" (p. 167). Rowe argued that much of the growth in the commercial paper market in the 1960s and 1970s was due to Regulation Q ceilings on interest rates. Finally, in discussing the incentives for development of the Eurodollar market, Goodfriend noted that banks could avoid regulations by using the Eurodollar market.

Not only might investors change what they trade, they might also change where they trade. Small investors may find it difficult to move to foreign markets, but large institutional investors can easily make that move. It is even easier for foreign investors to move to foreign markets.

Again, the Swedish experience is instructive. Their tax was 1 percent beginning in 1984 and 2 percent beginning on July 1, 1986. Following the tax hike, 30 percent of the trading volume of Swedish stocks moved to London. By 1990, 50 percent of the trading of Swedish stocks had moved to London (Umlauf, pp. 229-230). In addition, the Swedish market for interest rate options disappeared following the imposition of an STT.

In the United States it would be easy to escape the tax by trading U.S. securities in London, where large amounts of U.S. stocks are already traded. To counteract this response, the tax could be imposed on U.S. investors who trade U.S. securities in other countries. However, investors might then choose to invest in foreign securities that are close substitutes for U.S. securities. Moreover, foreign markets could create synthetic securities that mimic the S&P 500 or other U.S. securities.

For similar reasons, taxing futures transactions could put the U.S. futures market at a significant disadvantage. Edwards (p. 83) estimated that a 0.5 percent tax applied to the notional value of a stock index futures contract would increase transaction costs for a round-trip trade in the futures market by 2,200 percent. By increasing transaction costs so much, many investors might switch to foreign futures markets. And since futures markets throughout the world are characterized by low transaction costs, the incentive to switch to foreign markets could be great. Moreover, this is not an idle concern, as U.S. futures markets compete head-to-head with foreign futures markets. For example, eight of the top ten U.S. futures contracts are also traded on foreign markets (Edwards, pp. 85-86). And these eight contracts are large. According to Edwards, if half of the annual trading in those eight futures contracts moved to foreign markets, the volume on U.S. futures markets would decline by one-third.

Overestimating revenue. An STT would unquestionably raise some revenue, but the amount might be less than expected. The overestimates arise because the tax base would decline as security prices and the volume of trading decline. Trading volume would decline for three reasons: a tax induces investors to trade less often, some trading would move abroad, and new securities not subject to the tax would be introduced. Hubbard (p. 989) conservatively estimated that an STT on stock transactions could reduce trading volume by 25 percent. Furthermore, an STT on futures transactions could reduce trading volume by 88 percent (Hubbard, p. 992). In Sweden, the Finance Ministry initially estimated revenues at 1,500 million Swedish kronor (SEK) per year. In contrast, the realized revenue averaged only SEK 50 million per year, with a maximum of SEK 80 million in 1989 (Froot and Campbell, p. 18).

STT opponents also point out other significant

costs. For example, the cost of implementing, administering, and ensuring compliance could be significant. In addition, the cost spent to avoid the tax must be taken into account. Lawyers and financial analysts would devote considerable time and energy to designing new securities to avoid the tax. Since this is solely a result of the tax, it should be considered another cost of the tax. Given the salaries of lawyers and financial analysts, this cost could also be significant. After taking account of these costs and the likely avoidance, the net revenue gained from an STT might fall far short of the $58 billion estimated by the Congressional Budget Office.

CONCLUSIONS

The case for an STT has not been proven. The benefits of the tax do not necessarily exceed the cost. While the proponents have identified several possible benefits, serious questions remain about whether the benefits would be achieved. As Richard Darman, the Director of the Office of Management and Budget during the Bush Administration, stated: "[An STT] has no evident justification. It could cause distortions in the financial markets and could cause many investors, particularly institutions, to shift their equity trading away from organized exchanges and to foreign countries" (Grundfest and Shoven, p. 441).

An STT will not necessarily reduce volatility. Advocates argue an STT would reduce volatility by eliminating noise trading, which adds volatility to the market. Opponents argue an STT could just as easily raise volatility. Opponents also point to the Swedish experience and to econometric evidence, both of which show little effect of an STT on volatility.

There is no clear evidence that too many resources are wasted on financial analysis. Advocates claim that too many resources are spent on trading claims to financial assets, rather than on creating wealth. Opponents, on the other hand, believe that by creating and trading financial derivatives, financial markets provide important benefits to society.

While an STT would raise needed revenues, the revenue gains may be overestimated. Advocates argue that even if an STT had no benefits, the tax could be useful because the $58 billion it might raise in the first five years could be used to reduce the government's large budget deficit. However, opponents point out that since investors will try to avoid the tax, the revenue gains could be substantially less than what proponents estimate.

In addition to disputing the benefits of an STT, opponents believe that the tax has several harmful side effects. It would penalize all investors—not just short-term traders, noise traders, or financial analysts. Furthermore, the cost of capital would likely rise, reducing the amount of investment.

Furthermore, if the tax is such a good idea, why are many countries reducing or eliminating their taxes? Sweden, Finland, and Taiwan have recently reduced or eliminated their taxes, while Australia, Japan, and the U.K. are considering reductions in their taxes (Froot and Campbell, p. 1).

Finally, London is one of the biggest backers of a U.S. transaction tax. The London financial press believes that a U.S. tax would be good for business in London. In a story about a U.S. STT, a London *Financial Times* headline read "City Sees Advantages in U.S. Levy on Volume." The story goes on to say that "if the U.S. administration decides to go ahead with a securities turnover tax, it will have strong support in the City of London" Grundfest, p. A10). Obviously, London believes that it will get some additional business if the United States adopts an STT.

Given the doubts and uncertainties, the burden of proof for adopting an STT remains with the advocates. As yet, the case for an STT has not been proven.

APPENDIX

THE RELATION BETWEEN HOLDING PERIOD AND RETURN

In all examples, assume a $100 investment, no inflation, and that investors demand a real after-tax rate of return of 4 percent.

No taxes.

With a 4 percent real rate of return, a $100 investment yields $104.

A 0.5 percent tax and one-day holding period.

An interest rate of 286.71 percent (at an annual rate) yields a 4 percent after-tax rate of return. A 286.71 percent annual return equals a 0.5176 percent return over one week. A $100 investment yields $100.5176 in one week (= $100 * 1.005176). The tax is $0.50259 (= 0.005*$100.5176), so the after-tax return is $100.015. Therefore, the annualized after-tax rate of return is 4 percent (= [($100.015/$100)^{262} - 1] * 100 = 4 percent).

A 0.5 percent tax and a five-year holding period.

An interest rate of 4.1 percent yields a 4 percent after-tax rate of return. A 4.1 percent annual return yields $122.28 after 5 years. The tax is $0.61 (= 0.005*$122.28), so the after-tax return in $121.67. Therefore, the average annual after-tax rate of return is 4.0 percent (= [($121.67/$100)$^{(1/5)}$ - 1] * 100 = 4 percent).

A general formula.

The general formula is now easy to state. Let i be the interest rate, expressed at an annual rate, and let τ be the tax rate. Let h be the holding period, defined so that $h = 52$ means a one-week holding period and $h = 0.2$ means a five-year holding period. Then, assuming a 4 percent after-tax rate of return is required, the following arbitrage condition must hold:

$$[(1 + i)(1 - \tau)^h - 1] = .04 .$$

Therefore, the before-tax rate of return is given by:

$$i = \left[\frac{1.04}{(1-\tau)^h} - 1\right] \times 100 .$$

ENDNOTES

[1] Hubbard gives a brief discussion of the history of securities transaction taxes in the United States.

[2] Engel and Morris discuss the benefits and characteristics of efficient markets.

[3] In addition, Becketti and Sellon show that normal volatility in the stock market has been relatively constant from 1920 to 1988. In contrast to normal volatility, the frequency of large one-day price changes was much higher in 1985-87 than in previous periods. They also show that interest rate volatility increased in the early 1980s. Volatility of short-term rates has since declined, but volatility of long-term rates has remained high.

[4] The rank correlation statistic is Fisher's exact test. A typical correlation coefficient measures the association between the value of the tax rate and average price change. The rank correlation coefficient measures the association between the rank of the tax rate and the rank of the average price change. The p-value is 0.85.

[5] However, the results are not unambiguous. For example, the ratio of weekly to daily volatility declines, suggesting that taxes may reduce the effect of traders that simply follow trends in the stock market.

[6] All figures come from the *Mutual Fund Fact Book.*

[7] Thus, there are two opposing forces on stock prices. The direct effect of the tax is to make stock prices fall. However, if volatility falls, the fall in risk would make stock prices rise, offsetting the fall in prices. Which effect dominates? If volatility is unaffected, the direct effect dominates and prices fall. If volatility falls, the direct and indirect effects offset each other and prices could rise or fall. However, evidence cited earlier suggests that the relation between volatility and transaction taxes is weak, at best. Therefore, the direct effect is likely to dominate and so prices are likely to fall.

[8] While not everyone holds stocks, many do. Based on the 1989 Survey of Consumer Finances, Heaton and Lo (Table 13) report that 15 percent of households earning less than $30,000 held stock, 46 percent of households earning between $30,000 and $100,000 held stock, and almost 80 percent of households earning more than $100,000 held stock.

[9] The price-earnings ratio is approximately 11.7, implying a required role of return of 8.55 percent. Assuming the corporate tax rate is about 36 percent, the cost of capital is 13.36 percent. If prices fell 5 percent, the price-earnings ratio would fall to 11.15, the required rate of return would rise to 9 percent, and the cost of capital would rise to 14.06 percent. Therefore, the cost of capital rises from 13.36 percent to 14.06 percent, an increase of 70 basis points.

[10] *Helvering v. Gregory*, 69 F.2d 809, 810 (2d Cir. 1934), *Aff d.* 293 U.S. 465 (1935), as quoted in Grundfest and Shoven, p. 423.

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Will the Shift to Stocks and Bonds By Households Be Destabilizing?

By Donald P. Morgan

In the last decade, households have tended to shift out of bank deposits and money market funds and into stocks and bonds. Some analysts and journalists worry that the shift could be destabilizing to the economy and financial markets. Consumption spending, it is argued, might fluctuate more because households have invested in riskier stocks and bonds. Financial markets also could be more volatile because households might behave as short-sighted novices who will sell assets in panic at the first dip in the market. In addition, the pension and mutual funds through which households invest tend to trade more actively than households. The increasing role of such heavy traders, it is feared, might increase financial market volatility.

This article contends such concerns, though understandable, are exaggerated. The first section shows that the shift into stocks and bonds primarily indicates aging American workers are saving for retirement. The second section shows that portfolio shifts in the past did not destabilize consumption, and argues that new investors this time around will not destabilize financial markets. Households, for their part, are investing for long-run goals and therefore are likely to ride out short-term bumps in the market. Moreover, the role of institutional investors in the market has been trending up for 30 years without any accompanying trend in the volatility of stock prices.

Donald P. Morgan is a senior economist of the Federal Reserve Bank of Kansas City. Stephen Ravel, a research associate at the bank, helped prepare the article.

THE SHIFT IN HOUSEHOLD PORTFOLIOS

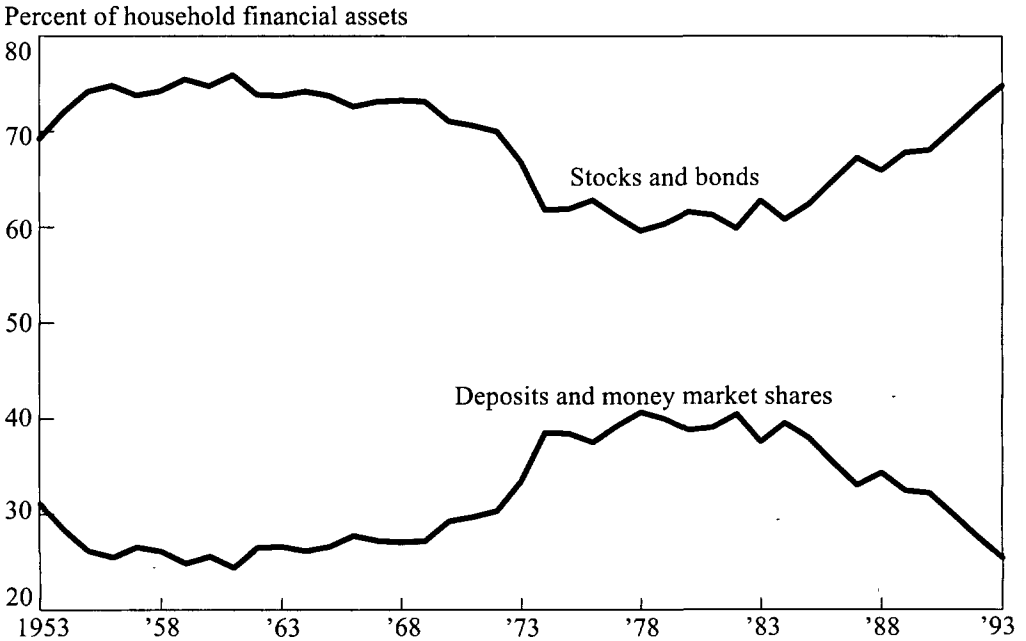
American households own a large portfolio of financial assets divided among safe assets, such as bank deposits and money market shares, and riskier assets, such as stocks and bonds. Over the last decade, some households have assumed riskier portfolios by substituting stocks and bonds for bank deposits and money market shares.

Dimensions of the shift

Even though the shift into stocks and bonds has drawn attention only recently, the trend began in the early 1980s (Chart 1).[1] The share of financial assets invested in stocks and bonds increased from 60 percent in 1982 to about 75 percent in 1993, the highest share since 1961. The share of financial assets invested in deposits and money market shares decreased over that period from 40 percent to 25 percent, the lowest share since 1961.

Chart 1

Households Have Shifted into Stocks and Bonds



Note: Included are direct holdings by households and indirect holdings in mutual funds, pensions, life insurance, and trust funds; see endnote for details.
Source: Flow of Funds Accounts, Federal Reserve System.

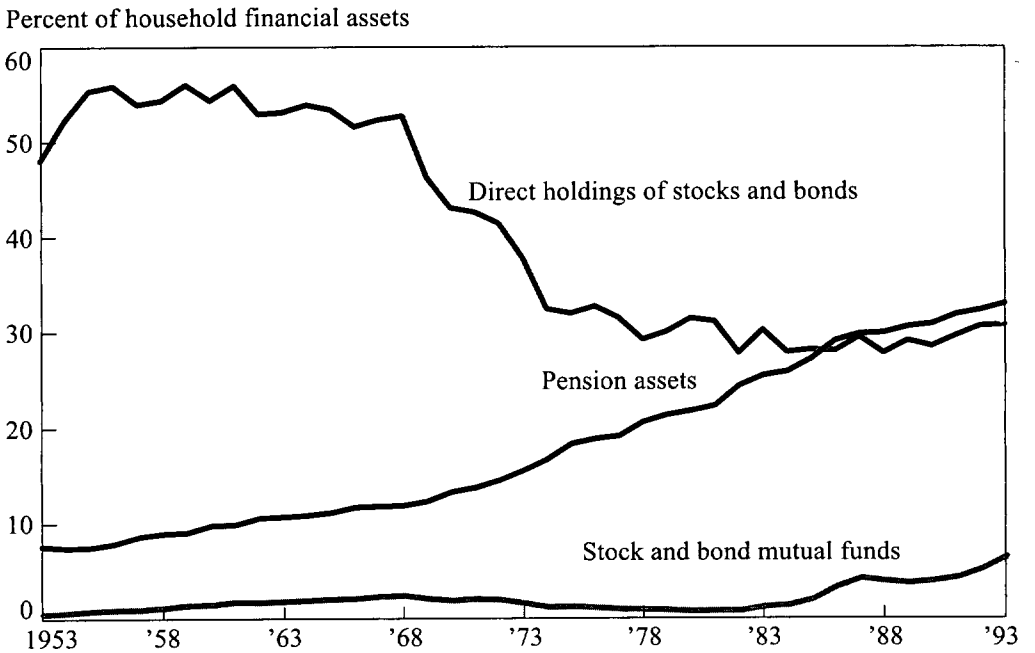
Over the last decade, households have invested mainly through intermediaries, such as pension and mutual funds, rather than buying stocks and bonds directly in the market (Chart 2). Stocks and bonds held in pension funds have increased steadily since the 1950s. Stocks and bonds held in mutual funds, while nearly flat until 1983, have grown dramatically since that time. Direct holdings of stock and bonds, in contrast, were flat over the last decade.

The preference for investing through intermediaries over investing directly is a recent phenomenon. Households in the 1950s and 1960s chose to invest directly in the market, even though stock and bond mutual funds were available. Households now hold about the same share of their financial assets in stocks and bonds as then, but hold a much smaller share directly.

U.S. residents, including households, have also invested more recently in foreign stocks and bonds (Chart 3). Although still a small share of total financial assets, foreign stocks and bonds now represent 4 percent of all household stock and bond holdings, with much of this growth occurring recently. International and global mutual funds are among the fastest growing classes of mutual funds and account for a large share of the spurt in mutual funds in the 1990s (Mutual Fund Fact Book).

Chart 2

Households Have Invested Through Pension and Mutual Funds



Source: Flow of Funds Accounts, Federal Reserve System.

Risks of the shift

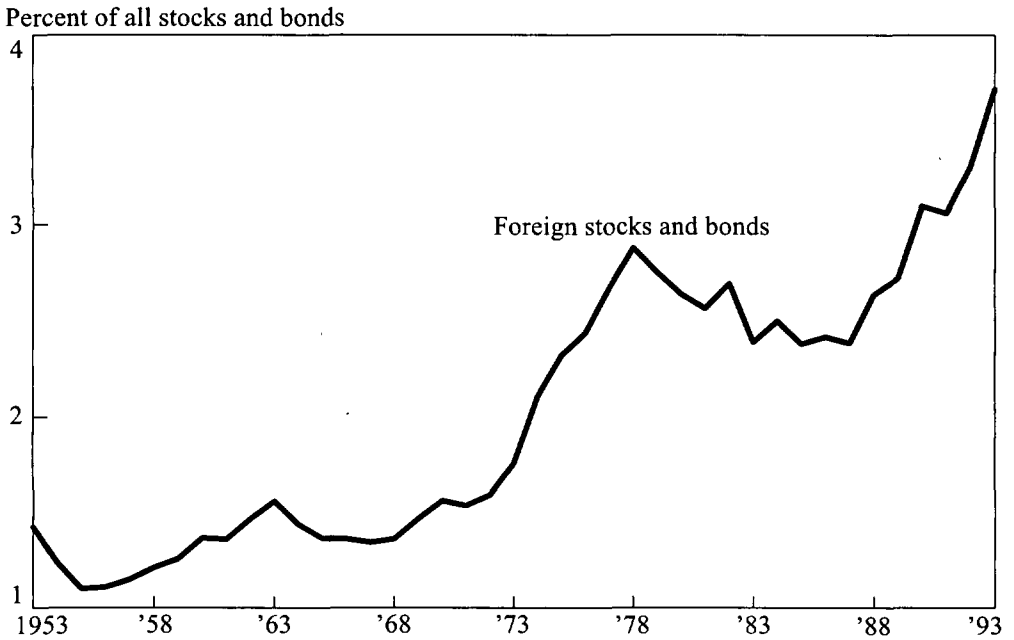
Households substituting stocks and bonds for bank deposits and money market shares have increased the riskiness of their portfolios. Stocks and bonds are inherently riskier than either bank deposits or money market shares. Bank deposits up to $100,000 are perfectly safe because they are federally insured. Larger bank deposits and money market shares, though not insured, are still safer than stocks or bonds.

The recent preference for diversified portfolios of pension and mutual funds mitigates, but does not offset, the increase in risk.[2] By pooling the resources of many investors, these funds enable individuals to invest in many different securities. Investing in many securities is usually safer than investing the same amount in only one of those securities because a fall in one security's price may be mitigated by a rise in the price of another. Still, even a perfectly diversified portfolio of stocks and bonds is riskier than a portfolio of bank deposits and money market shares, which is essentially risk free.

The trend over the last decade to defined contribution pension plans also increases the portfolio risk for some households. The share of all pension assets invested in defined contribu-

Chart 3

U.S. Residents Have Invested in Foreign Stocks and Bonds



Note: U.S. residents include households and corporations.
Source: Flow of Funds Accounts, Federal Reserve System.

tion plans increased from 30 percent in 1982 to about 43 percent in 1990 (Private Pension Plan Bulletin). Under such plans, payments to retirees are determined by the value of assets in the pension. The risk of declining asset prices is thereby borne by the pension holders themselves. Under the alternative of defined benefit plans, in contrast, payments to retirees are independent of the value of pension assets. The company sponsoring the plan, therefore, bears the risk of declining asset prices. This risk is shared by the federal government because defined benefit plans are insured by the Pension Benefit Guaranty Corporation. Given these differences between the two types of plans, the households investing through defined contribution plans are bearing more risk.

Investing abroad might also increase portfolio risk because the prices of foreign stocks and bonds fluctuate more than in the United States. For example, the standard deviations of monthly stock and bond returns in the United States in the 1980s were only 4.8 percent and 3 percent, compared with 6.6 percent and 4.6 percent on average in Japan, Germany, Britain, and Canada (Tesar and Warner).[3] In addition, foreign investments entail exchange rate risk because foreign assets are usually purchased with that country's currency. After selling the asset, U.S. investors must convert the foreign currency to dollars. Depreciation of the foreign currency against the dollar, therefore, could reduce the return on the investment.

Reasons for the shift

Whether the shift into stocks and bonds will be destabilizing depends in part on why households shifted in the first place. If households are investing for short-term gains, the shift may pose risks to the economy and financial markets. Such risks appear more remote, however, if households are investing for the long term. In fact, households appear to have shifted into stocks and bonds primarily because they are saving for retirement as they age. Other possible reasons for the shift—the availability of mutual funds, the steep yield curve, and changes abroad—appear to have been incidental.

Mutual funds. Some suggest that the availability of diversified mutual funds has led households to invest more in stocks and bonds. However, stock and bond funds have been available since the 1920s, so their availability cannot explain the portfolio shift over the last decade (Mutual Fund Fact Book). Households' demand for stocks and bonds increased in the early 1980s for some other reason, which in turn increased their demand for mutual funds.[4] To reverse the story places the cart before the horse.

Steep yield curve. Another possible reason for the shift into stocks and bonds is the unusually large spread between long-term bond yields and short-term interest rates in the 1990s (Chart 4). The spread was negative on average in 1989 and then steepened dramatically until it peaked at a record of 3.5 percentage points in 1992.[5] During that period, short-term interest rates fell relative to long-term rates as the Federal Reserve eased its monetary policy.[6] Relative yields influence investors, of course, so the steep yield curve is an obvious possible explanation for the shift into longer term stocks and bonds.

The steep yield is only a partial explanation, however, for two reasons. First, although stock and bond holdings began increasing about the same time the yield curve began steepening in the early 1980s, stock and bond holdings continued increasing even when the yield curve flattened over 1986-89. Second, this explanation takes the high yield on long-term assets as given. Doing so is fine when explaining why an individual is demanding long-term assets because relative yields are not affected by an individual's demand. Taking yields as given is unsatisfactory in explaining aggregate portfolio shifts, however, because such shifts do affect yields.[7] A more fundamental reason is needed to explain why households have been demanding stocks and bonds.

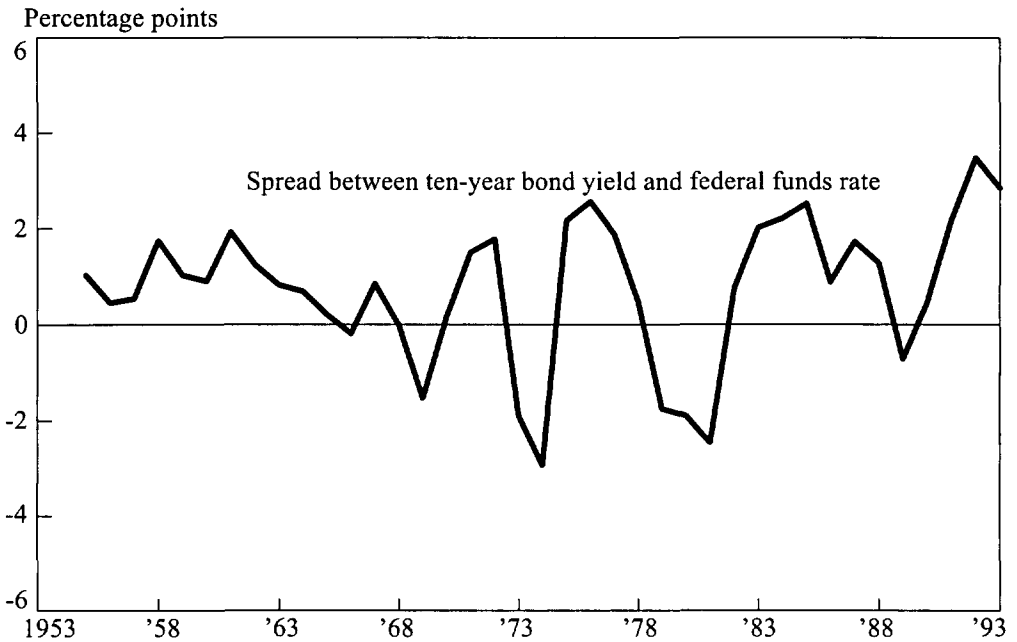
Changes abroad. Deregulation, rapid economic growth, and political and economic reform abroad have increased U.S. investors' demand for foreign assets. Developed countries around the world deregulated financial markets in the 1980s by lifting ceilings on interest rates and relaxing controls on foreign ownership and exchange rates (Maxwell and others). Rapid economic growth in the newly developed countries along the Pacific Rim also attracted U.S. investors. And, political and economic reforms in Latin America in the late 1980s and early 1990s, together with the resolution of the debt crisis, have encouraged U.S. foreign investment.

All these fundamental changes increased U.S. households' demand for foreign stocks and bonds. Nevertheless, such assets still comprise too small a share of all stocks and bonds to explain the overall portfolio shift into stocks and bonds.

Aging population. Demographic shifts are another explanation for portfolio shifts. As young workers in their 20s and early 30s enter the labor force, they are at the stage in their life when they are starting families and are borrowing to buy and furnish houses. To the extent such young households save at all, they are inclined to hold very safe, short-term assets, such as bank deposits, which are readily convertible to cash and then into goods. But as workers age and begin to contemplate retiring, they save more and their investment horizon stretches. With longer horizons, they are willing to accept greater short-run volatility in exchange for long-term returns, and so shift toward stocks and bonds.

Chart 4

The Yield Curve Steepened in the 1990s



Source: Board of Governors, Federal Reserve System.

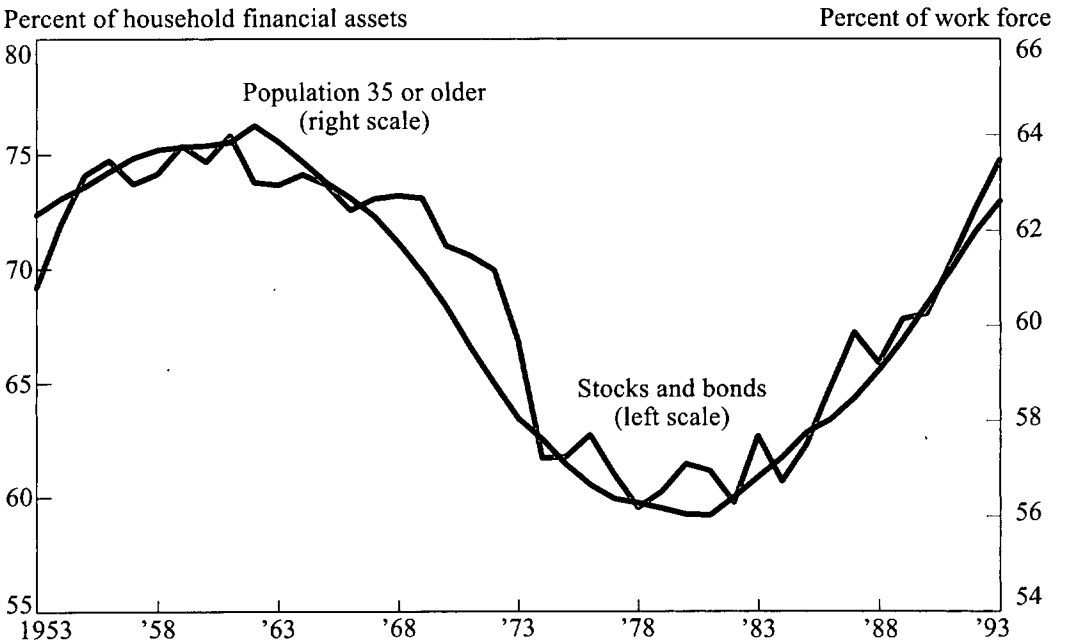
In fact, the share of household assets in stocks and bonds follows very closely the share of workers aged 35 or older (Chart 5). Both shares peaked in the early 1960s and began declining as the first wave of baby boomers entered the labor force. The shift out of stocks and bonds accelerated in the early 1970s as high energy prices and inflation squeezed business profits and dividends. The portfolio shift would have continued regardless, however, as baby boomers continued to throng the labor force in the 1970s. By the early 1980s, most baby boomers had turned "30 something" and so began migrating from liquid deposits into higher risk, but higher yielding, stocks and bonds.

Demographic shifts, by themselves, explain most of the portfolio shifts both over the last 40 years and since 1982. More precisely, 91 percent of the yearly changes in the share of household financial assets in stocks and bonds can be explained by statistically regressing that share against the share of workers 35 or older. Plotting each share in each year against the regression line estimated over 1953-93 reveals that holdings of stocks and bonds have risen as expected from 1983 to 1993, given the aging work force (Chart 6). This close fit indicates that demographic shifts were the primary reason for the portfolio shift. Other possible reasons—the availability of mutual funds, the steep yield curve, and changes abroad—appear to have been incidental at most.[8]

Despite the long-run investment goals of households, some analysts and journalists have

Chart 5

Portfolio Shifts Track Demographic Shifts



Source: Flow of Funds Accounts, Federal Reserve System; U.S. Census Bureau.

conjured alarming scenarios about the destabilizing impact of the portfolio shift. With so much wealth invested in stocks and bonds, they worry, a dip in the market could stagger consumption and the aggregate economy (Kaufman; Hale; Bleakley). The new investors could also destabilize financial markets by selling assets in panic when the market dips, turning the dip into a crash (Koretz; Kuhn; Wayne).

IMPLICATIONS FOR STABILITY

Concerns about increased volatility of consumption and financial markets seem exaggerated. Portfolio shifts in the past did not destabilize consumption and new investors are not likely to destabilize financial markets. Moreover, households' foreign investments, by diversifying risks abroad, could help stabilize consumption.

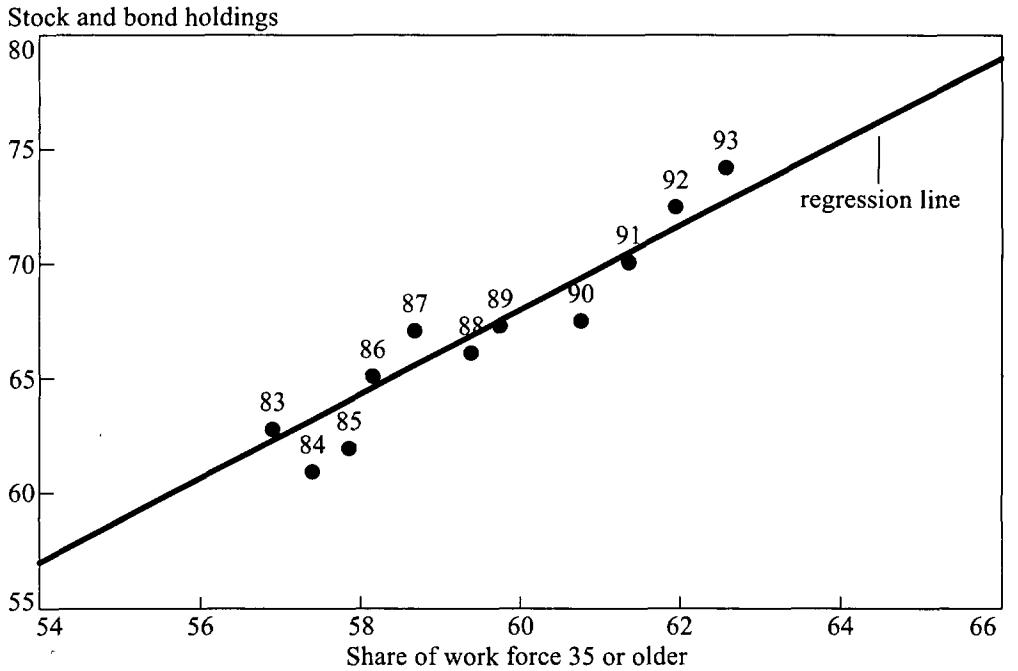
Portfolio shifts and consumption

The portfolio shift over the last decade is not the first such shift, only the most recent. Households also began a shift into stocks and bonds in 1953, and by 1955 had invested more of their financial wealth in stocks and bonds than they have today. For the next 15 years households invested about as much of their financial wealth in stocks and bonds as they have currently. In the early 1970s,

Chart 6

Stock and Bond Holdings Have Risen as Expected, Given the Aging Work Force

Percent of household financial assets



Note: The regression line was estimated over 1952-93.
Source: Flow of Funds Accounts, Federal Reserve System, Author's calculation.

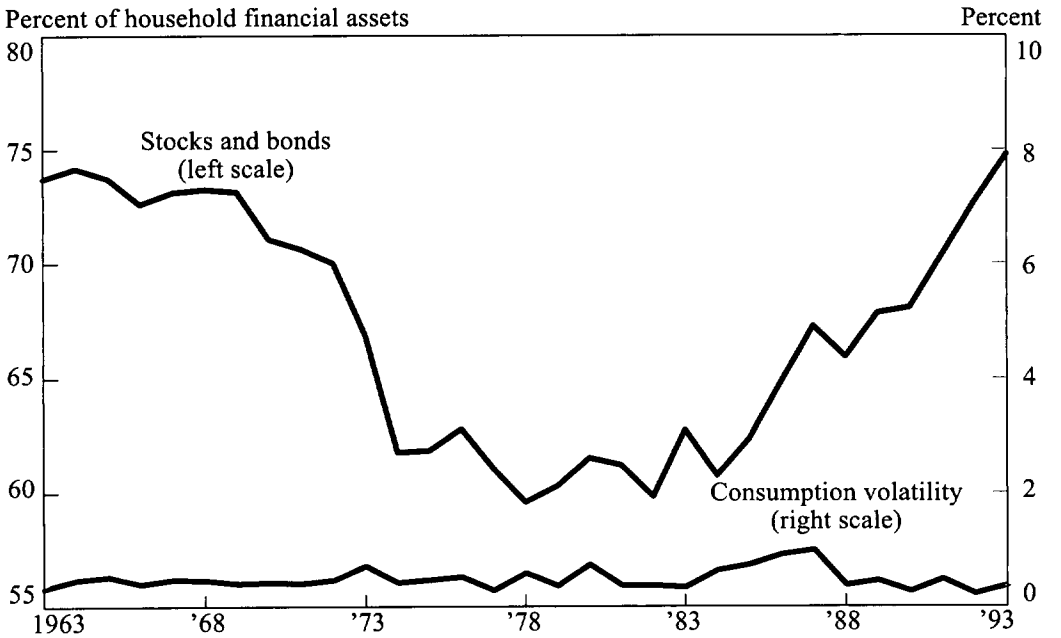
households began shifting out of stocks and bonds, and they invested only a small share in stocks and bonds until they shifted back in the early 1980s. These past portfolio shifts allow a simple test of whether consumption spending fluctuates more when households invest heavily in stocks and bonds.

The volatility of consumption is found to be unrelated to the share of financial assets invested in stocks and bonds over the last three decades (Chart 7). Consumption growth was actually a bit less volatile over 1963-72 when the share was high than over 1973-82 when the share was low. And while volatility increased a little in the mid-1980s after households began shifting back into stocks and bonds, it has since declined to its historical average.[9] The stability of consumption during past portfolio shifts into stocks and bonds should assuage fears that the recent shift will destabilize consumption spending.

One possible reason why shifts into stocks and bonds have not destabilized consumption is that consumption is not very sensitive to changes in wealth. Researchers estimate that, as a rule, households reduce their current consumption by only about 5 cents for every dollar decline in their wealth (Brayton and Mauskopf).[10] Consistent with this rule, Garner estimates consumption fell by only about $40 billion after the stock market crashed in 1987, which cost households about $750 billion in wealth.[11] Because households now own more stock than in 1987, a proportionate drop

Chart 7

Portfolio Shifts Have Not Destabilized Consumption



Note: Consumption volatility is the standard deviation of monthly growth rate of real personal consumption expenditures.
Source: Flow of Funds Accounts, Federal Reserve System, Author's calculation.

in the market today would cost households about $1.3 trillion in wealth. In this event, according to the rule, consumption would fall by only about $66 billion, or about 1 percent of GDP.

Another possible reason why shifts to stocks and bonds do not increase the volatility of aggregate consumption is that such shifts seem to merely reallocate risk among households. Except for foreigners' small share, U.S. households collectively own all the businesses in the economy and so must ultimately bear the aggregate risk of all those businesses. The type of financial claims households have against businesses—stocks, bonds, or deposits—merely allocates that risk across households. Stockholders bear the most risk, bondholders bear less risk, and deposit holders bear the least risk.

Substituting one claim for another seems to merely reallocate risk across households without increasing the amount of risk in aggregate.[12] Suppose one household uses its bank deposit to buy newly issued stock in a firm. That household now shares risk with the firm's previous shareholders, whose share of risk declines when the firm repays its bank loan with the proceeds from stock sales—the loan funded with the first household's deposit.

Similarly, the shift out of federally insured bank deposits and defined contribution pension plans tends to reallocate risk across households because households ultimately pay the liabilities of the government with taxes. The shift out of insured assets reduces the liabilities of the agencies

that insure those assets, which in turn reduces the risk that taxpayers must bail out those agencies. Such risks are real and substantial, as illustrated by the savings and loan bailout and by the current deficit of the Pension Benefit Guaranty Corporation (Becketti).

This reasoning, and the evidence before it, suggests the recent portfolio shift merely reallocates risk to new investors. This reallocation itself might increase aggregate risk if, however, new investors destabilize financial markets.

Will new investors destabilize financial markets?

Some analysts and journalists are concerned that the households now investing in stocks and bonds will destabilize financial markets. Others worry that pensions and mutual funds will increase volatility because these institutions trade more heavily than households.

Household investors. Some observers portray new household investors as short-sighted novices who are misinformed about the risks they face. The image of new investors as short-sighted speculators possibly comes from the suspicion that households began buying stocks and bonds recently because of the steep yield curve and booming stock market. This suspicion breeds another: the recent investors are novices because they have not yet experienced a normal market correction. Seeming to support the suspicion that new investors are novices is a survey finding that two of every ten people who purchased a stock or bond mutual fund between July 1991 and July 1993 were first-time buyers.[13] These novices may even be misinformed because, if they purchased stock and bond funds from a bank, they may think the mutual fund is federally insured.

This profile of new household investors seems distorted for several reasons. First, households appear to have shifted to stocks and bonds to save for retirement, not because they are short-sighted speculators. The long-term investment goal of households suggests they are prepared to ride out short-term drops in the market. Second, the new investors are not necessarily novices. Because households began shifting their portfolios back in 1982, the 1987 stock market crash taught them the risks involved. Moreover, the fraction of first-time buyers in recent years may be no higher than in the 1950s and 1960s.[14] Recent investors are certainly not young or uneducated: the survey of recent stock and bond fund investors found their median age was 44 and over half had college degrees. Third, only a small fraction of recent investors could mistakenly believe their stock and bond funds were federally insured. The same survey found less than 10 percent of recent investors purchased such funds from a bank, and presumably only a fraction of those investors were misinformed.[15]

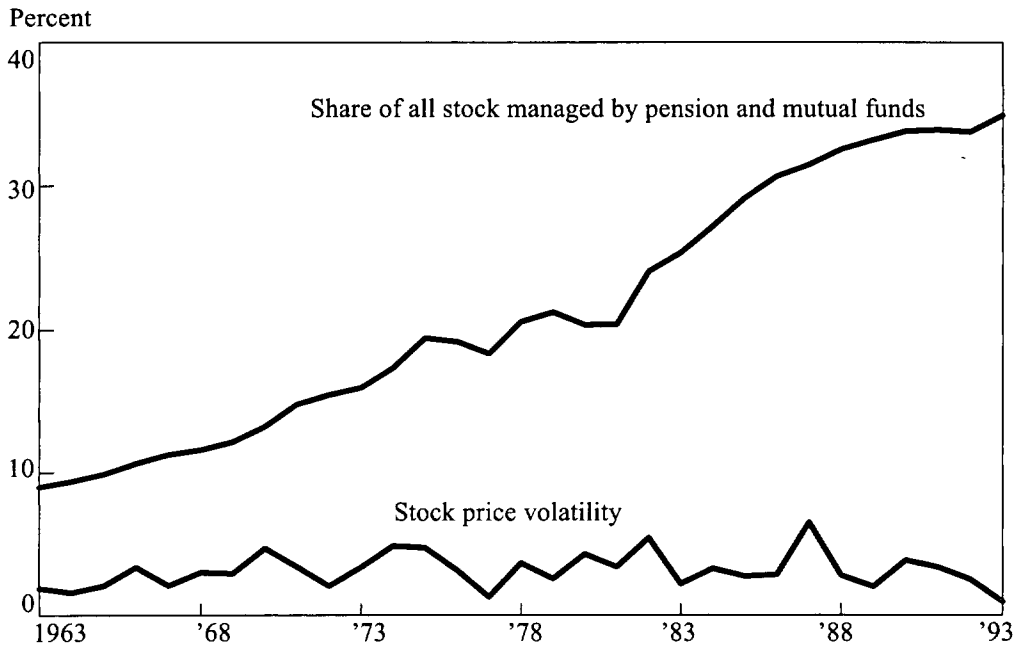
For these reasons, a more accurate profile suggests the new household investors are middle-aged, well-educated investors pursuing a long-term investment goal. Such investors seem unlikely to behave in a manner that would destabilize financial markets.

Institutional investors. Some analysts also worry that pensions and mutual funds could increase market volatility because these increasingly prominent institutions trade more actively than households. Institutional investors do indeed trade, or turn over, their assets more often than households (Froot, Perold, and Stein). At the rate households traded in the 12 months ending in 1990, for example, they would take almost five years to turnover their portfolios. Pensions and mutual funds, in contrast, would have turned over their portfolios in about two years at the rate they traded over that period. The more prominent market role of such heavy traders could therefore increase trading volume.

The role of institutional traders has been trending up for 30 years, however, without noticeably increasing the volatility of stock prices (Chart 8). The standard deviation of the real growth rate

Chart 8

Institutional Investors Have Not Destabilized Stock Prices



Note: Stock price volatility is the standard deviation of the real, monthly growth rate of the S&P 500.
Source: Flow of Funds Accounts, Federal Reserve System, Author's calculation.

of stock prices every month, measured by the S&P index, has cycled up and down over this period without any trend. This simple fact should help dispel fears that institutional investors will destabilize financial markets.

Foreign diversification and consumption

The substitution of foreign for domestic stocks and bonds could potentially stabilize consumption. This claim seems paradoxical, given the greater volatility and the exchange rate risk entailed by foreign investments. Despite those risks, investing abroad can stabilize consumption if fluctuations abroad mitigate fluctuations here.

The benefit of diversifying abroad depends on the degree of correlation between markets in the United States and abroad. A negative correlation is most beneficial because increases abroad tend to cancel decreases here. Foreign diversification is still beneficial, however, as long as markets are not perfectly correlated—which they are not. The average correlation of real, quarterly stock returns over 1975-92 in the United States, Japan, Britain, France, Germany, and Canada was only one-half—which means that a dollar decline in the U.S. market is associated with only a 50 cent decline on average in those foreign markets (French and Poterba). The stock market crash in 1987 illustrates this low correlation. The Standard and Poor's index fell 23 percent over the fourth

quarter of 1987, while the Morgan Stanley foreign index fell only 11 percent, about half as much.[16]

Because of this low correlation, researchers agree that foreign diversification can stabilize wealth despite the additional exchange rate risk (Obstfeld). Tesar and Warner calculate that investing in the United States, Japan, Britain, Germany, and Canada—with each country weighted according to its market share of all markets—was safer over the 1980s than investing in just U.S. stocks or bonds, notwithstanding exchange rate risk. Moreover, investors can hedge against exchange rate fluctuations with a futures contract that guarantees a certain exchange rate, as many mutual funds do.

CONCLUSION

Concerns that the shift into stocks and bonds by households will destabilize aggregate consumption or financial markets seem exaggerated. Consumption remained stable in the 1950s and 1960s when households had as much invested in stocks and bonds as they do today. In addition, new investors are not likely to destabilize financial markets. Households seem to be investing for retirement and therefore are likely to ride out short-run bumps in the market. And the role of institutional investors in the market has been trending up for 30 years without any accompanying trend in the volatility of stock prices.

ENDNOTES

[1] The Federal Reserve's Flow of Funds measures bonds at book value and stocks at market value. Bonds include all credit market instruments held by households. Holdings of each type of asset (stocks and bonds versus deposits and money market shares) include direct and, as best as possible, indirect holdings through mutual funds, life insurance companies, pensions, and bank trusts. Holdings through private pensions, state and local pensions, and bank trusts were decomposed into each type of asset using tables L123, L124, and L133 from the Flow of Funds Tables, September 1993. It was not possible, however, to decompose holdings through mutual funds, life insurance companies, and federal pensions so those holdings were assumed to be invested only in stocks and bonds; that assumption is reasonable because those institutions hold relatively small amounts of deposits and money market shares. Holdings of each type of asset are expressed as a percentage of household financial assets excluding security credit, miscellaneous assets (direct and indirect), and noncorporate equity.

[2] Some analysts claim that the shift from direct stock and bond holdings to domestic mutual funds will stabilize aggregate consumption because mutual funds are better diversified. This argument is a fallacy of composition; individuals' consumption may be more stable following such a shift, but aggregate consumption is unaffected because variations in individuals' consumption cancel in aggregate.

[3] These are the standard deviations of excess returns: the monthly return on stocks or bonds less the holding period return on a 30-day Treasury bill or Eurorate.

[4] The growing popularity of mutual funds over direct investment could reflect several factors. Households may better understand the benefits of diversification now. Mack discusses several other possible reasons. Increased advertising by mutual funds after the SEC adopted rule 12b-1 in 1980, which permits mutual funds to pay for advertising with their assets, may have increased their market share. The introduction of IRA and Keogh accounts in 1982 may also have favored mutual funds to the extent mutual funds are more convenient for opening such accounts. The popularity of mutual funds cannot reflect declining costs, however; from 1982 to 1992 expenses of domestic stock funds rose from 1.08 percent of assets to 1.49 percent, while expenses of bond funds remained constant at about 0.9 percent of assets (Mack).

[5] These figures are annual averages.

[6] Among short-term assets, bank deposits were especially low during the 1990s as banks seemed to lower their rates relative to other short-term rates in response to weak loan demand, reduced competition from the struggling thrift industry, and new capital requirements.

[7] A third reason for not using the steep yield curve to explain the portfolio shift is that it assumes investors allocate their

wealth in response to current yields rather than expected future yields.

[8] In particular, the spread between the ten-year bond rate and the federal funds rate—current, lagged, or both—was insignificant in explaining yearly changes in the share of assets held in stocks and bonds, given the share of workers 35 or older. Alternatively, the increased share of wealth in stocks and bonds could reflect capital gains on existing holdings, rather than new inflows. However, that explanation begs the question: after enjoying capital gains, why didn't households re-balance their portfolios by shifting into safer deposits? Perhaps because households were aging and therefore desired a larger share of wealth invested in stocks and bonds. In any case, demographic shifts remain highly significant in explaining portfolio shifts even when the regression includes the annual market return on the S&P 500—current, lagged, or both; regardless of the specification, the demographic variable has a t-statistic between 30 and 40. These regression results are available from the author.

[9] The standard deviation of consumption growth was 0.47 percent over 1963-72 and 0.52 percent over 1973-82. The standard deviation was 0.76 percent over 1983-87 and 0.41 percent over 1988-93. These figures are the average over the period of the data plotted in Chart 7. Those data are the standard deviation each year of the monthly growth rate of personal consumption expenditures. Although monthly data seem to provide a more meaningful measure of volatility, using quarterly consumption growth leads to the same conclusion: the volatility of quarterly consumption growth—total or just durables—is unrelated to the share of financial assets invested in stocks and bonds.

[10] This small estimated impact of changes in wealth on consumption accords with the life-cycle theory of consumption, which holds that households will reduce their spending gradually over their entire lifetime rather than all at once when their wealth falls (Modigliani and Brumberg).

[11] According to the rule, consumption would fall $37.5 billion = .05 x $75. Consumption actually declined by only $1 billion over the fourth quarter of 1987 because income and other factors changed. Garner held these other factors constant to isolate the impact of the crash on consumption.

[12] The reallocation might have a small, or second-order, effect on aggregate business risk if the firms' managers were inclined to pursue riskier investment projects as a result of the changes in claims against it.

[13] The survey of 1,000 people was commissioned by The Investment Company Institute, a mutual fund trade association.

[14] That new investors over the last decade are investing through mutual funds, rather than directly in the market, suggests investors are more sophisticated than their counterparts in the 1950s and 1960s. Households then were much more likely to buy directly in the market than to invest through mutual funds, which is puzzling. Middle-class investors tried to lower their risk by investing in relatively safe public utilities and, to a lesser extent, mutual funds (Crockett and Friend).

[15] It is implausible that investors who purchased stock and bond mutual funds through brokers and directly from mutual funds would believe such purchases were insured.

[16] The Morgan Stanley index of stock markets in 24 countries is denominated in dollars and so includes exchange rate risk.

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Causes of the Recent Increase In Bank Security Holdings

By William R. Keeton

While bank security holdings have increased sharply in recent years, there is widespread disagreement about the significance of the increase. Some analysts argue that the increase is not a cause for concern because it results from temporary factors such as the business cycle. Others argue that the increase represents a permanent shift in bank portfolio preferences from loans to securities, which could cause banks to look more like mutual funds. If the latter view is true, small firms that rely on banks for credit may be unable to fund new investment. Moreover, monetary policy may be less able to influence total spending in the economy by affecting bank lending.

This article seeks to determine how much of the surge in bank security holdings can be explained by temporary factors. The first section discusses possible explanations for the recent increase in bank security holdings. The second section presents empirical evidence based on the aggregate behavior of bank portfolios over the previous 30 years. The article concludes that more than half the increase in security holdings cannot be explained by temporary factors, suggesting that bank portfolio preferences may have permanently changed.

William R. Keeton is a senior economist at the Federal Reserve Bank of Kansas City. Kenneth Heinecke, a research associate at the bank, helped prepare the article.

POSSIBLE EXPLANATIONS FOR THE INCREASE IN BANK SECURITY HOLDINGS

Is the recent increase in bank security holdings unusually large by historical standards? In comparing the recent increase with past increases, it is important to take into account the tendency for inflation and long-run economic growth to increase bank security holdings. Over time, the dollar values of all bank assets and liabilities should increase with the price level. And as aggregate output grows, so should the size of the banking system and the real values of all bank assets and liabilities, including security holdings.

One way of adjusting the change in security holdings for both inflation and long-run economic growth is to measure security holdings relative to potential GDP. Potential GDP is the amount of output the economy can produce at full employment, valued in current dollars. Because potential GDP measures output at full employment, it provides a better measure of long-run economic growth than actual GDP, which varies over the business cycle. And because potential GDP is measured in current dollars, it increases with the price level.

Adjusted for inflation and long-run economic growth, the recent increase in total bank security holdings far exceeds past increases (Chart 1).[1] From the fourth quarter of 1989 to the second quarter of

1993, the ratio of bank security holdings to potential GDP increased 2.7 percentage points. During the previous 30 years, by contrast, the largest increase in the ratio over a period of 3 1/2 years or less was only 1.9 points. Possible explanations for the recent increase can be grouped into two categories—temporary and permanent.[2]

Temporary explanations

One factor that may have caused a temporary increase in security holdings is the slowdown in economic activity and the accompanying fall in short-term interest rates during the 1990-91 recession. Another factor is that short-term rates continued falling after the recession ended, in contrast to previous cycles. A third factor is that excessive borrowing and lending in the 1980s may have led to a bigger and more prolonged decrease in the demand for and supply of bank loans during this recession than past ones.[3]

Normal cyclical response. Bank security holdings tend to increase during a recession and early recovery for two reasons. First, banks find lending to be less attractive during recessions. The slowdown in economic activity reduces businesses' and households' demand for credit, decreasing the interest rates that banks can charge on loans and, thus, the expected return from lending. Recessions also increase the risk of default, which reduces the amount banks are willing to lend even without any change in the expected return from lending. These factors tend to reduce the attractiveness of loans. One way banks may respond is by shrinking their total size—that is, by cutting back on loans and reducing large time deposits and other borrowed funds. Another way banks may respond is by shifting out of loans into securities, keeping their total assets unchanged.

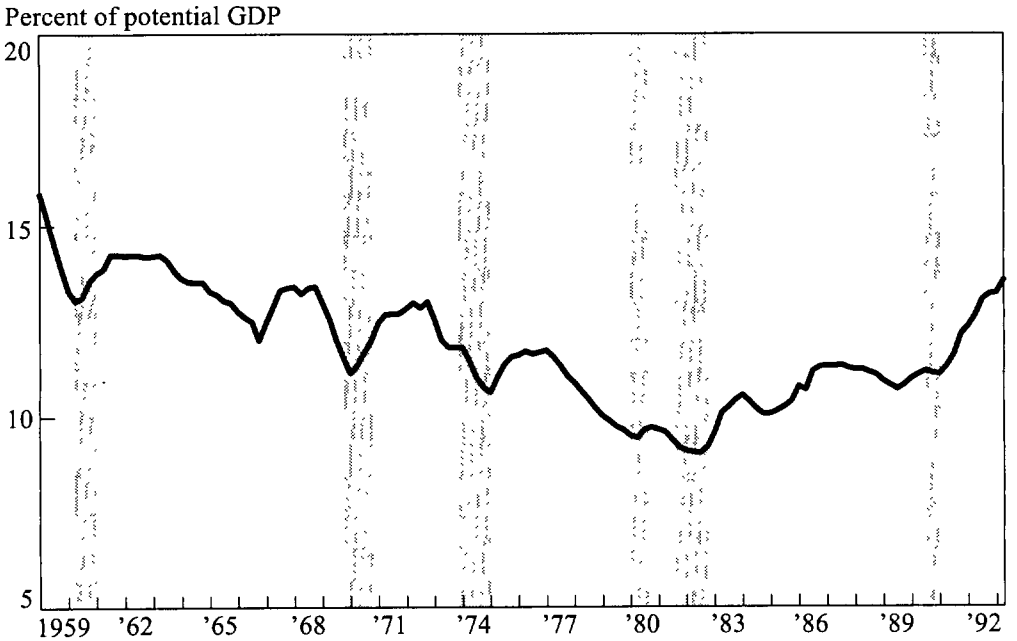
A second reason bank security holdings may increase during a recession and early recovery is that easier monetary policy increases the amount of funds banks have to invest. The Federal Reserve usually pushes down short-term interest rates during recessions to stimulate the economy. The immediate effect of such a reduction in interest rates is typically to increase the public's demand for core deposits—checkable deposits and small time and savings deposits. But the decline in interest rates may not immediately stimulate lending. For example, loan demand may be unresponsive to the cost of borrowing in the short run. Or it may take time for lower open-market rates to increase loan demand indirectly by stimulating the economy. Thus, when the Fed eases, banks may enjoy a temporary surplus of funds. One way banks may respond is by reducing their large time deposits and other borrowed funds, which tend to be more expensive than core deposits. Another way is by acquiring more securities.

Chart 1 confirms that it is normal for bank security holdings to increase during recession and early recovery. The typical pattern is for the ratio of bank security holdings to potential GDP to start declining sometime before the business cycle peak, turn upward sometime before the business cycle trough, and then continue increasing for a while. The most recent increase in the security ratio started a little earlier and has been significantly larger than in the last five recessions. However, the increase in the security ratio may have been larger this time because the recession and recovery themselves were different. Thus, from Chart 1 alone, it is impossible to tell whether the recent increase in security holdings is a normal cyclical response.

Unusual behavior of short-term rates during the recovery. In past recessions and recoveries, the Fed stopped easing by the time the recession ended (Chart 2). Thus, during recoveries, short-term rates remained stable or increased. During the most recent recovery, in contrast, short-term rates continued falling until late 1992—a year and a half after the recession technically ended. Because decreases in short-term rates tend to raise the public's demand for deposits faster than borrowers' demand for loans, the continued fall in

Chart 1

Security Holdings of Commercial Banks



Note: Vertical bands indicate recessions.
Source: Board of Governors of the Federal Reserve System.

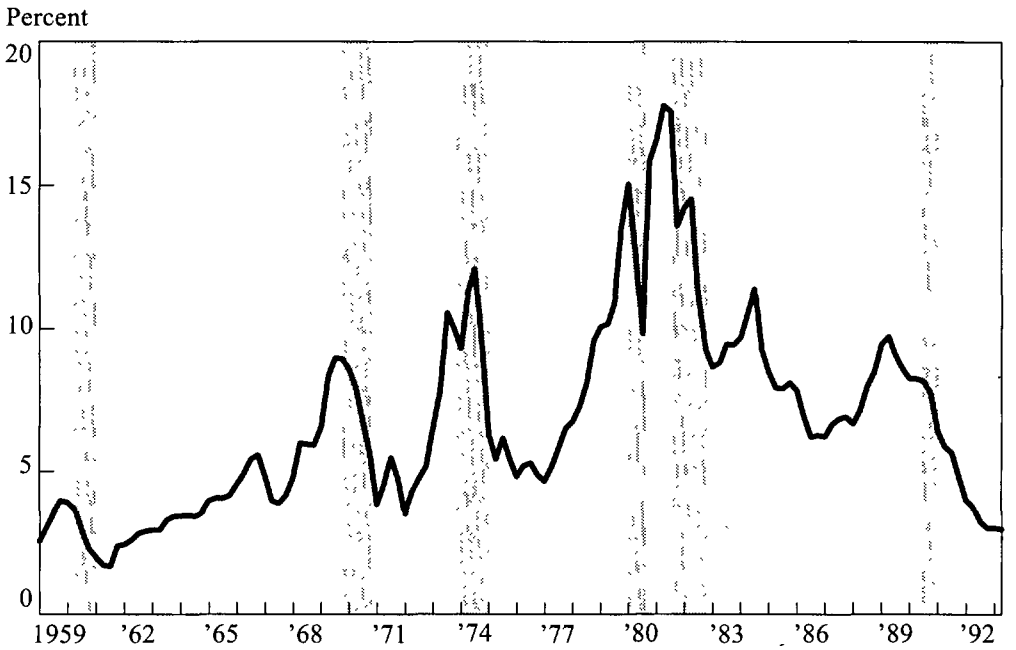
short-term rates during this recovery may have caused banks to temporarily increase their security holdings.[4]

Unusual temporary decline in loan demand and supply. As noted above, recessions decrease the attractiveness of lending by reducing the interest rates borrowers are willing to pay and the amount of default risk banks are willing to assume. This effect suggests bank loans should decline relative to potential GDP during recessions. Chart 3 confirms this fact; as a percent of potential GDP, bank loans typically peak near the start of the recession and then decline for a while before resuming their increase. The chart also shows, however, that bank loans have fallen much more sharply during the recent recession and recovery than in the 1970, 1980, and 1981-82 recessions and recoveries. Loans also have fallen more than in the 1973-75 recession and recovery, though the difference is smaller.

Two explanations have been offered for the unusually steep decline in bank loans during the recent recession and recovery (Bernanke and Lown; Cantor and Wenninger; Johnson). The first is a temporary decrease in the demand for loans by borrowers. According to this explanation, businesses and households have been especially reluctant to borrow because they overborrowed in the 1980s and want to restructure their balance sheets. The second explanation is a temporary decrease in the supply of loans by banks. According to this explanation, banks have been more reluctant to take

Chart 2

Federal Funds Rate



Note: Vertical bands indicate recessions.
Source: Board of Governors of the Federal Reserve System.

on default risk than in past recessions, either because their heavy loan losses during the late 1980s made them more risk-averse or because regulators put unusual pressure on them to avoid risk.

Whether the unusual weakness in lending results from reduced demand or reduced supply, banks can be expected to respond either by cutting back on their large time deposits and other borrowings or by increasing their security holdings. A good case can also be made that the effect on bank portfolios should be temporary. Once borrowers finish restructuring their balance sheets, the demand for bank loans will presumably revive. And as the memory of the 1980s fades and the economy fully recovers, banks and their regulators could become less risk averse.

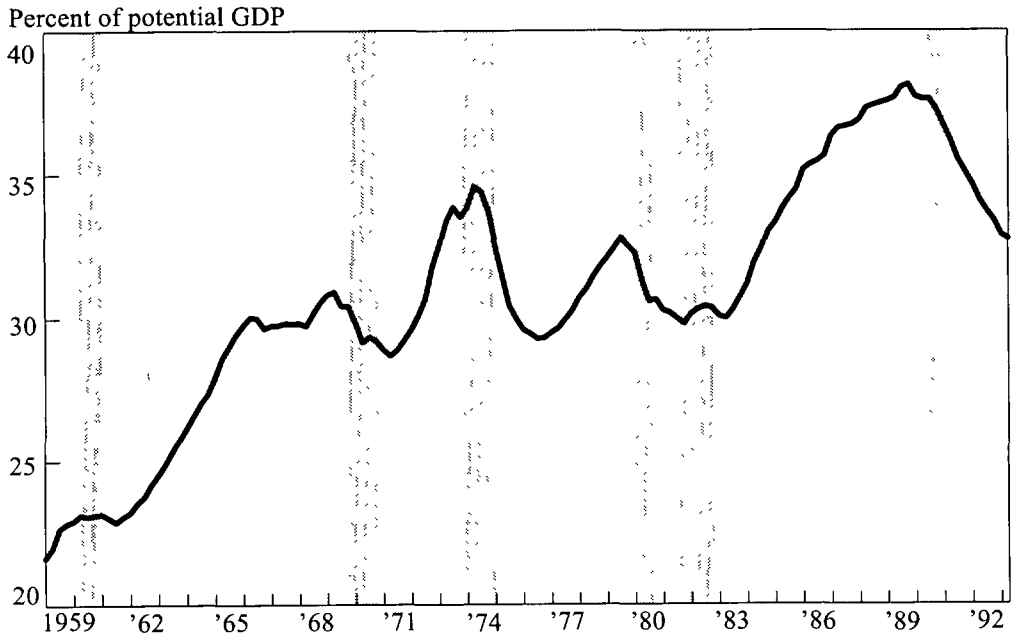
Permanent explanations

Two factors may have led to a permanent increase in bank security holdings—the adoption of risk-based capital standards, and increased pessimism about the long-term prospects for bank lending.

Risk-based capital standards. New capital standards announced in 1989 may have made securities more attractive to banks. Under the new system, banks must satisfy a minimum ratio of capital to risk-adjusted assets. Business and consumer loans have a weight of 100 percent in risk-adjusted assets, while most securities carry weights of zero or 20 percent.[5] Because increases in securities have little or no effect on risk-adjusted

Chart 3

Total Loans at Commercial Banks



Note: Vertical bands indicate recessions.
Source: Board of Governors of the Federal Reserve System.

assets, a bank can use deposits or other borrowed funds to purchase securities without having to raise a large amount of capital to satisfy the risk-based requirement. And because decreases in loans have a one-for-one effect on risk-adjusted assets, a bank can reduce its required capital without shrinking total assets by shifting to securities from loans.[6]

Economists disagree on the plausibility of this explanation for the recent increase in bank security holdings. Skeptics argue that most banks were unaffected by the risk-based requirement because they already exceeded it by a substantial margin. They also point out that credit unions, which were not subject to risk-based capital requirements, also shifted heavily into securities (Greenspan; Mullins). And they cite studies showing that banks exceeding the risk-based capital requirement increased their security holdings just as much as banks that did not (Baer and McElravey; Berger and Udell; Hancock and Wilcox). Proponents of the risk-based capital explanation concede that relatively few banks were affected by the risk-based requirement. However, they counter that these banks were primarily large banks and thus accounted for a disproportionate share of industry assets. And they cite other research suggesting that banks exceeding the risk-based capital requirement increased their security holdings *less* than banks that did not (Haubrich and Wachtel; Jacklin).

Pessimism about the long-run profitability of lending. A final possibility is that banks have

undergone a permanent shift in portfolio preferences unrelated to recent changes in capital requirements. As a result of increasing competition from securities markets and nonbank lenders, banks may have decided they can earn adequate profits from lending only by focusing on their best customers and making fewer loans. To be sure, the competitive position of banks has eroded gradually over many years, making it unclear why they would suddenly decide to shift out of loans. But perhaps the heavy loan losses of the late 1980s delivered the coup de grace, convincing banks once and for all that lending was less profitable. One way banks might respond is by shifting into securities.

EMPIRICAL EVIDENCE

To the extent that temporary factors fail to account for the recent increase in bank security holdings, it can be argued that banks may have made a long-term decision to withdraw from traditional forms of lending and operate more like mutual funds. To determine whether the increase in bank security holdings is temporary or permanent, this section uses regression analysis to estimate how much of the increase can be attributed to the three temporary factors cited above—normal cyclical response, the unusual fall in short-term interest rates, and the unusual decline in loan demand and loan supply.[7]

All the empirical results are based on a vector autoregression (VAR) estimated with quarterly data on the aggregate economy and bank balance sheets. In a VAR, each variable is regressed on its own lags and the lags of each other variable in the model. Such an approach has two major advantages. First, it allows for feedback among the variables. And second, because all variables are included in each regression equation, fewer arbitrary decisions are made as to the structure of the model.[8]

The VAR includes four lags of three macroeconomic variables and four balance sheet variables, and is estimated in levels.[9] The macro variables are the federal funds rate, the ratio of actual GDP to potential GDP, and the rate of inflation as measured by the GDP deflator. The funds rate and GDP ratio are included to capture the first two temporary explanations for the increase in security holdings—normal cyclical response and the unusual behavior of short-term rates. Although no one has suggested that the recent increase in bank security holdings is due to the behavior of inflation, this variable is included because of its potential effects on bank portfolio decisions and because of its important influence on monetary policy decisions.

The bank balance sheet variables are securities, loans, core deposits (checkable deposits plus small time and savings deposits), and large time deposits.[10] Loans are included in the VAR to capture the effect on bank security holdings of the lending slowdown. Core deposits and large time deposits are included because banks may respond to a shortfall in loans by reducing deposits rather than increasing securities.[11] All four variables are seasonally adjusted and measured as ratios to potential GDP. Also, a dummy variable is included after 1982 to account for the impact of deposit deregulation on core deposits.[12]

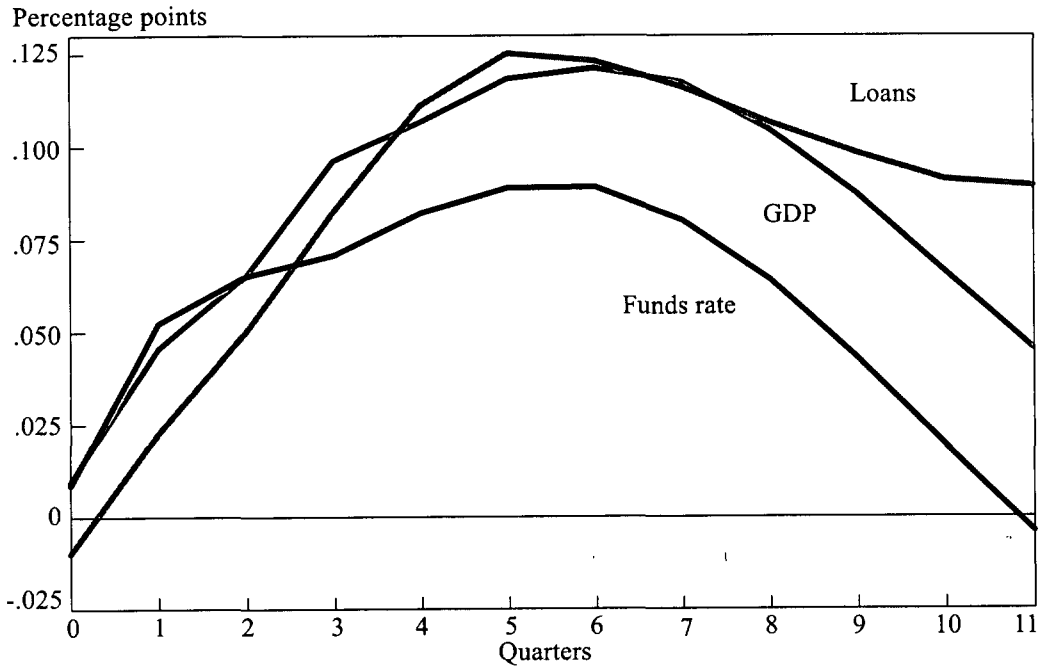
The model is estimated over the 1960-89 period. The estimation starts in 1960 partly because of data availability and partly because large negotiable CDs, which are an important alternative to securities for funding loans, were not introduced until 1961. The estimation ends in 1989 because that was the year when securities and loans both started to deviate significantly from previous trends.

The VAR yields three forms of evidence on the causes of the recent increase in security holdings. First are the "impulse responses" for the 1960-89 period. These responses indicate the typical effect on bank security holdings of various shocks—for example, unexpected changes in GDP, interest rates, or loans. Second is the "decomposition of variance" for the 1960-89 period. This decomposition indicates how much of the past variation in

Chart 4

Response of Bank Security Holdings to Different Shocks

Cumulative change in ratio of securities to potential GDP



bank security holdings was due to each possible kind of shock. Third, and most important, is the "decomposition of change" for the 1989-93 period. This decomposition estimates how much of the *recent* increase in security holdings is due to each kind of shock, assuming banks respond to such shocks the same way as in 1960-89.[13]

Impulse responses for 1960-89

Based on past behavior, how plausible are the business cycle, the behavior of short-term interest rates, and the slowdown in lending as explanations for the recent increase in security holdings? As a first step in answering this question, Chart 4 shows how the ratio of bank security holdings to potential GDP typically responds to three different shocks—an unexpected decline in the ratio of actual GDP to potential GDP, an unexpected decline in the federal funds rate, and an unexpected decline in the ratio of total loans to potential GDP. In each case, the change in the variable is unexpected in the sense that it cannot be predicted from the VAR. And in each case, the change is equal in magnitude to the typical unexpected change over the 1960-89 period.[14]

Chart 4 shows that bank security holdings increase in response to all three shocks. In all three cases, the ratio of security holdings to potential GDP reaches a maximum after about a year and a half and then declines. Thus, impulse responses

Table 1

Variance Decomposition for Ratio of Securities to Potential GDP
1960-89

Percent of variance over 3 1/2 years due to shocks in	
Funds rate	10
GDP	19
Inflation	27
Loans	24
Core deposits	2
Large time deposits	5
Securities	13
Total	100

for the 1960-89 period suggest that negative shocks to GDP, the funds rate, and lending may account for at least some of the increase in security holdings since 1989. The extent to which the three shocks explain the recent increase depends, however, on how big the shocks have been relative to the change in security holdings, something the impulse responses cannot reveal.

Variance decomposition for 1960-89

Table 1 takes the analysis a step further by showing the extent to which various kinds of shocks explain changes in bank security holdings during the 1960-89 period. This information is relevant because the more a particular kind of shock helps explain past changes in bank security holdings, the more plausible it is that the same kind of shock can explain the recent change.

Table 1 shows how much of the unexpected variation in the security ratio over a period of 3 1/2 years tended to be due to various shocks. A horizon of 3 1/2 years is used because the purpose of this article is to explain the change in security holdings from the end of 1989 to mid-1993. Each row in the table corresponds to a different variable and shows the percentage of variation in the security ratio due to that variable. For example, the first row shows that over a 3 1/2-year period, 10 percent of the variation of the security ratio from the level expected at the beginning of the period tended to be due to unexpected changes in the funds rate.

The table shows that shocks to the three macroeconomic variables and to loans account for much of the past variation in the security ratio. After 3 1/2 years, shocks to these four variables tend to explain 80 percent of the variation in the security ratio from the level initially expected (10 + 19 + 27 + 24). Thus, based on past behavior, it seems plausible that the business cycle, the post-recession drop in the funds rate, and the slowdown in lending could account for most of the increase in the security ratio from 1989 to 1993.

Like the impulse response functions, the variance decomposition is suggestive but cannot prove which shocks account for the recent increase in bank security holdings. For example, the variation in bank security holdings due to shocks in the three macroeconomic variables and shocks in loans might have been high over the 1960-89 period only because the shocks themselves were very large. From Table 1, there is no way to tell whether shocks to these variables have also been large enough in the recent period to explain most of the change in security holdings.[15]

Decomposition of change for 1989-93

To better assess the causes of the recent increase in security holdings, Table 2 uses the VAR to attribute the actual change in the security ratio from 1989:Q4 to 1993:Q2 to various shocks.[16] The

Table 2

Decomposition of Change in Ratio of Securities to Potential GDP

Percentage point change, 1989:Q4 to 1993:Q2

Actual change	2.7
– Expected change	-.1
= Unexpected change	2.8
Change due to shocks in	
Funds rate	.6
GDP	1.1
Inflation	-.8
Loans	.9
Core deposits	-.2
Large time deposits	-.3
Securities	1.5
Total	2.8

first row shows the actual change in the ratio of securities to potential GDP over the period. The second row shows the expected change in the security ratio—the change that could have been anticipated given conditions at the start of the period and underlying trends. The actual change minus the expected change equals the unexpected change. As the third row shows, the unexpected change in the security ratio was 2.8 percentage points. The next seven rows of the table show how much of this 2.8 percentage point increase was due to shocks in each of the seven variables in the VAR.[17]

According to the table, shocks to the three macroeconomic variables and to loans explain a significant part of the recent increase in bank security holdings. Shocks to the funds rate, GDP, and inflation accounted for a total of 0.9 percentage points of the increase in the security ratio from 1989:Q4 to 1993:Q2 (0.6 + 1.1 - 0.8). And the unusually steep drop in loans—whether due to reduced demand or reduced supply—contributed another 0.9 points to the increase in bank security holdings.

Although macroeconomic shocks and loan shocks explain much of the increase in the security ratio, the rest of the table shows that more than half the increase remains unexplained. Sharper-than-expected declines in core deposits and large time deposits should have reduced the security ratio by a total of 0.5 points (0.2 + 0.3). Thus, the unexplained increase in the security ratio—the portion due to shocks to securities rather than to shocks to other variables—amounts to 1.5 percentage points (2.8 - 0.9 - 0.9 + 0.5). Put another way, shocks to securities account for 53 percent of the total unexpected increase in the security ratio over the 3 1/2 years from the end of 1989 to mid-1993 (1.5/2.8). During the 1960-89 period, by contrast, shocks to securities accounted for only 13 percent of the unexpected variation in the security ratio over a 3 1/2-year horizon (Table 1).

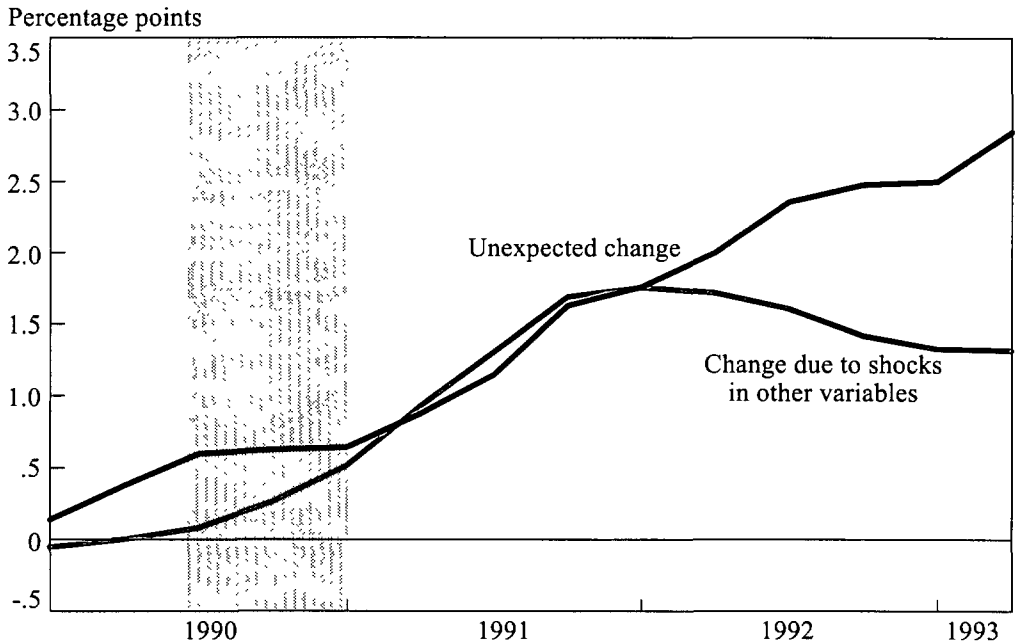
Chart 5 shows that the unexplained change in the security ratio did not emerge until the second quarter of 1992, a year after the recession ended. The solid line in the chart shows the unexpected change in the security ratio from 1989:Q4. The dotted line shows the portion of the change that can be explained by shocks to other variables. From Chart 5, it can be seen that the security ratio increased significantly more than expected from 1989:Q4 to 1992:Q1—1.5 percentage points. The chart shows, however, that all the unexpected increase in the ratio up to that point can be explained by shocks to other variables.[18] After 1992:Q1, the security ratio continues increasing more than expected, but the change due to shocks to other variables levels off, causing the gap between the two curves to grow.[19]

These findings suggest that about a year into the recovery, securities became unusually attractive to banks. One possibility suggested earlier is that banks experienced a permanent shift in

Chart 5

Change in Ratio of Security Holdings to Potential GDP

Cumulative change from 1989:Q4



Note: Vertical band indicates recession.

preferences from loans to securities—for example, due to risk-based capital requirements or increased pessimism about the long-run prospects for lending.[20] Another possibility is that banks began to respond differently to temporary declines in GDP, the funds rate, and loans. For example, as loans continued to decline during the recovery, banks may have decided to use more of their surplus funds than normal to buy securities, intending to sell the securities when loans finally revived.

CONCLUSIONS

Based on the behavior of bank portfolios over the previous 30 years, the recent increase in bank security holdings appears highly unusual. To be sure, the business cycle, the post-recession drop in interest rates, and the unusual decrease in loan demand and loan supply explain a substantial part of the recent increase in security holdings. But a little more than half the total increase in the ratio of bank security holdings to potential GDP from 1989 to 1993 remains unexplained. The possibility cannot be dismissed that the unexplained increase in the security ratio reflects a change in banks' response to temporary shocks in GDP, interest rates, and loans. If so, security holdings may go back down as the recovery progresses. On the other hand, the unexplained increase in the security ratio may well reflect a permanent shift in bank portfolio preferences from loans to securities. If so, security holdings will remain high, causing banks to look more like mutual funds and justifying fears of a reduced role for bank lending.

ENDNOTES

[1] Data in this article include all government and private securities held by domestically chartered commercial banks and U.S. offices of foreign banks. At the end of 1989, U.S. Treasury securities accounted for 27 percent of total bank security holdings; federally guaranteed mortgage-backed securities accounted for 21 percent; other U.S. Government securities for 17 percent; state and local securities for 22 percent; and private securities for 14 percent.

[2] For other discussions of the possible causes of the increase in bank security holdings, see Greenspan; Mullins; Neuberger; Rodrigues.

[3] Another temporary explanation suggested by some analysts is that an unusually steep yield curve encouraged banks to shift from short-term loans to long-term government bonds (Rodrigues). However, when a measure of the steepness of the yield curve is included in the empirical model in the next section, the variable explains none of the recent increase in bank security holdings. This result should not be surprising. To the extent the steep yield curve reflected market expectations of higher short-term interest rates in the future, banks would have little to gain from shifting from short-term investments to long-term investments. They would earn higher profits in the short run, while short-term interest rates were low, but lower profits in the long term, when short-term interest rates were high. The only reasons a bank might make such a shift are because it believed it could outguess the market or because it wanted to gamble.

[4] For evidence that an unexpected change in short-term rates causes a change of opposite sign in bank security holdings, see Bernanke and Blinder.

[5] The weight is zero for U.S. Treasury securities and mortgage-backed securities directly guaranteed by the Government National Mortgage Association (Ginnie Mae); 20 percent for general obligation municipal bonds and mortgage-backed securities guaranteed by the Federal National Mortgage Association (Fannie Mae) or the Federal Home Loan Mortgage Corporation (Freddie Mac); and 50 percent for municipal revenue bonds and privately issued mortgage-backed securities.

[6] Banks must also satisfy a leverage requirement in the form of a minimum ratio of capital to total assets (Keeton). The new capital standards increase the attractiveness of securities only for banks that exceed the leverage requirement but not the risk-based requirement.

[7] The assumption here is that borrowers' decreased willingness to borrow and banks' decreased willingness to take on default risk are temporary changes due to the excesses of the 1980s. If this assumption is false, that portion of the increase in security holdings due to the lending slowdown may also reflect a fundamental change in bank behavior.

[8] As is well known, such decisions cannot be avoided altogether. To calculate the impulse responses, variance decomposition, and decomposition of change, certain assumptions must be made about the contemporaneous correlations of the variables (the "ordering" assumptions).

[9] In time series jargon, all seven variables appear to be integrated of order one over the sample period. A common approach in such circumstances is to estimate the model in first differences rather than levels. However, the Johansen test strongly suggests the existence of a cointegrating vector, implying that it would be inappropriate to difference the data.

[10] The data were obtained from the Board of Governors and correspond to Table 1.24 in the *Federal Reserve Bulletin.*

[11] Because bank assets and liabilities must sum to zero, the VAR also has implications for the residual item consisting of other liabilities minus other assets. Other liabilities include RPs, federal funds borrowed from nonbanks, and Eurodollar borrowing, while other assets include cash.

[12] Although the deregulation of core deposits began in 1978 with the introduction of the 6-month money market certificate, the biggest step by far was the introduction of MMDAs at the beginning of 1983. From the data, this event appears to have led to a permanent increase in core deposits.

[13] One limitation of the VAR is that it assumes an increase in any variable has the same size effect as a decrease in that variable—for example, declines in GDP during a recession have the same effect on bank balance sheets as increases in GDP during a boom.

[14] In particular, the shock to each variable is one standard deviation in size. To compute impulse response functions, some choice must also be made as to the ordering of the variables. The earlier a variable comes in the ordering, the more exogenous the variable is assumed to be. Specifically, shocks to a particular variable are allowed to cause contemporaneous changes in those variables that come later in the ordering but not in those variables that come earlier. In the present case, the variables are ordered as follows: the funds rate, GDP, inflation, loans, core deposits, securities, and large time deposits. The funds rate is put first because it is a policy instrument which appears to respond only with a lag

to economic conditions (Bernanke and Blinder). Loans and core deposits are put before securities and large time deposits on the grounds that banks use securities and large time deposits as buffers against changes in loans and core deposits. Although this particular ordering seemed the most plausible, the results are not significantly affected when different orderings are used.

[15] It should also be noted that the recent increase in the security ratio is much larger than the typical unexpected change over the 1960-89 period. The security ratio increased 2.7 percentage points from the end of 1989 to mid-1993. For the 1960-89 period, by contrast, the standard deviation of unexpected changes in the security ratio over a 3 1/2-year horizon was only 0.7 percentage point. Thus, to account for the same percent of the recent change in the security ratio as of past changes, shocks to the three macroeconomic variables and loans would have to be larger than average.

[16] This decomposition involves two steps. The first step is to estimate the actual shocks to each variable over the period from the end of 1989 to mid-1993. The second step is to use the impulse response functions to determine the effects of each set of shocks on the security ratio.

[17] Table 2 shows the effect on securities of shocks to other variables but does not show the sign or magnitude of those shocks. One way of summarizing this information is to calculate the cumulative change in each other variable due to shocks to that variable. This "own effect" equals -4.5 percentage points for the funds rate, -2.8 points for GDP, 2.6 points for inflation, -4.5 points for loans, -1.1 points for core deposits, and -0.4 point for large time deposits. These figures confirm that the funds rate, GDP, and loans were all subject to large negative shocks after 1989. They also indicate that the inflation rate was subject to positive shocks (inflation should have declined even more than it did), while core deposits and large time deposits were subject to negative shocks.

[18] Although not shown in the chart, macroeconomic shocks contributed 1.0 percentage point to the increase in the security ratio up to 1992:Q1, and loan shocks contributed another 0.5 point.

[19] A two-standard-error confidence band was computed around the unexplained change in the security ratio—the gap between the two curves in Chart 5—using the Monte Carlo technique in the RATS software package (Doan). This confidence band lies entirely above zero after 1992:Q3.

[20] It is not obvious why banks would wait until 1992 to become more pessimistic about long-run lending prospects. However, one reason banks might have waited this long to respond to the new risk-based capital requirements is that FDICIA, the banking law passed in November 1991, tended to make the requirements more binding (Baer and McElravey). The law did this by forcing banks to exceed capital requirements by a wide margin to receive the most favorable regulatory treatment.

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A New Agricultural Policy for a New World Market

By Alan Barkema and Mark Drabenstott

A new farm bill will be enacted in 1995, and the debate over it has already begun. With farm bills being renewed just once every five years, the 1995 bill provides a propitious opportunity to re-evaluate the current bill in light of fundamental changes to the marketplace since the adoption of the 1990 bill. One of the most important changes since then has been in the world food market. Selling successfully in world markets is vital to U.S. agriculture because it produces far more food than domestic consumers require. Thus, while the upcoming farm bill will spawn debate on many issues, few will be more important than reconciling U.S. agricultural policy with a new world food market.

Recent developments in the world food market reflect basic changes in two key market features. The market for finished food products is much stronger than for bulk commodities. This trend has held down the growth in U.S. agricultural exports because bulk commodities still account for most of our foreign sales. The food market has also been growing more rapidly in Asia and North America than in Europe. This trend has prompted U.S. exporters to shift their sales away from a traditional dependence on Europe, a shift that appears well under way.

If these trends persist, will current farm policy be in step with the world food market of the future? This article's examination of the factors likely to shape the world market concludes that agricultural policy must be overhauled if U.S. agriculture is to excel in tomorrow's marketplace. The first section of the article reviews recent fundamental changes in the market for U.S. agricultural exports. The second section explores the future direction of the world food market. The final section discusses policy changes that may be needed for U.S. agriculture to take full advantage of the new opportunities emerging in the global food market.

RECENT TRENDS IN U.S. AGRICULTURAL EXPORTS

U.S. agricultural exports began to recover in 1986 after plummeting in the early and mid-1980s. The recovery period provides a useful gauge of the basic changes occurring in the world food market (Chart 1). Two key trends underlie the recovery. The first trend relates to *what* products the United States is selling. Traditionally, bulk commodities have dominated, but sales of consumer

Alan Barkema is an assistant vice president and economist at the Federal Reserve Bank of Kansas City. Mark Drabenstott is a vice president and economist at the bank. Corey Waldinger and Deron Ferguson, research associates at the bank, helped prepare the article.

Chart 1
U.S. Agricultural Exports

Source: U.S. Bureau of the Census trade data.

products are now growing more rapidly. The second trend relates to *where* the United States is selling. The United States is shifting its sales away from Europe to the Pacific Rim and North America.[1]

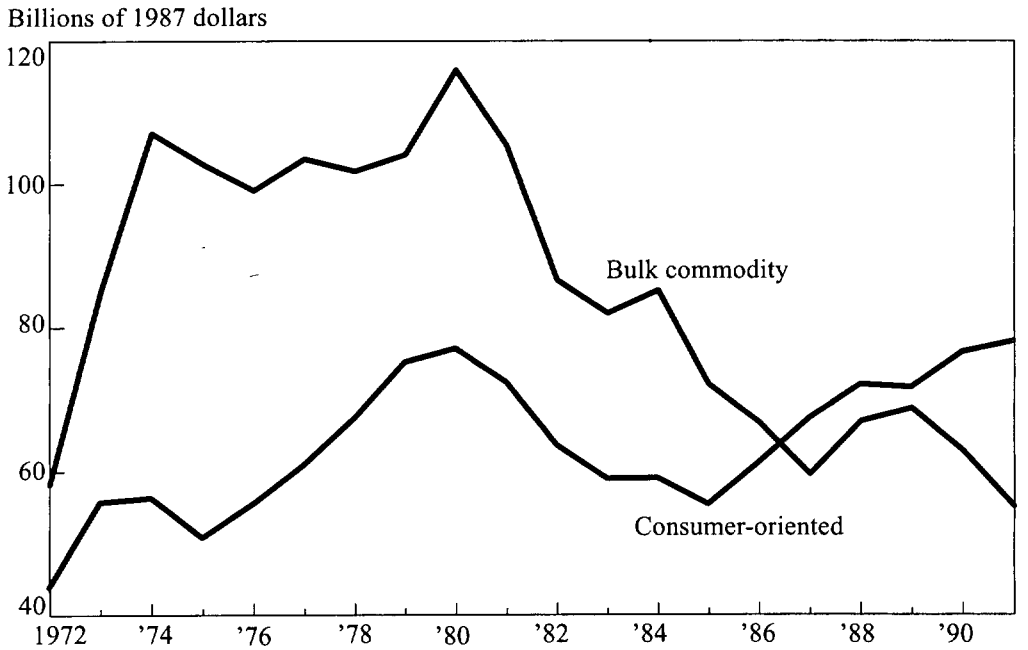
Trends in product sales

Historically, the United States has primarily been an exporter of bulk farm commodities. The nation's vast cropland, favorable climate, and well-developed infrastructure helped the United States take advantage of the 1970s boom in farm commodity trade. Recent trends, however, suggest that the United States must continue to adjust its products to a world market where finished food products are in greater demand.

Measured in real terms, world food trade has increased nearly a third over the past two decades. All of the growth has been in consumer and related products (Chart 2).[2] Bulk commodity trade grew substantially through the 1970s but fell sharply in the 1980s and now stands below its pre-boom level.

Despite the prominence of consumer products in the world marketplace, bulk commodities continue to dominate U.S. exports. While consumer products account for 45 percent of world agricultural trade, they make up less than a third of U.S. agricultural exports. U.S. exports of bulk commodities have fallen from a two-thirds share of all U.S. agricultural exports in the early 1970s, but they are still much more important than consumer

Chart 2
World Agricultural Trade
Excluding Intra-EU Trade



Source: Food and Agricultural Organization of the UN and U.S. Bureau of the Census trade data.

products. In the world market, by contrast, bulk commodities account for less than a third of all agricultural trade.

Growth of U.S. exports since the mid-1980s has been much stronger for consumer products than for bulk commodities. U.S. exports of consumer products have swelled 12.5 percent a year over the recovery, double the annual growth of total food trade worldwide during the same period. Despite this growth, the United States has made only modest overall gains in the world market since the U.S. share of world trade in consumer products was small to begin with. Currently at just 13 percent of the world market, the U.S. share is still only half that of the European Union (EU) (Chart 3).

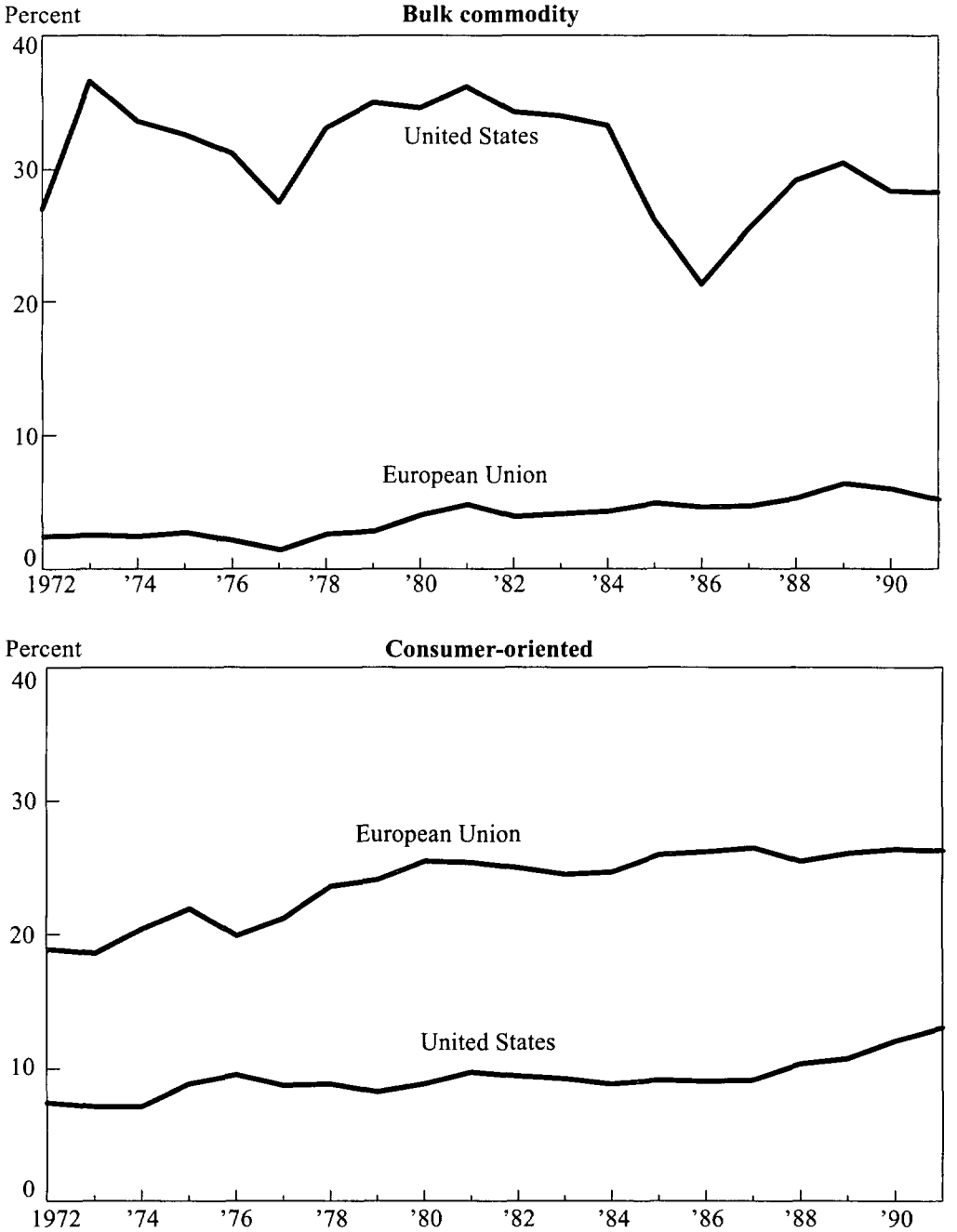
U.S. exports of bulk commodities, in contrast, are improving but remain below their level of a decade ago. Bulk exports from the United States have actually fallen 2.1 percent a year since the early 1980s, but world bulk trade has shrunk even faster. The United States currently has a 28 percent share of the world's bulk commodity trade, up from about a fifth in 1986 but still less than its 36 percent share in the early 1980s. During this time, the EU has essentially maintained its 5 to 6 percent share of bulk commodity trade, mainly through hefty export subsidies. By the same token, recovery in the U.S. market is at least partly due to greater U.S. export subsidies under the Export Enhancement Program.

In short, the United States has traditional strength in bulk commodities, but that market has

Chart 3

Shares of World Agricultural Trade

Excluding Intra-EU Trade



Source: Food and Agricultural Organization of the UN and U.S. Bureau of the Census trade data.

continued to shrink. And the U.S. share of the market remains below levels at the peak of the boom. Meanwhile, U.S. exports of consumer food products have grown rapidly throughout the export recovery, although the U.S. market position remains relatively small in these high margin products. Though rapid growth in world trade in consumer food products might be expected to boost sales of U.S. bulk commodities to foreign manufacturers, this linkage has not been evident yet.

Trends in trading partners

Since the export recovery began in 1986, a modest realignment has occurred in U.S. agriculture's trading partners. Europe and Japan have long been considered U.S. agriculture's best customers. However, these nations are mature food markets. U.S. sales to North America and other Pacific Rim countries have grown more rapidly. The former Soviet Union, despite the attention it receives by many producers and policymakers, remains a relatively small market for U.S. agricultural exports.

The most important buyers of U.S. agricultural exports throughout the recovery have been the Pacific Rim countries. The share of total U.S. exports bought by Pacific Rim countries has risen from 34 percent to 37 percent, the biggest of any region (Chart 4). Japan has been an important and steady customer, accounting for just under a fifth of U.S. foreign sales. More and more of the sales to Japan are consumer food products. U.S. firms now sell roughly equal amounts of bulk and consumer products to Japan. The consumer sales are especially vital, making up a quarter of total U.S. exports of such products. South Korea, Hong Kong, and Taiwan have also been strong Pacific Rim markets for U.S. consumer food exports.

Europe has fallen off sharply as a buyer of U.S. agricultural exports. The EU share of total U.S. agricultural exports fell from a fourth in 1986 to a sixth in 1992. Part of that market drop is probably due to the EU's mountain of agricultural subsidies and its trade barriers against U.S. products.

North America has taken up much of the slack from Europe. North America now accounts for a fifth of U.S. agricultural exports, double its share in 1986. Helped by the freer trade provisions of the Canada-U.S. Trade Agreement, U.S. exports to Canada have more than tripled since 1986, boosting Canada's share of U.S. agricultural exports to more than 11 percent. Canada has become an especially important market for U.S. consumer food products; a fourth of such exports head north. The dramatic turnaround in Mexico's economy, meanwhile, has led to a surge in U.S. exports, and Mexico's share of our exports during the recovery has more than doubled.

The former Soviet Union has increased slightly as a market for U.S. agricultural exports in recent years. Those gains, however, were dependent on heavy use of credit guarantees and other export subsidies. Without that assistance, U.S. sales to the various republics would have fallen.

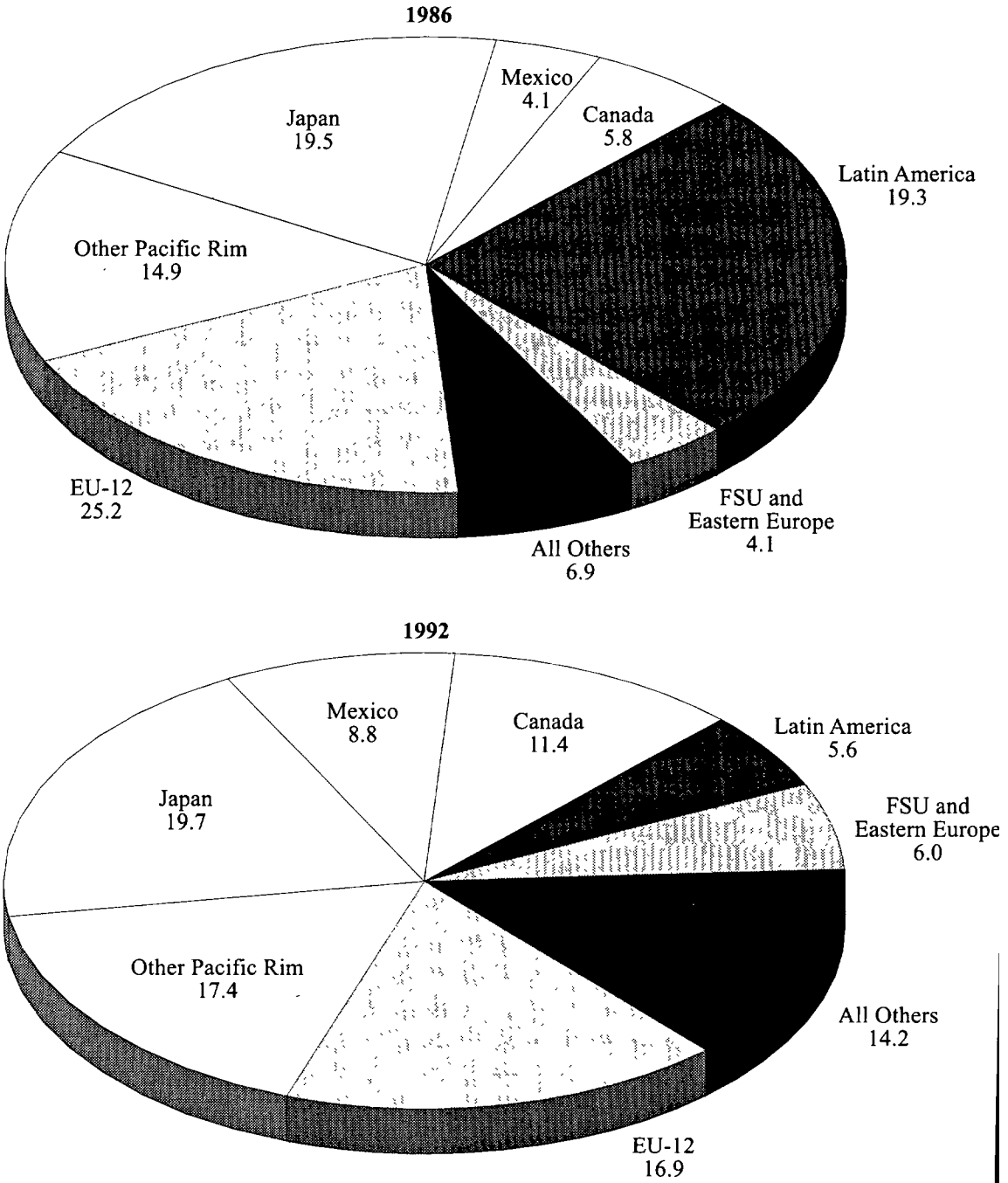
In short, recent trends reveal some important realignment in U.S. trading partners. Europe is a waning market, although it could rebound somewhat as agricultural subsidies and trade barriers there decline under the GATT agreement. Sales to Canada and Mexico have grown smartly, a trend that NAFTA will build upon. And the Pacific Rim remains the dominant market, especially for consumer products.

THE WORLD FOOD MARKET OF THE FUTURE

Further growth in U.S. agricultural exports hinges on the pace of growth in foreign populations and incomes, the key fundamentals underlying world food demand. The strongest population and income gains are occurring in the rapidly

Chart 4

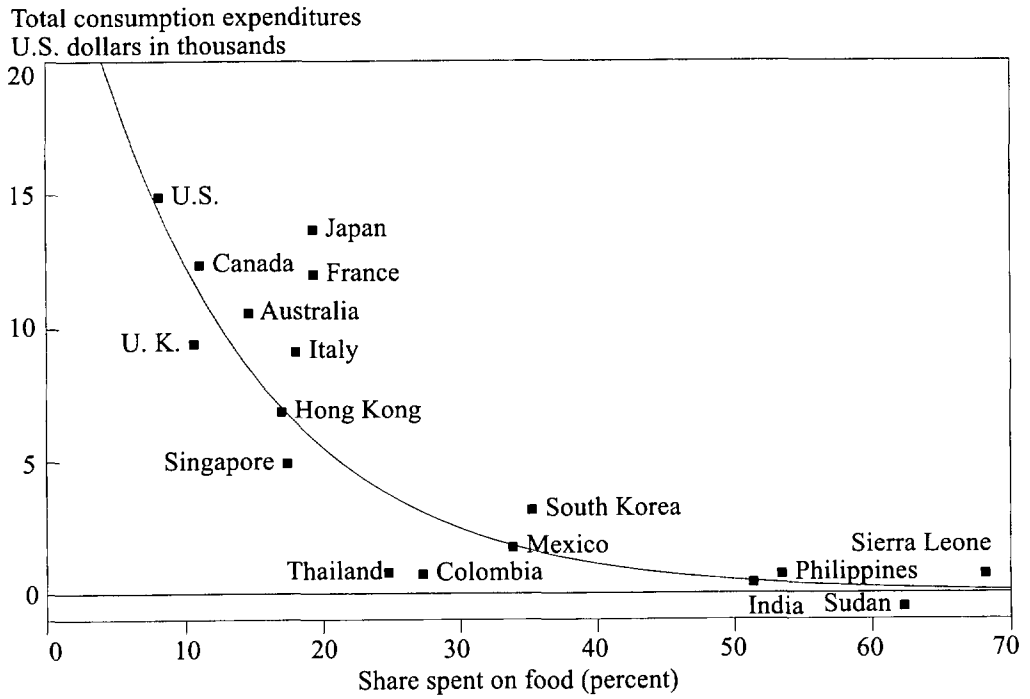
Shares of U.S. Agricultural Exports
Percent



Source: U.S. Bureau of the Census trade data.

Chart 5

Share of Average Household Budgets Spent on Food



Source: Putnam and Allshouse (1993).

developing countries of Asia, particularly the Pacific Rim countries, and Latin America. Because local food production there is not keeping pace, the recent shift in U.S. farm exports toward Asia and Latin America promises to be the wave of the future.

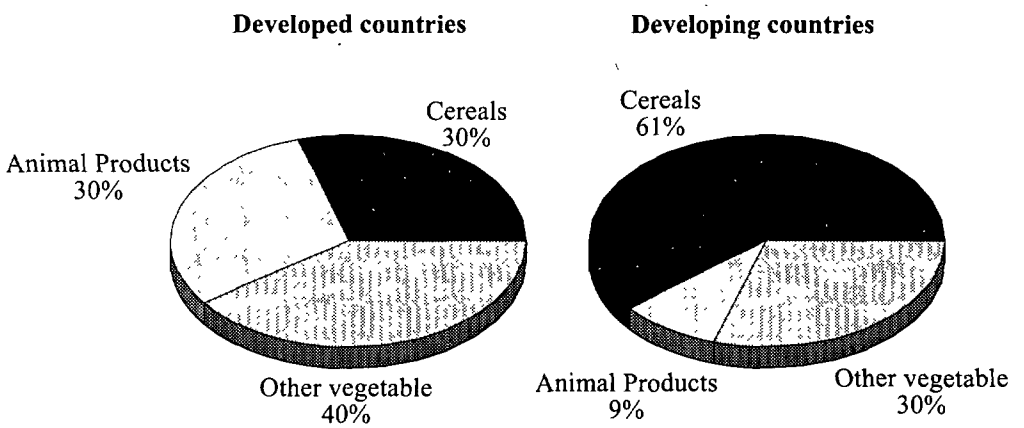
World food demand

Population growth is a key parameter in the world food market, since food demand generally rises in direct proportion to increases in population. The world population is currently about 5.6 billion and growing about 1.5 percent a year. Population growth is expected to slow gradually in all parts of the world during the next 30 years. Nevertheless, the population in the developing world is expected to swell nearly four times faster than the much smaller population of developed nations. Thus, even with the gradual slowing expected in the world population overall, by the year 2020 nearly 8 billion people will rely on the world's farmers. And nearly 85 percent of those consumers will live in Asia, Africa, and Latin America (U.S. Bureau of the Census).

Also playing a key role in the global food market of the future will be income growth. Food demand generally rises with gains in income. Unlike increases in population, however, gains in income generally push up food demand less than proportionately. Thus, income growth has a smaller

Chart 6

Contribution of Major Food Groups to Per Capita Calorie Supplies
1986-88



Source: Food and Agricultural Organization of the UN, Food Balance Sheets (1991).

impact on total food demand than population growth. Still, growing incomes can have a big impact on food trade, since higher incomes enable consumers in developing countries to upgrade and diversify their diets by purchasing foods from abroad that they cannot produce themselves.

Rising incomes will have the biggest impact on food demand in developing nations, where a large share of household budgets is spent on food. Most consumers in the developing world are likely to spend a significant portion of any additional income on food. For example, in Sierra Leone, Sudan, the Philippines, and India, spending on food accounts for well over half of total consumer spending (Chart 5). In contrast, food's share of household spending is much smaller at the high end of the income spectrum. In the United States, Canada, and most European nations, food accounts for less than 20 percent of household budgets, implying only a small boost to food demand with further gains in income.

As incomes rise, consumers also change the mix of foods in their diets. In many developing countries, low-income consumers are primarily concerned with consuming enough calories. But as incomes rise, consumers add more variety and quality to their diets, shifting from root crops and rice to wheat products, which require less at-home preparation, and eventually to relatively expensive animal products. At the highest rung on the food ladder, attained by only the world's wealthiest

Table 1

World Grain Consumption and Production

	Share of grain consumption produced at home (Percent, 1985-92)	Annual per capita production (kg, 1985-92)	Annual growth in per capita production (Percent, 1970-92)	Annual per capita consumption (kg, 1985-92)	Annual growth in per capita consumption (Percent, 1970-92)
World	100.2	322	.4	321	.2
North America					
United States	139.5	1,197	1.9	858	.5
Canada	196.0	1,904	1.3	972	-.3
European Union	115.2	527	1.6	458	-.2
Former Soviet Union	86.0	611	-.4	710	-.1
Latin America	94.8	237	-.3	250	.5
Africa	75.3	124	-1.4	164	-.1
Asia	91.6	217	1.0	237	1.1
Oceania					
Australia	293.5	1,321	1.0	440	.9

Source: U.S. Department of Agriculture, PS&D View (1993).

consumers, direct consumption of cereals falls sharply and consumption of animal products shoots up, pushing up demand for cereals as livestock feed.[3] In the wealthiest nations, increases in household income also push up demand for more highly processed, conveniently prepared food products and food prepared outside the home.

Compared with consumers in the wealthier countries, consumers in developing countries on average still derive a far higher proportion of their calories from cereals (about twice as much) and a much smaller proportion from animal products (about a third as much) (Chart 6). A pronounced, gradual shift away from cereals and toward animal products is under way in the diets of many Asian and Latin American nations where consumer incomes are rising rapidly. For example, the proportion of total calories derived from animal products has tripled in Korea and nearly doubled in Japan, China, and Mexico during the past 25 years, while the proportion derived from cereals has fallen sharply (Mitchell and Ingco).

World food trade

Overall, gains in global food supplies are keeping pace with the world's growing food needs, and this pattern seems likely to continue. As a result, the outlook for providing an adequate diet for a larger proportion of the world population is rela-

Table 2

Annual Growth in World Grain Trade

(Percent)

Net exports	1970s	1980s	1990s
Developed countries	16.9	.0	1.9
United States	11.1	-3.5	2.0
European Union	NA	20.8	4.1
Net imports			
Developing countries	13.1	3.7	4.9
East Asia	7.1	3.7	3.7
South Asia	5.2	3.3	12.3
Latin America	7.0	.5	3.3

Source: Mitchell and Ingco (1993).

tively bright. A global mismatch, however, between the places where most of the population lives and the places where most of the food is produced underscores the growing importance of food trade.

Cereal grains are a useful proxy for tracking overall trends in the world food market because they are by far the world's most important food, either to be consumed directly or as livestock feed.[4] Steady gains in world grain production have easily outpaced growth in the world population during the past two decades, pushing up per capita grain supplies almost a half percent a year and improving the diet of most of the world's population (Table 1). With slower growth in the world's population and steady gains in grain yields likely in the years ahead, further improvement in world diets will be possible.

Improvement in diets in much of the world will require a significant expansion in food trade. Much of Asia, Latin America, and Africa—where a substantial majority of the world's consumers live—do not produce enough food to meet domestic needs, and their food supply gap is likely to widen in the years ahead. Since 1985, the share of grain consumption produced domestically averaged only 75 percent for Africa, 92 percent for Asia, and 95 percent for Latin America. In each of these areas, per capita consumption has risen faster than per capita production for at least the past two decades. A combination of further population growth (albeit gradually slowing) and brisk income growth promises to widen the gap between local food consumption and production. But higher incomes will better enable most consumers in Asia and Latin America to fill their food supply gap with purchases in the world market.[5]

In contrast, a relatively small handful of countries produce more grain than is needed to meet their domestic needs, creating large food supplies for export. The leaders among these are the United States, Canada, the EU, Australia, and Argentina. Consumers in these nations are already well-fed with per capita grain consumption well above the world average. Moreover, slow population growth

and steady gains in production point to even larger exportable supplies in the future.

The growing mismatch between where food is consumed and where it is produced promises stronger growth in world food trade in the years ahead. Mitchell and Ingco (1993) estimate that growth in grain exports from the developed countries will average about 2 percent a year in the 1990s, up from the flat market of the 1980s but still well below the double-digit growth recorded during the 1970s (Table 2). Meanwhile, the annual growth of grain imports in the developing countries could pick up to about 5 percent a year, fueled by strong growth in Asia and Latin America.

Whether the developing nations will import their food needs in the form of grains and other bulk commodities or as processed food products is an open question. Rising incomes could encourage bulk commodity imports to be processed domestically into the products that more affluent consumers in developing countries demand. In most developing countries, however, capital is scarce and labor is abundant. Thus, developing countries may favor imports of consumer foods which require capital-intensive processing, continuing the recent trend toward much more rapid trade growth in consumer food products than in bulk commodities.

In either case, the outlook points to moderate growth in the world food market. The population of the developing world, which is growing in size and affluence, will increasingly rely on the world market for a bigger share of its food needs. But world food demand should remain comfortably within the capacity of the major food producers, and competition is likely to remain keen among them. Meanwhile, new competitors in the market may emerge as further reform in the former Soviet Union and Eastern Europe scales back consumption, boosts production, and frees food supplies for export. Thus, the world food market of the 1990s promises to be much stronger than in the 1980s but much less vibrant than the booming market of the 1970s.

RECONCILING OLD POLICY WITH A NEW MARKET

Faced with this outlook, U.S. agriculture can choose from two broad strategies to improve its position in the world market. First, it can try to sell more bulk commodities. Prices for bulk commodities, however, will probably be relatively low and declining in real terms, as the global spread of a new generation of agricultural technologies assures ample commodity supplies. Thus, the industry must accept thinning margins while constantly cutting costs of production with the newest technologies. This strategy would essentially continue the approach that many in the sector currently follow.

Second, the industry can take advantage of rapid growth in more profitable consumer food products. Food companies may try to sell more, either by investing abroad or by expanding shipments from U.S. plants. Investment appears to be the more likely channel to foreign buyers; 1993 sales from foreign affiliates of U.S. food processing firms were more than three times exports of consumer food products. But growing investment abroad translates into gains for U.S. farmers only if foreign affiliates purchase bulk commodities here. To date, rapid growth in consumer food trade has not led to a marked increase in sales of U.S. farm commodities.

Regardless of which strategy is pursued, changes in agricultural policy will be needed. The outlook for the world food market and its related opportunities have four important implications for agricultural policy. First, U.S. interests in international policy matters will lie more in economic and trade policies and less in attempts to wrestle down agricultural subsidies abroad, the primary focus of recent years. Second, the export outlook raises questions about the validity of U.S. commodity programs. Third, programs that idle U.S. acreage may hurt U.S. competitiveness. And finally, programs aimed at developing foreign markets need to be reappraised in light of current trends and market fundamentals.

International policies

For more than a decade, U.S. agriculture has carried one message to international policy debates: lower agricultural subsidies and trade barriers worldwide. The mountain of European agricultural subsidies and barriers to U.S. products in many markets have been powerful motivating forces for that message.

In a post-Uruguay Round world, when subsidies will be coming down—albeit slowly—a new message is needed. Moreover, with the prospect of plentiful supplies of food, further reductions in subsidies would not address the principal problem anyway. That problem is too little demand. U.S. agriculture has great capacity, but that capacity becomes an asset only when growth in world food demand is robust. Thus, U.S. agriculture has much to gain from economic and trade policies that boost economic growth in regions like Asia and Latin America, where populations are growing fast. Ironically, the biggest benefit to U.S. agriculture from the Uruguay Round will probably be its boost to world income and food demand, not its reduction in global agricultural subsidies.

Commodity programs

A world market with sluggish trade in commodities and brisk trade in consumer food products raises some fundamental questions about the validity of U.S. commodity programs. First, the cost of such programs is likely to be high due to the prospect for weak market prices for major crops. The cost of the programs is already under considerable scrutiny in an environment of tight federal budgets.

Second, U.S. support prices could hurt the competitive position of many bulk commodity exports. Support prices were reduced in the 1985 and 1990 Farm Bills. But if world prices decline in real terms in the period ahead, support prices could become more of a competitive problem, especially if they are frozen or raised in the 1995 farm bill.

Finally, pushing up commodity prices with government programs may simply wed U.S. farmers to the slowest growing segment of the world market—bulk commodities—while driving up costs of commodity inputs and hindering the industry's competitiveness in the fastest growing segment of the world market—consumer foods. Put another way, eliminating commodity programs may encourage U.S. farmers to shift to products with higher profit margins and brighter market prospects.

Acreage idling programs

Closely related to the commodity programs is the cropland that is idled under them.[6] Under current law, farmers must generally idle a portion of their cropland acres in exchange for federal price supports. The amount of acreage that must be idled is set by the secretary of agriculture within fairly broad guidelines in the farm bill.

The problem is that idling U.S. cropland capacity may be unwise in the context of the world market that lies ahead. In a slowly growing market crowded with foreign competitors, reductions in U.S. acreage simply encourage production elsewhere in the world. That linkage was evident in world production patterns of the 1980s. Normally, the rationale for restricting U.S. production is to boost prices to U.S. farmers. If the market is growing moderately, though, especially for bulk commodities, reductions in the United States may provide only a small boost to U.S. crop prices, especially if U.S. production cutbacks are matched by increases in other countries. Finally, cutting back U.S. crop production also throttles the use of U.S. grain handling capacity. This transportation and handling infrastructure may be one of the chief competitive assets of the United States in the world grain market. But the average costs of handling and shipping grain increase if a significant portion of the handling capacity lies idle due to cuts in U.S. production.

Market development policies

The United States has used a number of export promotion programs to help develop foreign markets for its farm products. In recent years, export credits and export subsidies have been the two main programs.[7] Both programs may need to be rethought in light of U.S. export prospects.

Export credits. The United States has been spending more than $5 billion a year on export credits in recent years. The question is whether these credits are flowing to countries that represent the best long-run markets for the United States. Roughly half the credits for fiscal 1992 were allocated to Russia, Ukraine, and other former Soviet republics. But these countries are unlikely to be strong long-term markets for U.S. agricultural exports. By contrast, Asia is a much more promising region for U.S. exports, although South Korea is the only Asian country to receive export credits. Clearly, export credits are influenced by both political and economic considerations. If the goal is to nurture new markets with significant long-term potential, however, a rebalancing of credits across regions may be necessary.

Export subsidies. Export subsidies have been a fact of life in world agricultural trade in recent years. Since the U.S. export recovery began in 1986, annual grain export subsidies in the EU have gone from $2 billion to $4 billion, while U.S. Export Enhancement Program (EEP) subsidies have increased from $250 million to just under $1 billion. In each case, every dollar of subsidy is attached to several dollars of trade—roughly $2 for the EU and $3 to $4 for the United States. Thus, as much as $12 billion a year in world grain sales—about a quarter of total world grain trade—are made with export subsidies attached.

Competing subsidies in Europe will come down under the final GATT agreement, but only gradually. While some will argue that EEP bonuses should be continued to offset EU export subsidies, the bigger question is whether such bonuses are effective in developing high-potential foreign markets. In recent years, the majority of EEP bonuses have gone to North African and Middle Eastern countries, who are some of the biggest purchasers of U.S. wheat. While these countries generally have high population growth, their economic prospects are less bright than in some Asian and Latin American countries.

Another factor in considering the future of the EEP will be its impact across U.S. commodities. EEP bonuses are not distributed equally across U.S. agricultural exports. In fact, more than three-fourths of the bonuses are given for wheat, while none are spent on corn. In this case, the wheat bonuses have made wheat a price-competitive feedstuff for some foreign buyers, displacing corn exports in those markets.

As U.S. farmers and food companies try to export more consumer food products, a broader variety of market development programs may be needed. In particular, U.S. firms will benefit from improved information on what foreign consumers want to buy. Thus, new programs aimed at market research on foreign food markets may pay bigger dividends than some current market development programs.

CONCLUSIONS

As in the past, U.S. agriculture remains vitally dependent on selling its surplus on the world market. But the character of the world market has changed. Consumer food products are selling better than bulk commodities, historically the mainstay U.S. export. Moreover, the growth in the world market is shifting to areas where populations and incomes are growing rapidly—Asia and Latin America. Although U.S. sales are beginning to shift along with the overall market, additional shifts may be needed to take advantage of the best opportunities. Overall, food appears likely to be plentiful, holding the growth in U.S. exports below the boom rates of the 1970s but above the slow growth of the late 1980s.

To fully exploit the market opportunities ahead, U.S. agricultural policy needs to be re-evaluated during the debate on the 1985 farm bill. A great deal of attention has been paid in recent years to reducing agricultural subsidies around the world, but with the Uruguay Round now over, U.S. agriculture will benefit most from trade and economic policies that will boost incomes abroad. Commodity programs will be evaluated on many criteria in the upcoming farm bill debate. From the point of view of expanding foreign sales, their usefulness is doubtful at best. Similarly, programs that idle U.S. cropland appear likely to be counterproductive in a world market where low-cost producers will hold the advantage. Finally, export promotion programs need to be re-evaluated in light of emerging market opportunities. Regions of the world that offer the best long-term growth prospects for U.S. agriculture are not receiving most of the dollars spent on export market development.

ENDNOTES

[1] In this analysis of agricultural export markets, the Pacific Rim countries include: Australia, Brunei, China, Hong Kong, Indonesia, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Taiwan, and Thailand.

[2] Consumer products include fruits and vegetables, meats, snack and breakfast foods, and other processed food products. Intermediate products include such things as wheat flour, soybean meal and oil, and hides and skins. Bulk commodities are unprocessed products such as grains and oilseeds.

[3] Minimum caloric requirements are typically met with the most readily available, domestically produced staple food, usually a starchy root crop like cassava or a cereal grain like rice. Mitchell and Ingco (1993) provide a more detailed account of income-induced shifts in diets.

[4] In recent years, cereal grains accounted for nearly half of world cropland, by far the largest proportion of any crop.

[5] The outlook is less bright for Africa, where incomes may not be adequate to enable consumers to purchase enough food in the world marketplace to make up for domestic production shortfalls (Mitchell and Ingco).

[6] Another 36.5 million acres lie idle under the Conservation Reserve Program. Much of this land is highly erosive, and its future will depend more on environmental considerations than supply and demand considerations. Thus, it can be set aside for the purposes of this discussion.

[7] Export credits are administered by the Foreign Agricultural Service (FAS) under the General Sales Manager (GSM) program. Export subsidies are administered by FAS under the Export Enhancement Program.

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