

# Federal Reserve Bank of New York

## Quarterly Review

Autumn 1993 Volume 18 Number 3

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# The Global Derivatives Market

by William J. McDonough

I welcome the opportunity to comment today on the excellent study on derivatives by the Group of Thirty (G-30). The report, and especially its appendices, provide a comprehensive overview of derivatives activity and their risks, a survey of current risk management practices, and recommendations on sound practices for risk management and on regulatory and accounting measures. This report belongs at the top of the reading list for the senior management of all institutions active in derivatives markets, as well as for regulators and the legislative community concerned with the safe operation of these markets.

I have long been convinced that the extraordinary growth of derivatives activity over the past decade has provided real benefits in the form of more efficient allocation and management of risks. By lowering the costs of risk intermediation and providing more finely tuned hedges, derivatives enable investors, financial institutions, and corporate treasurers to achieve exposures in their financial transactions that are more consistent with their overall business strategies. As a result, derivatives have facilitated the financing of investment in physical assets.

These important benefits of derivatives require the continuous, smooth, and safe functioning of derivatives markets. To this end, the first line of defense against disruptions to the derivatives markets is the risk management capability of all firms active in these mar-

kets. The G-30 study on derivatives helps fortify this line of defense by distilling the present wisdom on the nature of risks in derivatives activities and on sound practices for risk management. Let me stress how important it is that those end-users of these products who become quasi-market makers have the same sound practices we expect from financial institutions. Other end-users should use these practices as guides. Indeed, I believe that the adoption of the full set of recommendations in the report by *all* major users of derivatives would significantly reduce the chance that a major financial disruption will originate in any one firm's derivatives activities.

I find myself even more challenged to add to the report's discussion of the nature of systemic risks that might arise because of the effects that derivatives activities have had on the functioning of the financial system. At the end of my remarks, I will provide my own perspective on this issue.

Beyond these critical risk management and systemic risk concerns lies another set of issues that we at the New York Fed and our colleagues at the Board of Governors are committed to better understanding—that is, the ways in which the expanded use of derivatives by a wide variety of end-users has altered the channels of influence of monetary policy. This concern clearly lies outside the scope of the G-30 study, but I mention it today because this important topic has just begun to get the attention it deserves.

I do not mean to suggest that the use of derivatives has undercut the ability of monetary policymakers to achieve their broad macroeconomic goals. I have no such presumption, nor do I exclude the possibility. I

Remarks by William J. McDonough, President of the Federal Reserve Bank of New York, on *Derivatives: Practices and Principles* (July 1993), a report by the Global Derivatives Study Group of the Group of Thirty, presented at the Group of Thirty Meeting, Washington, D.C., September 27, 1993.



simply wish to underscore that derivatives have become so pervasive that their potential macroeconomic consequences can no longer be ignored.

Let me cite two examples to give you a sense of the issues involved. First, much of the transmission process

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operates, in the first instance, through the impact of monetary operations on financial intermediaries, particularly banks. How have derivatives altered banks' liquidity and interest rate management practices, and might these alterations affect the transmission process? Second, has the improved ability of corporations to hedge interest rate and exchange rate risks altered the sensitivity of their investment decisions to interest rate and exchange rate movements?

I give these examples in the form of questions because, as yet, economic research provides little guidance as to the answers to these queries. The Federal Reserve is exploring these issues, and we hope that we can also spark the interest of other researchers in both the public and the private sectors.

#### **Comments on the G-30 recommendations**

I turn now to my specific comments on the recommendations offered in the G-30 report.

*The role of senior management.* The G-30 is exactly right to stress in its first recommendation the importance of senior management's active involvement in the formulation of risk management policies. However, our vision of the role of senior management in derivatives activities is even broader.

Senior management must be actively engaged in the risk management process on an ongoing basis and not just at the policy formulation stage. Let me again emphasize that I am speaking of the top management at *all* firms—both financial and nonfinancial—active in derivatives markets. Senior managers should critically evaluate risk taking in their organization, reviewing risk management reports as appropriate. They should regularly ask probing questions of line managers about the nature of risks in their area, insist on prompt discussion

of internal control or loss recognition problems, and engage area managements in the discussion of which events could expose the firm to substantial loss. Senior managers should also be in a position to give a concise summary of risk control mechanisms to appropriate regulators. Only this active involvement by senior management will ensure a full discussion of the often rapidly evolving vulnerabilities of the firm. The Board of Directors should be actively involved in reviewing both policy and performance, including management proposals of changes in the acceptable levels of risk.

I do understand that people of my generation who are not astrophysicists have to strain to understand these products. But it is simply not responsible to use that

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**To put it simply and directly, if the bosses do not or cannot understand both the risks and rewards in their products, their firm should not be in the business.**

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difficulty as an excuse for noninvolvement. To put it simply and directly, if the bosses do not or cannot understand both the risks and rewards in their products, their firm should not be in the business.

*A comprehensive approach to risk management and control.* To enable senior management to assess evolving vulnerabilities, internal risk management systems need to integrate all aspects of risk in a way that allows an overall risk profile to emerge. Risk of substantial loss in a particular scenario could derive from market, credit, liquidity, and operational risks. As a result, firms must be able to aggregate, at least roughly, the consequences of major market events across all product and activity groups for all of these areas of risk. This requires that the risk management approach to market and credit risks outlined in the G-30 report be extended to include funding liquidity and operational risks within a unified framework, perhaps in the context of stress tests.

The development of a comprehensive approach to risk management would be facilitated by the articulation of a broad conceptual framework covering risk measurement, risk management and control, and the management information system that produces reports for all levels up to senior management. Here, one important issue is how to link tightly the "value at risk" approach to market risk, as advocated in the report, with the price risk limits frequently used by trading desks. Trading limits sometimes appear to be derived intuitively rather than directly from the value at risk framework.

The G-30 report provides recommendations on many

of the building blocks that could go into the development of such a comprehensive approach to risk management and control but does not provide advice on how to assemble the building blocks in a coherent manner. We believe that market practitioners rather than regulators are best equipped to design workable ways to solve this problem and would welcome further recommendations by the G-30 on this issue.

*Valuation procedures.* While the report's treatment of credit risk management is extremely thorough, including the discussion in an appendix, the treatment of market risk is less detailed. In particular, the issue of valuation procedures is raised in the report's recommendations, but I wish more had been said.

For example, recommendation 3 suggests valuing derivatives portfolios at mid-market value less specific adjustments. The study suggests that these adjustments should capture such expected future costs as unearned credit spreads, closeout costs, administrative costs, and investing and funding costs. The report also notes that these adjustments are implicitly assumed in the bid and offer method. Yet the precise nature of these adjustments remains unclear, and the devil may lie in the detail.

The mere fact that these adjustments to market prices are recommended for risk management purposes appears to be an acknowledgment that the market may not accurately value all these factors. No mention is made of liquidity premia; but I wonder if the market price fully reflects the illiquidity of the more complex instruments with cross-market exposures that can be difficult to hedge.

For senior managers to understand the implications of these adjustments, they would need to see the actual market values, with the adjustments listed separately and thoroughly annotated. The reporting of adjusted market values alone, without this disaggregation and elaboration, creates the potential for misconceptions. At worst, these adjustments could mask the consistent underpricing of sizable risks.

*Management information systems.* The G-30 report may have underplayed the importance of developing the management information systems that are required for all the G-30 recommendations to be implemented. The limitations of a firm's management information system are directly related to the effectiveness of risk management. For example, the problem I noted earlier about reliance on trading limits that are only loosely linked to a value at risk approach may derive from an inability of the management information system to measure and monitor risks in the real time frame of the trading desks.

Because the development and ongoing modification

of these information systems are very costly and take time, the limitations of the systems may prove a significant constraint on the ability of firms to rapidly implement some of the valuable recommendations in the G-30 report. For this reason, senior managers should carefully assess the state of their information system when deciding how rapidly to expand their firm's derivatives activities.

*Accounting and disclosure.* I welcome the attention of the G-30 study to the critical issues of accounting and disclosure. I see these as key areas for extensive further cooperative effort, both here in the United States and around the globe. These are crucial issues because squeezing derivatives into existing accounting structures can conceal and distort information and the decision making that depends on that information. In

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addition, the increased use of derivative instruments, combined with the inadequacy of current accounting concepts in this area, has reduced the transparency of a firm's exposures and of the financial system more broadly.

The G-30 recommendations to harmonize accounting practices and standards and to improve the quality of disclosures may go a long way toward enhancing transparency. I would like to provide a few additional thoughts on the nature of accounting and disclosure measures that might further this process.

If you compare the effectiveness of current practices regarding accounting and disclosure for financial activity with those of yesteryear, one simple impression emerges: Formerly, you could look at the balance sheet of a financial institution and quickly get a sense of the nature and extent of exposures and risks. Today, balance sheet information is clearly inadequate for this purpose.

From this simple observation, a whole agenda for reform must be born. The basic question is: How can we revise our accounting and reporting practices so that we can, as readily as in the past, understand the nature of a firm's risks and exposures? In particular, what key exposures need to be measured and how can they be reported so that essential information is provided without compromising proprietary interests?

The Financial Accounting Standards Board (FASB) in

this country, and comparable bodies abroad, have struggled in recent years to respond to these questions. But the problems have proven formidable. I am thinking especially of the difficulties of capturing such key notions as the potential future credit or market exposures in derivatives transactions, which are typically assessed through simulation and sensitivity analyses. Similarly, an evaluation of the vulnerability of a firm's portfolio to extreme events may best be performed by comprehensive stress tests, perhaps supplemented by an analysis of possible liquidity problems. The present accounting and disclosure frameworks do not yet shed much light on these issues.

How can progress be made rapidly enough to avoid being greatly outpaced by the evolution of the financial markets themselves? One interim way to bridge this gap while we await progress on accounting standards would be to develop a detailed statement of sound market practices for these more complicated accounting and disclosure issues. These sound market practices could supplement the information provided by the formal accounting standards. The recommendations in the G-30 study could provide a starting point for this effort.

*Steering committee on accounting and disclosure for derivatives.* To develop these sound practices, as well as to advise the ongoing efforts of FASB, a steering committee could be formed in this country. We could also encourage the establishment of similar groups in other countries. The composition of the committee could be designed to incorporate all relevant perspectives—FASB (or a similar body in other countries), major market practitioners, end-users, and regulators. I

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envision that industry practitioners would take the lead in developing these sound practices, but the presence of the other members on the steering committee would ensure that a broad range of concerns was addressed.

One difficult problem that the steering committee would confront is that the fast pace of activity in today's markets renders financial statements stale almost before they can be prepared. Here the G-30 recommendations provide little guidance. The report quite appropriately states that the degree and nature of risk must

be disclosed. In order for this disclosure to be meaningful, however, it must be timely.

In practice, more timely disclosures may need to involve partial information with respect to key aspects of a firm's exposure. Of particular interest may be those factors that could directly affect a firm's ready access to liquid markets. The steering committee could explore whether some information could readily be provided on a much more frequent basis than at present. Over time, developments in electronic communications and systems technology may increase the feasibility of collecting and releasing information on a more frequent and timely basis.

*International harmonization of accounting and reporting standards.* A final concern that I have in this area is that, given the global nature of derivatives markets, only a global approach to these issues will succeed in the end. Decreased transparency is not solely a domestic concern, and all of the initiatives I have discussed, as well as those in the G-30 study, will require close coordination of efforts in all countries with developed financial markets. I would therefore underscore the sense of urgency conveyed in the G-30 report to create harmonized international standards.

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#### **The changing nature of systemic risks**

The section of the G-30 report about which I have the most significant reservations is that on systemic risks. While the report identifies many of the potential sources of systemic problems, the discussion, perhaps inadvertently, appears to understate these concerns.

It may appear that central banks are unduly preoccupied with low-probability scenarios of possible systemic disruptions. However, it is precisely because market participants may only take minimal precautions for events in the tails of probability distributions that central banks must be vigilant. In those rare occasions of financial disruption, central banks must be prepared to assess the nature of the problem and to act swiftly. For this reason, we at the Federal Reserve Bank of New York will continue to work actively on improving our understanding of the evolving sources of systemic risk.

I wish to emphasize that I do not believe that derivatives are the sole, or perhaps even the principal, source of systemic risk in today's financial markets. At least

equal risk of a sizable default or failure of a major financial firm, or group of firms, could result from losses on more traditional activities. Still, the increasingly widespread use of derivatives has altered firm-level exposures and market dynamics, and we must consider how these changes modify our thinking on possible sources of systemic disruptions and how those disruptions play out.

It may be useful to delineate two broad categories of systemic risks associated with derivatives. The first category, which encompasses many of the points noted in the G-30 discussion, includes disruptions that have their origin in derivatives activities at the individual firm level. Here I would include oft-cited concerns about the underpricing of credit, market liquidity, or other risks that can lead to large losses on derivatives positions. I would also include the difficulties faced by senior management in detecting fraud in the internal reporting of complex derivatives positions.

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A second category of systemic risks associated with the proliferation of derivatives is less well understood. I refer here to the ways in which the spread of derivative instruments, coupled with advances in technology and telecommunications, has altered the susceptibility of the financial system to shocks.

A variety of issues falls into this second category. For example, the decreased transparency of firms' exposures can contribute to the development of a financial crisis. While it has always been impossible to know precisely the nature of exposures at a counterparty, this problem has been exacerbated by the lack of information about off-balance-sheet activities.

In the absence of timely and accurate information on exposures of a firm rumored to be in trouble, other firms are more likely to back away from providing funding to, or trading with, that firm. Under these circumstances,

liquidity problems can grow into a threat to solvency. Similarly, if a major market maker in derivative instruments were to fail, it could prove difficult to find other firms willing to take over or unwind a complex derivatives book whose risks are difficult to assess quickly.

Another issue in this second category is the increased market linkages and altered price dynamics created by derivative instruments. One concern is the phenomenon frequently referred to as positive feedback, that is, those mechanisms that have the potential to exacerbate an already sharp price move.

Positive feedback mechanisms have always existed in financial markets in one form or another, but the tremendous growth of options and option-like instruments creates an added source of positive feedback. The reason is that written options, as a matter of course, tend to be dynamically hedged and hence require selling into a falling market. In addition, margin and collateral arrangements are increasingly being used to manage credit risk in derivatives transactions, and these provisions can also amplify already sharp price moves in underlying markets.

In its discussion of this point, the G-30 study notes that academic research has shown that derivatives trading does not increase volatility in underlying markets. An important distinction should be drawn, however, between volatility in normal times and in times of stress. Econometric studies do not shed much light on the experience with volatility in times of stress, because these episodes occur infrequently and tend to differ greatly in character, making them difficult to summarize empirically.

I would like to underscore the critical role that more active involvement of senior management can play in reducing the potential for problems to escalate to a point where they pose systemic risks. The problems with market dynamics noted in my second category of systemic risks can contribute to the firm-level risks included in my first category. As a result, both sets of issues should be on the radar screens of top management. These examples, while brief, are intended to illustrate just how complex the evaluation of systemic risks has become. As we work to improve our understanding of these issues, we hope that the G-30 and other private sector entities will continue to provide us with the sort of thought-provoking and educational material found in the present study on derivatives.

# Recent Trade Liberalization in Developing Countries: The Effects on Global Trade and Output

*by Susan Hickok*

The success of the market-oriented growth strategies of the East Asian economies over the last decade has led many developing countries to consider trade liberalization programs. A substantial number of developing economies have recently eased or announced their intention to ease import tariffs and other barriers to trade. This study examines the probable impact of such reforms on international trade flows, output, and the U.S. economy.

An important element in this discussion is the ability of developing countries to pay for the increased import demand created by the lifting of trade barriers. Financial flows to developing countries have increased markedly in recent years, easing earlier financing problems. New constraints could potentially arise, however, because financial flows to developing countries are already relatively large and may perhaps have limited scope for further increase.

This article first estimates the effect of liberalization on international trade flows and output when developing countries face no financing constraints. It then assesses the effect when developing countries encounter problems raising additional funds. Estimates of the impact of developing country liberalization on the U.S. economy in particular are provided after the global analysis. The estimated effects derived in both the global and U.S. analyses should be taken as indicative rather than precise given the uncertainties inherent in quantifying reform efforts.

Overall, the estimates suggest that developing country import liberalization will have a substantial long-run positive impact on global trade and output. The extent to which trade and output grow and the distribution of

growth between industrialized and developing countries over the medium term, however, will depend on the severity of the financing constraints facing developing countries. When financing is sharply limited, the willingness of industrialized countries to buy developing countries' products actually becomes a key determinant of the degree to which developing country import liberalization improves world trade and output. In consequence, the trade restrictions imposed by industrial countries may be as influential as the trade practices of developing countries in determining the impact of developing country reforms on the global economy in the medium term.

## **Changing developing country trade policies**

Many developing countries have enacted significant trade liberalization measures in recent years. These measures have typically taken the form of phased-in reductions in tariffs and quantitative controls. Some reductions have already been completed; some are still to be implemented. Other countries have announced plans to introduce significant trade reforms in the near future. This section briefly discusses recent and prospective reform initiatives in the developing countries. It then assesses the level of import liberalization likely to occur over the 1991-95 period.

In 1985, the latest year for which a comprehensive survey of developing country tariff levels is available, the average unweighted tariff level for fifty developing countries was 26 percent.<sup>1</sup> This level substantially

<sup>1</sup>This number was not weighted by either the relative size of each country or the relative importance of each listed tariff item within a country's tariff schedule.

exceeds the roughly 5 percent level set in industrialized countries. When other import charges levied by developing countries are included, the average unweighted import tax level for 1985 rises to 34 percent. In addition to imposing these taxes, developing countries typically placed substantial quantitative restraints on imports. For instance, 60 percent of Argentina's imports, 34 percent of Brazil's imports, and over 90 percent of India's imports were subject to quantitative restrictions in the mid-1980s. There was clearly scope for significant import liberalization in developing countries in the second half of the decade.

Many countries took advantage of this scope. Since 1985, more than thirty developing countries have enacted trade reform measures. Most of the reforms have been fairly recent or are to be phased in over the next few years. Table 1 lists the trade liberalization efforts of major developing countries.

As Table 1 indicates, nations that represent some of the largest developing country trade partners of the United States are currently cutting tariffs by roughly 10 to 20 percentage points. They are also significantly reducing quantitative import restrictions. Indeed, Brazil, China, and India have all announced reductions in their restrictive import licensing requirements. The reforms enacted by these large countries are representative of the efforts of many smaller developing countries: in fact, much of the developing world is moving toward freer trade policies.

Nevertheless, some notable Asian developing countries—Hong Kong, Singapore, South Korea, and Taiwan—are not listed on Table 1. The omission of these four newly industrialized economies (the Asian NICs) does not mean that they have continued to suppress imports. Rather, these economies already had relatively low nonagricultural import tariffs and relatively few non-agricultural import restrictions in the second half of the 1980s. Although some of these economies have recently lowered or plan to lower tariff levels further, their current tariff changes are very small in percentage point terms compared with the tariff changes of the countries shown in Table 1.

What do the measures shown in Table 1 suggest about the aggregate magnitude of developing countries' current import liberalization efforts? The countries listed in the table account for roughly two-thirds of total developing country exports and imports other than those of the Asian NICs just mentioned. (The countries listed account for about 75 percent of U.S. imports from developing countries and 70 percent of U.S. exports going to developing countries, again excluding the Asian NICs.) Bearing in mind that other, smaller countries are also liberalizing trade restrictions, we may take the countries shown in Table 1 as representative of

developing countries in general. That is, we may assume that the trade policy changes of the countries listed are indicative of the current decline in the tariff rates of all developing countries. Consequently, we may use the policy changes shown in Table 1 to estimate the magnitude of the current reduction in the tariff level of all developing countries taken as a group (excluding the tariff level of the Asian NICs).

In deriving this estimate, we focus on trade policy changes since 1991. Although Table 1 reports trade policy developments predating this period, the impact of such developments on global trade and output has probably already been felt; we want to estimate the impact yet to occur from trade reforms.

For the countries whose changing average tariff rates have been reported, the declines in these rates between 1991 and 1995 range from 7 to 20 percentage points; the declines average 11 percentage points. For the countries whose peak tariff rates alone have been tracked, the reported declines in these peak rates range from 5 to 43 percentage points and average 19 percentage points. The fall in the average tariff levels of this second group of countries is likely to be somewhat smaller than the fall in their peak tariff rates.

Overall, the reported rate declines suggest that a reasonable estimate of the magnitude of tariff reduction for all developing countries taken as a group would be about 10 percentage points. This estimate is roughly the mean of the reported declines in average tariff rates and is less than the mean of the decline in peak tariff rates for the developing countries with available data. Of course, this estimate is imprecise. However, the relatively narrow range of reported average rate changes suggests that the actual aggregate cut in developing countries' tariff rates is unlikely to be either much greater or much less than 10 percentage points.

Estimating the quantitative impact of developing country reductions in nontariff barriers is more difficult. Nevertheless, we can make a reasonable assessment of the impact these reductions are likely to have. The tariff equivalents of nontariff barriers—that is, the levels of tariffs that would have the same contractionary impact on imports as that had by the nontariff barriers—have been found to substantially exceed 100 percent for a number of products in highly protected countries, including some of the countries that are now reducing their nontariff barriers.<sup>2</sup> Given the extent of nontariff

<sup>2</sup>If import price elasticities of demand equal one, a 100 percent tariff would cut demand 100 percent, an effect equivalent to that of a nontariff barrier that totally blocks import purchases. Since price elasticities typically exceed one for restricted imports, tariff equivalents may exceed 100 percent by a considerable margin. Lewis and Gaisinger report tariff equivalents of over 100 percent for selected imports of Pakistan in Bela Balassa, ed., *The Structure of Protection in Developing Countries* (Johns Hopkins Press, 1971). The

Table 1

**Recent Trade Liberalization Measures**

Country	Measure
Argentina	Average tariff level reduced from 18% to 11% in 1991; highest tariff rate cut by 15 percentage points in 1992, although import taxes were raised 7 percentage points; import licensing restrictions substantially eased in 1991
Bangladesh	Average tariff rate recently reduced to 25%; further tariff cuts planned for 1993
Brazil	Average tariff level was 32% in 1990, 25% in 1991, and 21% in 1992; it was scheduled to fall to 14% in July 1993. Automobile duties scheduled to fall to 35% in 1994 from 50% in 1992; stringent computer protection ended in October 1992; most nontariff barriers removed in March 1990
Caribbean Community (Caricom): thirteen-member common market	Agreement concluded to drop ceiling rate for common external nonagricultural tariffs to 20% in 1997 from 45% in 1992
China	Agreement concluded in October 1992 with the United States to begin significant liberalization of imports, including end of almost 90% of nontariff barriers by 1998. Substantial tariff cuts also announced in 1992
Colombia	Average import duty, including surcharge, reduced from more than 33% to less than 13% in 1992; top tariff rate to be cut from 63% to 20% by end-1993 under Andean Pact agreement on common external tariff
Ecuador	In June 1992 new tariff range for most products of 5 to 20% replaced previous range of 5 to 35%; further liberalization planned
Egypt	World Bank program that includes trade liberalization is in progress. In 1992 import ban reduced to 10% of tradeable goods from 23% in 1991 and 37% in 1990; in 1993 new tariff range for most products of 5 to 80% replaced previous range of 5 to 100%
India	Many restrictive import licensing requirements (which covered 70% of all imports) eliminated in 1992; substantial tariff reductions enacted or planned; average peak tariff rate reduced to 85% from 110% under fiscal year 1993-94 budget
Indonesia	Trade liberalization packages adopted in 1986, 1987, 1988, 1990, 1991, and July 1992
Israel	Remaining import duties to end in 1995 under free trade agreement signed with the United States in 1985
Mexico	Remaining import duties (which average about 10%) to end in 2007 under free trade agreement signed with the United States in 1992 (U.S. ratification vote is scheduled for November 17, 1993)
Pakistan	Under fiscal year 1992-93 budget, tariffs on consumer durables cut from 80 to 90% to 50% and some machinery tariffs cut in half; list of banned imports cut in half in 1991 and reduced again in 1992
Peru	Tariff range to be reduced from 15 to 25% to 5 to 20% by the end of 1993 as part of Andean Pact common external tariff agreement
Philippines	Trade reform package adopted in 1991 to reduce average tariff rate from 28% to 20% over four years; some quantitative restrictions lifted
Thailand	Significant reduction of tariffs planned
Turkey	Substantial tariff reductions enacted at the end of 1992
Venezuela	Tariffs recently reduced and further cuts planned through 1993; the maximum scheduled tariff for 1993 is 20%, down from 40% in 1991 and 30% in 1992

*Footnote 2 continued*

World Bank, in its *World Development Report 1987*, observes that when Sri Lanka replaced quantitative restraints with tariffs, the tariff rates went as high as 500 percent. Bhagwati and Srinivasan estimate that quota premiums for India were as high as 230 percent of cif import value for drugs and medicines and more than

*Footnote 2 continued*

500 percent for certain food products. See Jagdish N. Bhagwati and T.N. Srinivasan, eds., *Foreign Trade Regimes and Economic Development: India* (National Bureau of Economic Research, 1975). Of course, most nontariff barriers are likely to have a significantly smaller tariff equivalent than these extreme examples.



liberalization reported in Table 1, tariff equivalents now appear to have been slashed at least in half in these countries.

We may derive a rough quantitative estimate of the degree of developing country nontariff liberalization by assuming that 40 percent of developing countries (the proportion shown in Table 1) are relaxing nontariff barriers, that these nontariff barriers had covered roughly half of total potential developing country imports (an assumption supported by the average coverage ratios of the countries identified as reducing nontariff barriers in Table 1), and that developing countries are reducing the tariff equivalents of the nontariff barriers by about 50 percentage points (or roughly cutting them in half from a plausible current average level of about 100 percent). These assumptions together imply that the aggregate tariff equivalent of nontariff barriers in developing countries is currently falling about 10 percentage points (that is, 40 percent of countries liberalizing  $\times$  50 percent import coverage ratio  $\times$  50 percentage point cut in rates = 10 percentage points). In other words, our assumptions suggest that the recent and planned reductions in nontariff barriers can be expected to have roughly the same impact on developing countries' imports in aggregate as would a 10 percentage point cut in the average tariff rates for these countries.

Putting the estimated impacts of the tariff and nontariff barrier changes together produces a reasonable estimate of the aggregate impact of developing countries' import liberalization efforts over the 1991-95 time period. This impact is roughly equivalent to an across-the-board 20 percentage point decrease in the countries' tariff rates (excluding those of Hong Kong, Singapore, South Korea, and Taiwan). Ten percentage points of this decrease reflect tariff reductions, while 10 percentage points reflect reductions in nontariff barriers.

We can take these calculations one step further to see what they imply for developing country import prices from the point of view of developing country purchasers. If one assumes that import restrictions had increased the average purchase price of imports by about 40 percent (a reasonable assumption given the level of protection found in the comprehensive 1986 tariff survey and supported by the numbers in Table 1) and that recent liberalization had lowered this protection by 20 percentage points, then the purchase price of imports would have fallen about 15 percent because of import liberalization. That is, if the original pre-protection import price was 100 and protection had increased it to 140 but will now only increase it to 120, the purchase price in the developing countries will have fallen by  $(140 - 120)/120$  or roughly 15 percent.

This decline of roughly 15 percent in import prices over the 1991-95 period should significantly affect

global trade flows over the next five or so years. A lag will exist between the liberalization period and the trade flow response time both because much of the liberalization occurred toward the end of 1992 or later and because it takes time for trade flows to adjust to price changes. The trade flow response is likely to be slower than usual when the price change is within the internal, previously closed market of a developing country because it takes substantial time to arrange new sales contracts and to set up new distribution networks.

The following sections trace the likely overall trade flow impact of the 15 percent reduction in developing countries' import prices over the next five years—a time horizon sufficient to allow trade flows to adjust. The likely effects on global output are also considered. For developing countries, the impact on output is assessed over a somewhat longer period (beyond 1998) to accommodate changes in production patterns resulting from liberalization. A more precise time profile of analysis is impossible given the diverse timing of the countries' liberalization efforts. Bear in mind that the estimated changes discussed in the following sections are indicative rather than precise because the extent of the reform in developing countries cannot be calculated with certainty.

### **The impact of import liberalization in the absence of financing constraints**

Clearly, a fall of roughly 15 percent in import prices can increase developing countries' demand for imports. Assuming that developing countries can afford to pay for additional imports, it is relatively straightforward to estimate the direct, medium-term (roughly five-year) impact of such a price reduction on industrial country sales to these countries and on industrial country output associated with these sales. Estimating the impact of liberalization on developing countries' own output is more difficult, in part because output changes entail the establishment of new production facilities in response to relative price changes. Nevertheless, a qualitative assessment can be made based on the past experiences of liberalizing economies.

#### *Impact on industrial countries*

Developing countries' increased demand for imports gives a clear boost to industrialized country exports and hence industrialized country output, assuming that industrialized countries have the resources available to meet this increased demand. How great the boost will be depends on how much the demand for imports increases as developing countries ease trade barriers. Import price elasticities of demand, which measure the percentage change in import demand in response to each 1 percent change in import price, would be the



natural way to gauge this increase.

Unfortunately, estimates of import price elasticities of demand are not available for developing countries (see appendix). In their absence, we may use as a proxy the average price elasticity for imports (from all sources) found for industrial countries. Given their diverse income levels, however, developing countries and their industrial counterparts may well react differently to price changes. Consequently, using industrialized country price elasticities does add another level of uncertainty to our analysis.

Goldstein and Khan list ninety-one industrial country import price elasticities taken from various studies.<sup>3</sup> These estimates average  $-1.0$ . Consequently, we will calculate the change in developing countries' import demand due to liberalization using the assumption of a  $-1.0$  developing country price elasticity. To assess the sensitivity of the estimated demand change to alternative price elasticity assumptions, however, we will also calculate the change in developing countries' import demand based on a price elasticity of  $-1.5$ . We choose a larger (negative) elasticity as an alternative assumption because 90 percent of developing country imports from industrialized countries are manufactured goods. Manufactured goods typically face a somewhat higher demand elasticity than do imports in aggregate.

Under the  $-1.0$  assumption, developing country import demand would be expected to increase 15 percent in response to the 15 percent decline in import sales prices arising from liberalization. Under the alternative elasticity assumption, developing country import demand would increase 23 percent. These estimates suggest that developing countries' import purchases from industrialized countries are likely to rise on the order of 20 percent as a result of recent trade reform.

An increase of roughly 20 percent in developing countries' import demand, basically for manufactured goods, translates into a notable rise in industrialized countries' exports and output, assuming that industrialized countries have unemployed resources available to satisfy this demand. The developing countries we are considering account for about \$400 billion, or 15 percent, of industrialized countries' manufactured goods exports. Consequently, a 20 percent rise in developing country purchases would increase the total manufactured goods exports of industrialized countries by roughly \$80 billion, or 3 percent. Given the share of exports in industrialized country GDP, this 3 percent rise in exports would raise GDP by 0.3 percent.

These calculations suggest that recent efforts by developing countries to liberalize trade could add signif-

icantly to the level of industrialized country output. When multiplier effects are considered, moreover, the boost to industrialized countries' output could be substantially higher than these calculations indicate. An initial increase in demand often leads to multiplier effects as those who earn additional income in an expanding sector of an economy spend this income in other sectors. Multiplier effects from an increase in export sales to developing countries could raise industrialized country output well beyond the 0.3 percent increase estimated here.

#### *Impact on developing countries*

The medium-term impact of liberalization on developing economies is basically the \$80 billion increase in import purchases. Over a slightly longer horizon, however, the easing of import barriers will likely cause developing countries to shift their output away from import-competing goods toward goods that they can produce more efficiently. Although measured output may initially decline as import-competing firms face increased competition,<sup>4</sup> output will likely eventually increase well beyond the level it would have reached without liberalization.

The longer term benefits of free trade policies are of two kinds, static and dynamic. Developing economies realize static gains when they remove price distortions that cause a misallocation and underutilization of developing economy resources. Countries that artificially depress import demand tend to have an overvalued exchange rate, which lowers export sales. Domestic resources are pulled away from production of exports to support production of import substitutes. Since production of developing economy exports generally employs labor (typically the developing economies' most abundant resource) more intensely than does production of import substitutes, labor often becomes undervalued and underutilized in an import-substitution regime. More generally, protected developing economies end up channeling resources to import substitution when the underlying imports could be purchased at a lower cost to the economy.<sup>5</sup> Resources devoted to producing

<sup>4</sup>The decline in the value of import-competing goods will be less than the \$60 billion increase in developing country imports because, given the choice to buy imports priced at their true market value (that is, free of the price increase resulting from import restrictions) or alternative domestic goods, developing country purchasers prefer the imported goods. Although sales of the eventually displaced domestic goods may have registered \$60 billion before liberalization, these goods would not have sold at such high prices if imports had been free of restrictions; import restraints allowed the sales price of these domestic alternatives to rise above their true value, measured at world prices.

<sup>5</sup>The overstatement of domestic output value in the presence of trade restrictions can be quite severe. Indeed, in some cases the value of domestic output has actually been negative in a highly

<sup>3</sup>Morris Goldstein and Mohsin S. Khan, "Income and Price Effects in Foreign Trade," *Handbook of International Economics* (Elsevier Science Publishers, 1985), p. 1079.

import substitutes become of more value to the economy when they are reallocated to goods they can more efficiently produce. These goods can then be traded on the world market for the previously restricted imports. This trading of goods efficiently produced for those inefficiently produced is the basic source of economic gain arising from international trade.

Developing economies realize dynamic benefits from import liberalization when they remove restrictions that inhibit competition. Protected markets in these countries are typically too small to support more than one or two local producers of a given product. With a protected market position, these producers often become inefficient and fail to invest in technological improvements, thereby slowing the growth of the whole economy. Removal of these restrictions raises an economy's growth path.

Studies have generally found that the static and dynamic gains from liberalization significantly improve the economic performance of developing countries.<sup>6</sup> After evaluating forty-one countries, the International Monetary Fund concluded that outward-oriented economies achieved on average "significantly higher growth rates of potential GDP and of total factor productivity" than inward-oriented economies.<sup>7</sup> The World Bank reported that independent studies measuring the static GDP benefits of moving to freer trade found positive gains varying from less than 1 percent to as high as 6 percent of GDP. The World Bank's own analysis of sixty developing countries showed a positive correlation between trade liberalization and productivity growth, a key generator of GDP growth. The World Bank does caution that data problems may distort its results.<sup>8</sup>

### **Overall impact**

Import liberalization by developing countries should

#### *Footnote 5 continued*

restricted economy. These negative value-added cases arise when a country spends more on imported inputs to produce a finished good domestically than it would have spent to import the finished good. Cases of negative value-added are reported in Ian Little, Tibor Scitovsky, and Maurice Scott, *Industry and Trade in Some Developing Countries* (London: Oxford University Press, 1970).

<sup>6</sup>Arguments offered in support of import restrictions are typically unsuited to developing economies. Strategic trade arguments stress the advantages of protecting high-technology industries subject to economies of scale. In developing countries, however, import restraints rarely protect advanced technology industries. Infant-industry arguments supporting protection fail to override the benefits likely to accrue from import liberalization. The usual degree of developing country protection has far exceeded, both in magnitude and scope across industry, the level suggested by the infant-industry argument.

<sup>7</sup>International Monetary Fund, *Issues and Developments in International Trade Policy*, August 1992, p. 48.

<sup>8</sup>The World Bank, *World Development Report 1991*, June 1991, p. 98.

provide a significant boon to both industrialized and developing countries. As argued above, industrialized country exports to developing countries are likely to rise on the order of 20 percent if developing countries face no financing constraint. This rise by itself could boost the level of industrialized countries' GDP by about 0.3 percent. Although developing countries may initially see a dip in their own output levels as they adjust to liberalization, evidence indicates that they, too, should benefit substantially in the medium to long run from the potential economic efficiency gains of trade reform. Indeed, output gains on the order of roughly 1 to 5 percent have been found for developing countries that have already liberalized.

As developing countries increase their competitiveness and output over the longer run, they will export more goods to industrialized countries. Industrialized economies should benefit from the lower prices that the increased competitiveness of developing countries is likely to entail. Increased competition will, no doubt, impede growth in some industries in the industrialized countries. Growth should be spurred in other industries, however, as the stronger GDP performance in developing countries arising from their reforms leads to a further increase in developing country import demand. At this point, industrialized countries as well as developing countries should benefit from the standard efficiency gains associated with trade now more closely based on the comparative advantages of both areas.

### **Impact of import liberalization in the presence of financing constraints**

So far the analysis has assumed that developing countries have or can obtain sufficient resources to pay for their increased import demand following liberalization. However, for many developing countries, the ability to pay for imports is a key constraint limiting import purchases. This section will consider how global trade and output will change when developing countries that have adopted freer trade policies face a binding financing constraint. Before estimating these changes, however, we discuss the potential extent of this financing constraint. The section will end with a note on how trade policy decisions by the industrialized countries could significantly affect our estimated results.

#### *Potential financing constraints*

To obtain additional resources to pay for increased imports, developing countries must take on more foreign debt or attract foreign funds through foreign investment, aid, or repatriated capital. However, for most of the developing countries considered here (Hong Kong, Singapore, South Korea, and Taiwan are again excluded), the options of increasing foreign debt or

otherwise raising foreign funds to finance trade liberalization are likely to be limited in the short run.<sup>9</sup> Although developing countries have been able to raise substantial capital inflows in recent years, these inflows have often been tied to specific investment projects rather than general balance-of-payments support. Moreover, given the developing country debt crisis of the 1980s, a large rise in imports (such as we estimated in the previous section) could temporarily depress further growth in foreign financing. Projections released by the International Monetary Fund in May suggest, for example, that average annual capital flows to indebted developing countries could remain at about their 1992 level through 1994.<sup>10</sup> Morgan Guaranty Trust offered an even more pessimistic assessment of developing country financing options last winter; it estimated that the net private capital inflow to Latin America in 1993 may be only about half the level it was in 1992 (\$23 billion compared with \$44 billion).<sup>11</sup> Over the medium term, external financing could be more forthcoming as developing country economies become more efficient. In the short run, however, developing countries may well face significant financing constraints.

If developing countries cannot raise sufficient foreign funds to pay for additional import purchases immediately following liberalization, they will have to increase their export sales to earn foreign exchange or reduce their import demand. Developing countries can boost the volume of export sales by depreciating their currencies in nominal terms. Alternatively, they can lower the price of their products through export promotion measures or more efficient production practices (perhaps brought about by privatization) while leaving their nominal exchange rates unchanged (an option developing countries may choose if they want to maintain nominal exchange rate stability). Lowering prices would mean that the countries depreciated their currencies in real, although not nominal, terms. Either form of depreciation would reduce the dollar price and hence increase the world demand for developing country products. How-

ever, under both forms of depreciation, the developing countries would earn fewer dollars for each unit sold, so the dollar value of exports might not actually rise.

The more important impact of depreciation on the developing countries' trade balances, measured in dollar terms, would be a reduction in the countries' demand for imports. Whether achieved through exchange rate adjustment or lower developing country domestic prices, depreciation would shift demand away from imports toward developing countries' own products. Since the dollar price of imports is unlikely to have changed (almost all developing country imports come from industrialized countries that are unlikely to change the dollar price of their goods; we assume there is no change between the dollar and other industrialized country currencies), a fall in the volume of import purchases would translate directly into a fall in the dollar value of imports.<sup>12</sup> Thus, the liberalization-induced increase in imports would be effectively curtailed, in aggregate if not in individual industries, by depreciation. In fact, if no additional financing is available, developing countries will likely have to depreciate to the point where the dollar value of imports shows no noticeable increase despite liberalization. The easing of import barriers would consequently affect import composition only.

One can cite a number of countries where currencies have depreciated during a period of trade liberalization. For instance, the Brazilian cruzeiro depreciated by roughly 40 percent in real terms against the dollar between 1989 and 1992 while Brazil introduced trade reforms. In India the devaluation of the rupee by 70 percent since the end of 1990 has coincided with the opening of the country's market to increased imported goods. Argentina, meanwhile, has emphasized the need to find production efficiencies, in part through privatization, that will lower domestic prices while it liberalizes its import regulations.

### *Estimating the effects*

This subsection presents an estimate of the medium-term impact of import liberalization on global trade and output when developing countries depreciate their currencies to finance increased import demand. We begin our discussion by noting two problems affecting the estimation procedure. (For a full discussion of the

<sup>9</sup>Mexico is one country that managed to finance a sharp growth in imports following substantial trade liberalization in 1987 by drawing down reserves and using exceptional financing flows (debt-bond and debt-equity swaps) rather than resorting to a significant real depreciation of the peso. However, for many developing countries these financing sources are not viable options.

<sup>10</sup>The level of capital flows to indebted developing countries and countries in Eastern Europe projected for 1993 by the International Monetary Fund, about \$120 billion, is roughly equal in inflation-adjusted terms to the capital flows to these countries in the late 1970s, a period when developing countries were borrowing relatively heavily. See International Monetary Fund, *World Economic Outlook*, May 1993.

<sup>11</sup>This forecast is cited in Stephen Fidler, "Trouble with the Neighbors," *Financial Times*, February 16, 1993, p. 15.

<sup>12</sup>Developing countries could also cut import demand by slowing their economic growth. Some countries that place strong emphasis on stable exchange rates to fight inflation or instill confidence might choose this path. However, unless the developing country economies are overheating, this method of balance of payments adjustment would undercut the expected economic benefits that initially prompted the import liberalization efforts. Depreciation, consequently, is likely to be a more accepted method of handling trade balance pressures.

model used to reach the estimate, see the appendix.)

First, we do not know the extent to which developing countries will be able to raise foreign financing. Thus, we calculate trade and output effects under two alternative scenarios. The first scenario assumes that developing countries are able to raise \$30 billion, or roughly half, of the foreign financing needed to pay for the additional import demand generated by import liberalization.<sup>13</sup> The second scenario assumes that developing countries are unable to raise any further foreign funds and thus must rely on depreciation to keep their trade balances at their pre-liberalization dollar levels after import restrictions are relaxed.

Second, we do not know industrial country price elasticities of demand specifically for developing country products. To deal with this uncertainty, we follow the same procedure we used to estimate the developing country price elasticities of demand; we use two different price elasticity assumptions,  $-1.0$  and  $-1.5$ , and average the results.

*Scenario 1: Limited additional financing.* The columns of Table 2 provide estimates, derived from the model in the appendix, of expected developing country currency depreciation and export and import changes following import liberalization. These estimates assume that developing countries are only able to raise sufficient foreign financing to pay for half of the increased import demand arising from trade reform. The top four rows of Table 2 show the estimated changes under alternative price elasticity assumptions for developing and industrialized countries. The fifth row shows the average of the previous four rows' estimates.

The estimated degree of developing country depreciation in this scenario, shown in Column 2, is about 7 percent under all of the elasticity combinations shown. The estimates of the increase in developing countries' export volume that this depreciation generates, shown in Column 3, center around 8 percent. Since depreciation lowers the dollar price of developing countries' exports while increasing export volume, the combined impact of these depreciation and export volume estimates on the dollar value of developing country exports, shown in the next column of the table, is very small. The dollar value of exports is expected to rise a modest 1 percent at most.

The estimated degree of depreciation shown in Column 2 is calculated to cut the volume of developing countries' imports by 9 percent on average, as shown in Column 5. Note that this column does not include the

estimated effect of the initial liberalization on imports. That impact is shown in column 6. The seventh column shows the estimated total impact of import liberalization and currency depreciation on the (dollar) value of developing country imports. As noted earlier, this total value impact is equivalent to the total volume change in imports because the dollar price of imports does not change. The average estimated change in the overall value of imports is 8 percent.

What conclusions may be drawn from the estimates reported in Table 2? Overall, with limited foreign financing covering only half the value of increased import demand arising from trade reform, developing countries' imports rise only half as much after liberalization as they did when foreign financing was unconstrained. The vehicle limiting developing countries' import demand is their moderate currency depreciation. Given an export price elasticity of close to  $-1$ , this depreciation spurs the volume of developing countries' export sales but leaves the dollar value of these sales little changed. Consequently, the value of imports can only increase in line with the restricted amount of financing available.

Before considering the impact of these developments on the economies of the industrialized and developing countries, let us consider what a more severe financing constraint would imply.

*Scenario 2: No additional financing.* If history is a guide, some additional financing could well materialize in response to the gains expected from trade reform in developing countries. Our second scenario, however, assumes the polar case in which developing countries are unable to attract any additional foreign financing to pay for increased import purchases. Table 3 shows the range of estimated depreciation rates and trade flow changes across the alternative price elasticity assumptions under this scenario.

Not surprisingly, the model estimates that under this scenario, developing countries depreciate their currencies to a greater extent than under the previous scenario; that is, depreciation averages 11 percent instead of 7 percent. In response, developing country export volume rises on average 13 percent instead of 8 percent. The combined impact on the (dollar) value of developing country export sales is still estimated to average a very modest 1 percent (again because the export price elasticity is close to  $-1$ ).

As for developing countries' imports, the model estimates that depreciation leads to an average 15 percent fall in the volume of import purchases. This decline offsets almost all of the increase in import volume generated by import liberalization. The total value of developing countries' imports rises a scant 1 percent, the same rate of increase as that for the value of

<sup>13</sup>Thirty billion dollars equals about half of the financing needed if the developing country price elasticity of demand for imports is  $-1.0$ .

developing country exports. Only the slight increase in export revenue, in fact, allows any growth in import value, given the severe financing constraint assumption.

**Overall results.** Overall, when developing countries are subject to financing constraints, import liberalization could have medium-term effects on global trade flows significantly different from those estimated in the previous section. Financing constraints could sharply limit the rise in developing countries' import purchases, while depreciation might substantially expand the volume of developing country export sales. Specifically, when additional foreign financing supports half of the liberalization-induced increase in import purchases, the volume of developing countries' exports is expected to rise almost as much as the volume of their imports. If no additional foreign financing is available, our estimates suggest that developing countries' export volume will actually rise much more than their import volume despite the relaxation of import barriers.

These results have important implications for both developing and industrialized countries. From the perspective of industrialized countries, trade reform in developing countries facing financing constraints is likely to lead to a substantial increase in the volume of developing country goods entering industrial country markets. The industrial countries will benefit from a fall in the dollar price of developing country goods. Industrialized country sales to developing countries will also likely increase, although by significantly less than would be the case if developing countries faced no financing

constraints. This moderation in the growth of industrialized countries' potential sales to developing countries, coupled with greater competition from developing countries in industrial country markets, will likely mean that developing country import liberalization will no longer provide a substantial medium-term boost to industrialized country output. Consequently, the main benefit of developing country trade reforms for industrialized countries during this period may be the reduced price of imports coming from developing countries.

From the perspective of developing countries, import liberalization under financing constraints leads to a smaller increase in imports coupled with a significant rise in exports. Developing country output may not drop and could actually rise in the short run because of increased export volume. However, higher output for developing countries comes at the cost of some loss of purchasing power in the global market owing to the depreciation of their currencies.

Most important, both industrial and developing countries still reap the long-run efficiency benefits of liberalization. Both areas will ultimately gain from global trade based more directly on comparative advantage. When developing countries face financing constraints, the industrialized countries will have a smaller cushion of increased demand for their products to ease their medium-term transition to this more efficient global allocation of production. Nevertheless, regardless of financing constraints, both industrialized and developing countries stand to benefit in the long run from

Table 2

**The Impact of Developing Country Trade Liberalization on Trade Flows in the Presence of Financing Constraints, Scenario 1: Limited Additional External Financing**

	Assumed Price Elasticity of Demand for Developing Country Exports	Dollar Price Change of Manufactured Exports (Percent Depreciation)	Volume Change of Manufactured Exports (Percent)	Total Manufactured Export Change (Percent)	Volume Change of Manufactured Imports Due to Depreciation (Percent)	Volume Change of Manufactured Imports Due to Liberalization (Percent)	Total Manufactured Import Change (Percent)
Case A: Developing country price elasticity of demand for imports = -1.5	-1.5 -1.0	-7 -8	11 8	3 -1	-11 -13	23 23	9 7
Case B: Developing country price elasticity of demand for imports = -1.0	-1.5 -1.0	-5 -6	8 6	2 -0	-5 -6	15 15	9 8
Average of above estimates	—	-7	8	1	-9	19	8



developing country trade reform.

#### *Importance of the industrialized countries' trade policy*

When developing countries face financing constraints, the willingness of industrialized countries to buy their products becomes a key determinant of the extent to which developing country reforms will boost global trade in the medium term. Indeed, the calculations summarized in Tables 2 and 3 indicate that developing countries' total imports and total exports (measured in dollar terms) are *both* higher when industrial countries show a greater willingness to buy their products (as measured by a higher industrial country price elasticity of demand—that is, a higher export price elasticity faced by developing countries). In contrast, the willingness of developing countries to buy industrialized countries' products (as measured by the developing country price elasticity of demand for industrial country goods) appears to have little influence on the ultimate level of both imports and exports. The willingness of industrial countries to purchase developing countries' products is much more important because it determines the total dollar value of export sales by developing countries. Consequently, it also indirectly determines the total dollar value developing countries can spend on industrialized countries' products and thus the total change of world trade.

Because industrial countries' willingness to purchase the products of developing countries facing financing constraints has such important effects, industrialized

country trade policy may be a prime, although hidden, determinant of the extent to which import liberalization in developing countries boosts the world economy in the medium term. Industrialized country import restrictions clearly reflect less willingness to buy developing country products. If the industrialized countries impose import restrictions in response to depreciation-induced growth in developing country exports, the industrial country demand response to the depreciation will be lower. Since this lower response would mean reduced world trade, increased industrial country trade restraints would ultimately hurt the industrialized countries themselves by reducing their sales to the developing world.

#### **Impact of developing country liberalization on the U.S. economy**

Developing countries (excluding the Asian NICs) currently account for about 30 percent of U.S. manufactured goods exports and about 25 percent of U.S. manufactured goods imports. For this reason, a marked rise in the trade volume of developing country manufactured goods should have a substantial impact on U.S. trade and the U.S. economy. This section will briefly discuss the effect of developing countries' trade reforms on U.S. manufacturing trade, output, and employment. It will also note how changes in U.S. trade policy could alter the outcome when developing countries face financing constraints.

Our earlier analysis suggested that developing country imports may be expected to rise roughly 20 percent

Table 3

#### **The Impact of Developing Country Trade Liberalization on Trade Flows in the Presence of Financing Constraints, Scenario 2: No Additional External Financing**

	Assumed Price Elasticity of Demand for Developing Country Exports	Dollar Price Change of Manufactured Exports (Percent Depreciation)	Volume Change of Manufactured Exports (Percent)	Total Manufactured Export Change (Percent)	Volume Change of Manufactured Imports Due to Depreciation (Percent)	Volume Change of Manufactured Imports Due to Liberalization (Percent)	Total Manufactured Import Change (Percent)
Case A: Developing country price elasticity of demand for imports = -1.5	-1.5 -1.0	-10 -11	15 11	4 -1	-17 -19	23 23	2 -0
Case B: Developing country price elasticity of demand for imports = -1.0	-1.5 -1.0	-10 -12	15 12	4 -1	-11 -14	15 15	2 -1
Average of above estimates	—	-11	13	1	-15	19	1

in the medium term when the countries are free of financing constraints. It is reasonable to assume that this increase would be spread evenly across all industrialized country suppliers, including those in the United States. Given the developing country share of U.S. exports, a 20 percent increase in developing countries' import demand would translate into roughly a 6 percent, or \$25 billion, rise in total U.S. manufactured goods export sales.

A \$25 billion increase in U.S. export sales would clearly boost U.S. output. U.S. manufactured goods shipments would increase by almost 1 percent, and employment in manufacturing industries would rise by roughly 102,000 jobs.<sup>14</sup> The U.S. industries benefiting most would include electrical and nonelectrical machinery and transportation equipment.

If developing countries face financing constraints, however, the medium-term impact on the U.S. economy is apt to be markedly different. Under the financing scenario that assumes developing countries are able to raise roughly half the financing needed to pay for the liberalization-induced increase in their import demand, developing country imports are only projected to increase by 8 percent. The volume of developing country exports is also expected to rise by 8 percent. If we again assume that developing country trade with the United States changes to the same extent, both total U.S. manufacturing goods exports and total U.S. manufacturing goods imports would rise by about 2 percent (compared with a 6 percent rise in U.S. exports and no rise in U.S. imports in the absence of financing constraints).

With U.S. manufactured goods sales to and purchases from the developing countries (excluding the Asian NICs) about equal in magnitude, the export and import changes expected under this financing constraint scenario would have little net impact on total U.S. manufactured goods output or employment. U.S. output and employment related to U.S. export sales to the developing countries would rise, but U.S. output and employment that compete with developing country sales in the U.S. market would decline by about the same amount.

Under more pessimistic financing scenarios, developing country liberalization could actually have some initial adverse effects on U.S. output. That is, U.S. sales to developing countries could rise less than U.S. purchases from developing countries, putting some immediate downward pressure on U.S. output levels.

Over the longer run, however, the U.S. economy is likely to benefit significantly from developing country

liberalization, even in the presence of severe financing constraints. Trade reform in developing countries will eventually lead to more efficient global trade and production based on the comparative advantages of all participants, regardless of the financial position of developing countries. Given the importance of the United States as a developing country trade partner, the United States should reap a significant share of the gains arising from the more efficient global production pattern.

Despite the long-run gains for the U.S. economy, increased developing country competitiveness arising from depreciation could generate a protectionist reaction in the United States in the medium term. An increase in U.S. import restrictions would be counterproductive for U.S. output and employment. If U.S. import policy reduced the volume of exports that developing countries could sell at any given price level, the developing countries facing financing constraints would probably be forced to depreciate their currencies still further to pay for increased import demand following liberalization. The likely resulting loss in the United States' own sales to developing countries would probably cut U.S. output and employment more than the protection-induced reduction in developing country exports to the United States would save output and jobs.<sup>15</sup>

## Conclusion

This article has estimated that the recent trade reforms in developing countries will probably lower imported goods prices in their markets on the order of 15 percent. In the absence of financing constraints, this 15 percent price change should raise developing country demand for industrialized country products by about 20 percent in the medium term. A 20 percent rise in developing country demand is equivalent to about 0.3 percent of industrial country GDP. In the longer run, the gain to industrialized countries will be very substantial as developing country liberalization leads to a more efficient pattern of global production and trade benefiting all areas. Developing countries may be expected not only to realize this efficiency gain but also to benefit from the increased economic dynamism that typically arises from significant import liberalization.

<sup>15</sup>Mathematical calculations based on the model in the appendix support this conclusion. If increased U.S. import restrictions had a contractionary effect on import demand equivalent to that of lowering the U.S. price elasticity of demand for developing country products to  $-0.5$ , the export and import changes estimated by our model imply that, on net, U.S. manufacturing shipments would fall by \$1½ billion and U.S. manufacturing employment by 5,000 jobs. Moreover, since the import-competing industries that would be protected generally pay lower wages than the U.S. exporting industries hurt by increased U.S. protection, average U.S. earnings would be lowered even more than the job loss figure suggests.

<sup>14</sup>This employment effect is calculated on the basis of the composition of developing country import demand and U.S. employment levels measured at the two-digit SIC level.

When developing countries face financing constraints, the medium-term impact of their efforts to relax import barriers is more complicated. Given financing constraints, developing countries will likely have to increase the volume of export sales through nominal or real depreciation to prevent trade balance deterioration as they liberalize. Consequently, although global output will still probably increase, industrialized as well as developing country markets will have to adjust to some extent to greater competition from abroad in the medium term. If industrialized countries respond to this increased competition by raising import barriers, they will likely force developing countries to depreciate further, exacerbating the industrialized countries' adjustment costs. Over the longer run, both industrialized and

developing countries will probably still benefit significantly from the efficiency gains generated by the developing countries' trade reforms.

The U.S. economy is apt to be a prime beneficiary of these reforms because it is a major developing country trade partner. Barring developing country financing constraints, U.S. manufactured goods shipments could rise by about \$25 billion and U.S. employment by more than 100,000 jobs in the medium term as developing countries' demand for U.S. goods rises. Developing country financing constraints, however, could substantially weaken this medium-term result. Nevertheless, regardless of such constraints, the U.S. economy should eventually benefit from global efficiency gains arising from the developing countries' reforms.

### Appendix: Developing Country Trade Elasticities and a Model of Developing Country Trade Balance Adjustment

This appendix examines the problems of estimating developing country trade elasticities. It also presents a model for estimating the impact on global trade flows of developing countries' efforts to ease import barriers when financing constraints are present. Developing country trade elasticities are a critical component of this model.

The price elasticities of demand for the manufactured goods imports and exports of developing countries are very difficult to estimate, with the export elasticity proving especially problematic. Data are not available on changes in the price and volume of aggregate developing country manufactured goods exports. Data are available for total developing country exports but the high percentage of commodities in these exports, coupled with very volatile commodity price movements, makes it virtually impossible to derive meaningful price elasticities for manufactured goods trade from this data.

Estimating the export elasticity for any given developing country by itself also poses problems. The world price elasticity of demand for total manufactured goods exports from developing countries is likely to be considerably lower than the elasticity for any one developing country's exports. That is, if all developing countries try to increase exports, they will have a harder sell than a single developing country acting on its own.

A final problem with estimating developing country export elasticities is that they are likely to depend significantly on how industrialized countries respond to a large, rapid increase in developing country sales. If industrialized countries try to impede these sales through protectionist actions, the de facto price elasticities of demand for industrialized countries will be lowered.

As for developing country import price elasticities of

demand, estimation difficulties include the unavailability of data on total manufactured goods import volume and price for developing countries. Estimating an individual developing country's import price elasticity may give a false reading on the aggregate developing country import price elasticity if the individual country has a significantly different import structure than the developing countries as a group.

Lacking satisfactory price elasticity estimates, we can examine the sensitivity of developing country export and import volume changes to varying price elasticity assumptions. Reasonable elasticity assumptions are  $-1.0$  and  $-1.5$ .<sup>†</sup> We will use these elasticity assumptions in our model, which is designed to calculate the impact of developing country import liberalization in the presence of financing constraints.

#### The model

Let us begin by defining  $\% \text{ chg } M_L$  as the initial increase in the dollar value of developing country imports due to developing country import liberalization,  $\% \text{ chg } X_D$  as the change in the dollar value of exports due to depreciation, and  $\% \text{ chg } M_D$  as the change in the dollar value of imports due to depreciation. Let us also define  $MB$  as the developing countries' initial import base and  $XB$  as the developing countries' initial export base, both measured in dollar terms.

In the simpler modeling case, which assumes that

<sup>†</sup>As noted in the text, the average of the 184 individual export and import price elasticity estimates for industrialized countries reported by Goldstein and Khan is  $-1.0$  ("Income and Price Effects"). Manufactured goods price elasticities are typically found to be somewhat higher than these all-commodity elasticities.



## Appendix: Developing Country Trade Elasticities and a Model of Developing Country Trade Balance Adjustment (Continued)

developing countries are unable to raise any additional financing to pay for increasing import purchases, the dollar value of the developing countries' trade balance must remain unchanged. Therefore, the impact of liberalization must be offset by the impact of depreciation, or algebraically:

$$(\% \text{ chg } M_L) (MB) = (\% \text{ chg } X_D) (XB) + (\% \text{ chg } M_D) (MB).$$

Under the other financing constraint scenario, which assumes that developing countries can raise limited additional financing, one-half of the impact of liberalization must be offset by the impact of depreciation, or algebraically:

$$\frac{1}{2} (\% \text{ chg } M_L) (MB) = (\% \text{ chg } X_D) (XB) + (\% \text{ chg } M_D) (MB).$$

Currency depreciation will in general not affect the dollar value of the developing countries' commodity exports, which are 35 percent of their total exports (with manufacturing goods accounting for 65 percent of total exports), since commodities typically sell at a world dollar price. Nor will currency depreciation likely have a large impact on developing country purchases of commodity imports (measured in dollar terms) since neither the dollar price nor the quantity of these imports is likely to change. Developing country import liberalization, moreover, will primarily affect purchases of manufactured goods, which account for about 90 percent of total developing country imports from industrialized countries.<sup>‡</sup> Consequently, we can rewrite our first equation as:

$$(\% \text{ chg } M_{L\text{manuf}}) (0.90 MB) = (\% \text{ chg } X_{D\text{manuf}}) (0.65 XB) + (\% \text{ chg } M_{D\text{manuf}}) (0.90 MB),$$

where the  $_{\text{manuf}}$  subscript refers to percent changes in the manufacturing sector. Our second equation can be similarly modified.

On the export side, the change in the dollar value of developing country export purchases will be the net effect of a fall in the dollar price of exports and a rise in the volume of exports induced by this dollar price fall.

<sup>‡</sup>These manufacturing shares of total developing country exports and imports are calculated based on the share of manufactured goods in total developing country (excluding the Asian NICs) trade with the United States. U.N. data suggest that these shares should be comparable to shares for developing country trade with all industrial countries.

Consequently,

$$\% \text{ chg } X_{D\text{manuf}} = (0.65) (\% \text{ chg } P_{x\text{manuf}} + \% \text{ chg } V_{x\text{manuf}}),$$

where  $P_{x\text{manuf}}$  and  $V_{x\text{manuf}}$  are the dollar price and volume of manufactured goods exports.

On the import side, developing country depreciation will likely have negligible impact on the dollar price of developing country import purchases, the vast majority of which are made from industrial country suppliers. The impact of depreciation will basically fall on import volume. Therefore,

$$\% \text{ chg } M_{D\text{manuf}} = \% \text{ chg } V_{M\text{manuf}},$$

where  $\% \text{ chg } V_{M\text{manuf}}$  equals the depreciation's impact on import volume.

Finally, MB about equals XB for the developing countries we are considering. Rewriting the initial equation, we now have

$$\% \text{ chg } M_L (0.90 XB) = (\% \text{ chg } P_{x\text{manuf}} + \% \text{ chg } V_{x\text{manuf}}) (0.65 XB) + \% \text{ chg } V_{M\text{manuf}} (0.90 XB).$$

For the second scenario, the equation would be

$$\frac{1}{2} \% \text{ chg } M_L (0.90 XB) = (\% \text{ chg } P_{x\text{manuf}} + \% \text{ chg } V_{x\text{manuf}}) (0.65 XB) + \% \text{ chg } V_{M\text{manuf}} (0.90 XB).$$

Our next step is to note that for any given level of depreciation, the changes in export and import volume will depend on the price elasticities of demand for developing country exports and imports. That is,

$$\begin{aligned} \% \text{ chg } V_{x\text{manuf}} &= e_{px} \% \text{ chg } (P_{x\text{manuf}}/P^*) \\ \% \text{ chg } V_{M\text{manuf}} &= e_{pm} \% \text{ chg } (P^*/P_D), \end{aligned}$$

where the  $e$ 's are the respective price elasticities of demand,  $P_{x\text{manuf}}/P^*$  equals the ratio of the dollar price of developing country exports to the dollar price of industrialized country products, and  $P^*/P_D$  equals the ratio of the dollar price of industrial country products to the dollar price of developing country manufactured goods sold domestically in the developing country markets.

We can assume that the dollar price of industrialized country manufactured goods does not change and that the dollar price of developing country manufactured

## Appendix: Developing Country Trade Elasticities and a Model of Developing Country Trade Balance Adjustment (Continued)

goods moves uniformly across all products and also moves one for one with the real exchange rate when developing country currencies depreciate. Consequently,

$$\% \text{ chg } P_{x\text{manuf}} = \% \text{ chg } (P_{x\text{manuf}}/P^*) = 1/\% \text{ chg } (P^*/P_D) \\ = \text{the real rate of developing country depreciation.}$$

The percentage change in developing country import purchases due to trade liberalization will also depend on the developing country price elasticity of demand. Specifically, it will equal this price elasticity of demand times the 15 percent reduction in import prices due to trade liberalization that we estimated in the text. Consequently, we may write

$$\% \text{ chg } M_{L\text{manuf}} (0.90 \text{ XB}) = e_{pm} (0.15) (0.90 \text{ XB}).$$

Restating the equations with all side conditions yields the following model:<sup>§</sup>

<sup>§</sup>This model is actually an approximation applicable to small changes because it adds percentage changes (based on taking derivatives). Cross-products are missing. The results in

*With no additional external financing—*

$$\% \text{ chg } M_{L\text{manuf}} (0.90 \text{ XB}) = (\% \text{ chg } P_{x\text{manuf}} \\ + \% \text{ chg } V_{x\text{manuf}}) (0.65 \text{ XB}) \\ + \% \text{ chg } V_{M\text{manuf}} (0.90 \text{ XB}).$$

*With additional external financing—*

$$\frac{1}{2}\% \text{ chg } M_{L\text{manuf}} (0.90 \text{ XB}) = (\% \text{ chg } P_{x\text{manuf}} \\ + \% \text{ chg } V_{x\text{manuf}}) (0.65 \text{ XB}) \\ + \% \text{ chg } V_{M\text{manuf}} (0.90 \text{ XB}).$$

$$\begin{aligned} \text{In both cases, } \% \text{ chg } V_{x\text{manuf}} &= e_{px} \% \text{ chg } P_{x\text{manuf}} \\ \% \text{ chg } V_{M\text{manuf}} &= e_{pm} \% \text{ chg } P_{x\text{manuf}} \\ \% \text{ chg } M_{L\text{manuf}} &= e_{pm} (0.15). \end{aligned}$$

The estimations shown in Tables 2 and 3 are derived from these equations under price elasticity assumptions of  $-1.0$  and  $-1.5$ .

*Footnote § continued*

Table 2 include cross-product effects since the predicted changes are relatively large.

# The Dollar and U.S. Imports after 1985

*by Thomas Klitgaard*

The dollar's dramatic appreciation in the first half of the 1980s made imported goods more affordable relative to those manufactured in the United States. Indeed, the strong dollar helped to make the volume of U.S. non-oil imports grow three and a half times faster than overall domestic purchases in the United States from 1980 to 1985. The dollar's subsequent fall might have been expected to slow the penetration of foreign goods into U.S. markets, yet the volume of imported goods still grew three times faster than total domestic purchases from 1985 to 1992.

Some observers have interpreted the continued rapid growth of imports in recent years as evidence that changes in the dollar exchange rate have lost some of their power to influence the demand for foreign goods. In particular, they contend that import behavior may have undergone a permanent structural shift in the first half of the 1980s when the dollar's value was persistently far above levels warranted by foreign and domestic price levels. Such overvaluation of the dollar may have caused important changes in U.S. markets that could not be reversed by the dollar's subsequent fall.

This article examines whether structural changes have, in fact, significantly altered import behavior. It tests this hypothesis by determining whether imports after 1985 responded to the dollar and other macroeconomic forces in a manner consistent with, or contrary to, historical norms.

The article begins by assessing the relationship between the dollar and imports. It surveys the arguments supporting the claim that the dollar's strength in the early 1980s made imports in subsequent years unusually resilient to the dollar's decline and to changes

in other macroeconomic determinants. The second section reviews import developments after 1985, highlighting the extent of the dollar's fall, the penetration of imports into U.S. markets, and the behavior of import prices relative to those for domestically produced goods. In the article's third section, a simple macroeconomic model for non-oil imports based on data up to the dollar's peak in 1985 is estimated to compare import behavior before and after 1985. Finally, the analysis is extended to four major commodity groups to search for market-specific changes that may have been obscured by the focus on imports as a whole.

The results indicate that any changes in market structures over the 1980s have not been large enough to alter import behavior significantly. The prices and volumes of imports responded as strongly to the dollar after 1985 as they did before 1985. In particular, both the rise in import prices and the moderation in the demand for foreign goods after 1985 appear to be in line with historical experience once the dollar is considered alongside the behavior of other relevant macroeconomic factors. Most notable among these macroeconomic factors is the increase in domestic prices after 1985, a development that helped ensure the continuing attractiveness of foreign goods and thereby offset some of the impact of the dollar's fall. The rapidly increasing prominence of computers as a share of total non-oil imports also contributed to the perception that the dollar had lost some of its influence on imports after 1985. The price and volume measures of computers are designed to reflect the pace of technological innovation, a practice that makes their behavior largely unresponsive to changes in the dollar. The analysis shows that once computers are excluded, the demand for foreign

goods since 1985 seems to have been somewhat weaker than expected.

The analysis by commodity groups, while highlighting differences in behavior, confirms that the demand for imported goods since the mid-1980s can be well explained by macroeconomic determinants. The demand for capital goods, consumer goods, and industrial supplies after 1985 roughly matches historical experience; only in the case of autos does a macroeconomic model fail to accurately track import behavior after 1985. One reason for this failure is that the model does not account for the transfer by Japanese firms of a sizable share of their assembly production to the United States in recent years.

### The dollar's influence on imports

Concerns about the long-run impact of the strong dollar are rooted in the notion that the dollar's rise in the first half of the 1980s was so out of line with relative unit labor costs or relative prices that it severely damaged the competitive position of U.S. firms. The implication is that U.S. markets were significantly altered in ways that were not offset when the dollar eventually returned to a more reasonable range. These alleged structural changes would consequently affect the response of import prices and volumes to the dollar and other macroeconomic forces after 1985.

Several arguments have been advanced to justify these concerns. Some analysts have suggested that the dollar's strength in the first half of the 1980s significantly increased the competitive pressure in U.S. markets. In theory, a dollar appreciation restrains import prices since it lowers the production costs for foreign producers when these costs are denominated in dollar terms.<sup>1</sup> The dollar's strength in the first half of the 1980s made sales to the United States more profitable by widening the gap, in home currency terms, between revenues and costs for an extended period. As a result, many foreign firms were encouraged to make the initial investment needed to enter U.S. markets—an investment that they would otherwise have viewed as too expensive.<sup>2</sup> Since the entry of additional firms made U.S. markets more competitive, exerting downward

pressure on prices, all firms ended up suffering a secular decline in profit rates over the course of the 1980s.<sup>3</sup> Consequently, foreign firms were not able to raise their prices as much as they had in the past when the dollar fell.<sup>4</sup> If foreign goods remained unusually competitive in price, then import demand may not have weakened as much as it normally would have.

Another theory is that the dollar's strength, by lowering foreign production costs relative to domestic costs, encouraged significantly more investment abroad than in the United States during the first half of the 1980s.<sup>5</sup> By this reasoning, foreign plants had an unusual opportunity to develop products that could compete in quality and technical sophistication with those produced in the United States. These plants were therefore better positioned than in the past to maintain sales when the dollar depreciated.

An additional suggestion is that the dollar's strength may have forced an unusually large number of domestic firms to either fold or shift production overseas. The dollar's subsequent decline was not enough, according to this view, to return this lost production capacity to the United States. Consequently, as the availability of domestically produced alternatives to foreign goods diminished, consumers were less likely than in the past to shift away from foreign goods when import prices were pushed up by the falling dollar.

These arguments appear plausible, but there is reason to question their empirical significance. The proliferation of foreign goods in U.S. markets and the investment in plants abroad by domestic firms have been ongoing developments. Although the rise in the dollar may have accelerated the process, it is not clear that it has significantly altered the previously observed relationship between the dollar and imports. In addition, while some industries may have undergone important structural changes because of the dollar's strength, the

#### Footnote 2 continued

foreign firms gets into U.S. markets, it is difficult to get them out ("Hysteresis in Import Prices: The Beachhead Effect," *American Economic Review*, December 1988, pp. 773-85).

<sup>3</sup>Ferdinand Protzman, "Why the Lower Dollar Didn't Work," *New York Times*, December 1, 1992, p. D1.

<sup>4</sup>This argument posits a decline in the markup but not in the dollar elasticity. Narrower profit margins might actually increase the role of the dollar since foreign firms would be less able to absorb currency swings.

<sup>5</sup>Peter Hooper found evidence of relatively rapid investment abroad in the first half of the 1980s, although he noted that this trend continued even after the dollar had depreciated. See "Comments on 'U.S. External Adjustment: Progress, Prognosis, and Interpretation'" by William Cline, in C. Fred Bergsten, ed., *International Adjustment and Financing* (Washington, D.C.: Institute of International Economics, 1991), pp. 57-63.

<sup>1</sup>Foreign firms, operating in imperfect markets, have some latitude in deciding how much of any decline in dollar production costs to pass on through lower prices. Import price behavior in imperfectly competitive markets is discussed in Rudiger Dornbusch, "Exchange Rates and Prices," *American Economic Review*, January 1987, pp. 93-106; Paul Krugman, "Pricing to Market when the Exchange Rate Changes," in Sven Arndt and J. David Richardson, eds., *Real-Financial Linkages Among Open Economies* (Boston: MIT Press); and Ken Froot and Paul Klemperer, "Exchange Rate Pass-Through When Market Share Matters," *American Economic Review*, September 1989, pp. 637-54.

<sup>2</sup>Richard Baldwin refers to this as establishing a beachhead: once



industries affected may not be large enough to influence the behavior of imports as a whole.

### Import behavior

An initial review of import behavior indicates that foreign goods have had continued success in U.S. markets despite the dollar's decline from its 1985 peak. As the dollar appreciated from 1980 to 1985, the volume of non-oil imports grew at an annual rate of 12 percent, or roughly three and a half times faster than total domestic purchases by U.S. residents.<sup>6</sup> Import growth did moderate with the dramatic depreciation of the dol-

<sup>6</sup>The term "domestic purchases" represents purchases of domestic and imported goods and services. It is equivalent to domestic demand, which is GDP minus exports plus imports.

lar, rising at a 5 percent annual rate from 1985 to 1992. Nevertheless, because of the slowdown in domestic growth, imports still grew three times faster than total domestic purchases.

The dollar's rise and subsequent fall over the 1980s were so pronounced that they should have had a substantial impact on U.S. import behavior. Chart 1 plots an import-weighted average of dollar exchange rates against the currencies of the six major industrial countries. The index peaked in the first quarter of 1985, reaching a level more than 30 percent above its 1980 average, largely because of the dollar's strength against the European currencies. The dollar then fell sharply, so that by the end of 1987 this index was almost 20 percent below the 1980 average. The decline was the most

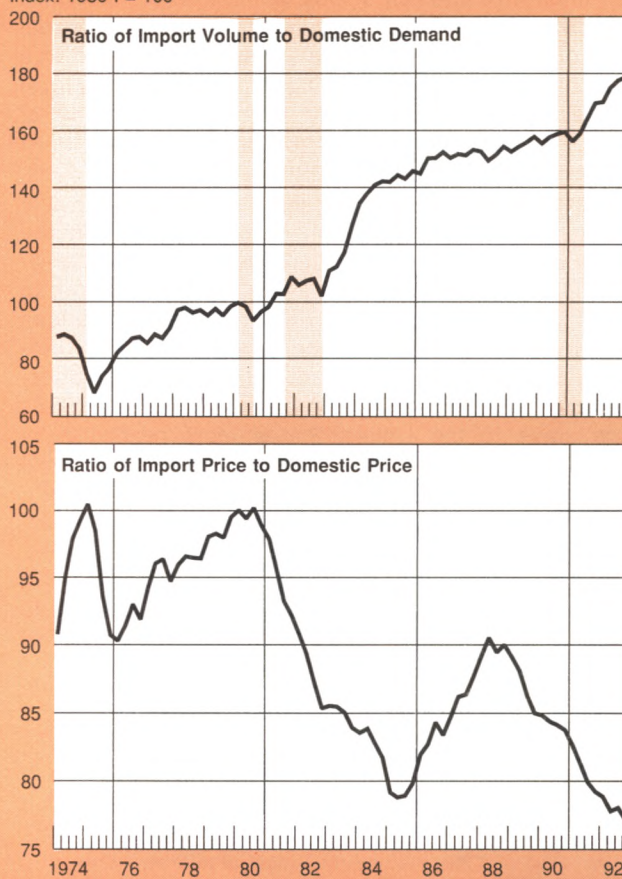
Chart 1

### Non-Oil Imports and Their Macroeconomic Determinants

Index: 1980-I = 100



Index: 1980-I = 100



Sources: National Income and Product Accounts; Bureau of Labor Statistics; International Monetary Fund.



dramatic, by far, against the Japanese yen. After 1987, the index rose slightly until the end of the decade, but then declined modestly from 1990 through 1992.

A strong connection between the dollar's movements and the purchase of foreign goods seems evident before 1985. When the dollar appreciated in the first half of the 1980s, the ratio of real non-oil imports to domestic purchases jumped sharply (Chart 1). The connection, however, is less clear after 1985. The large dollar depreciation from 1985 to 1987 failed to keep the ratio from rising, and in recent years, despite the dollar's continuing decline, the ratio jumped once again as non-oil imports grew thirteen times faster than domestic purchases from 1990 to 1992.

Part of the reason for the strength in imports could be that import prices did not rise as much as expected

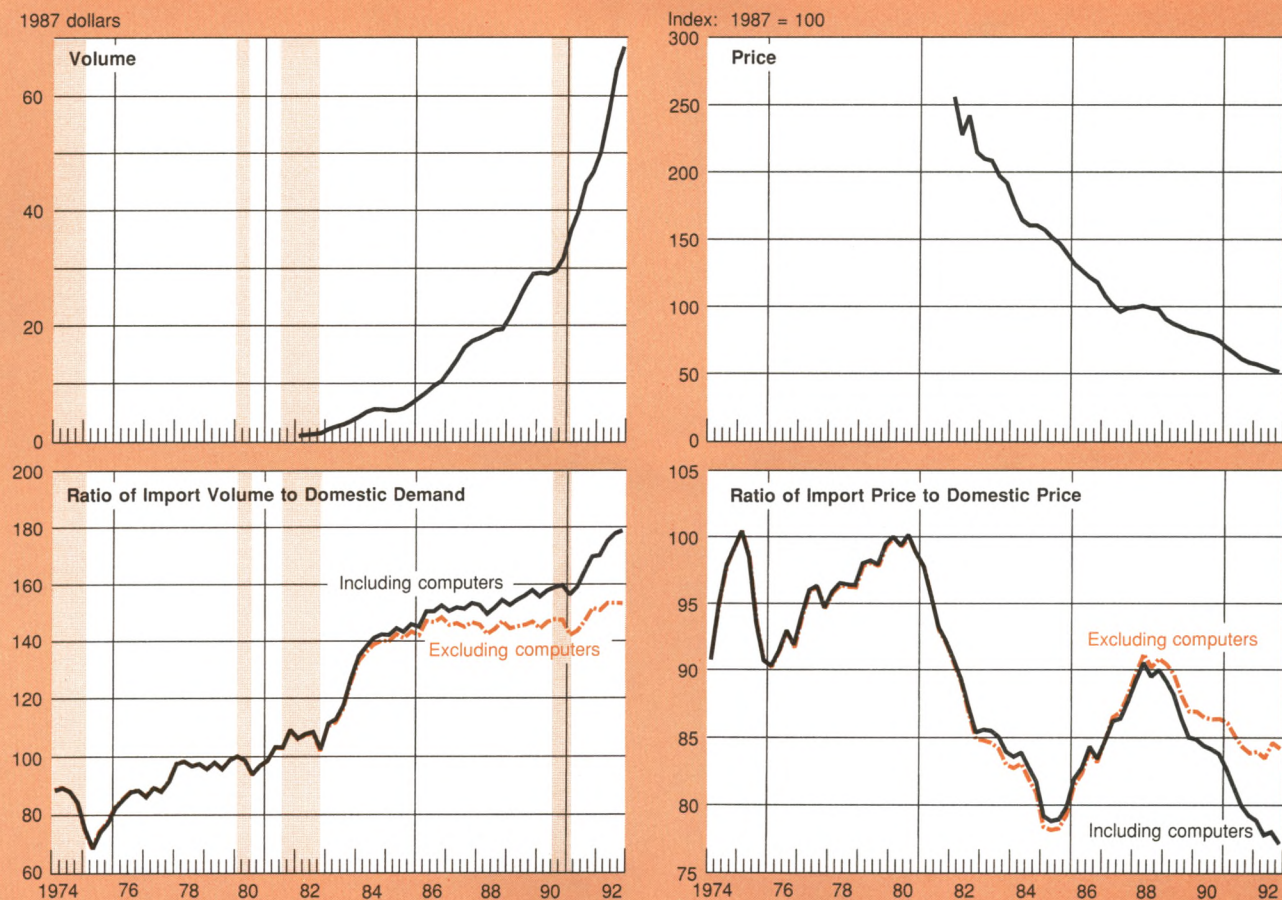
when the dollar fell. A simple price model that uses foreign production costs converted into dollar terms tracks import prices quite well until 1985 (Chart 1).<sup>7</sup> But after 1985, import prices did not rise nearly as much as foreign production costs, giving some preliminary support to the contention that foreign firms chose to limit their price increases in order to compete in U.S. markets.

Another important factor is that domestic prices continued to rise at a steady pace after 1985, offsetting the increase in import prices. While import prices did rise significantly after 1985, the impact on import demand

<sup>7</sup>Foreign production costs are proxied by an import-weighted average of producer price inflation in the six major foreign countries: Canada, France, Germany, Italy, Japan, and the United Kingdom.

Chart 2

### Computer Imports



Sources: National Income and Product Accounts; Bureau of Labor Statistics.

would ultimately depend on how import prices moved relative to domestic prices. In the first half of the 1980s, the ratio of import prices to domestic producer prices fell as domestic prices rose while import prices declined slightly, held down by the strong dollar (Chart 1). The result was a sharp improvement in the price competitiveness of foreign goods that mirrored the rise in the dollar. The depreciation of the dollar then pushed import prices higher, but domestic inflation prevented domestic products from regaining all the price advantage they had lost in the first half of the 1980s. When the dollar stabilized around the end of 1987, U.S. prices continued to rise while import prices remained essentially unchanged, causing the ratio to turn against domestic goods. By the early 1990s, this measure of price competitiveness returned to the unfavorable level it had held in 1985 when the dollar was at its peak, indicating that all the gains from the dollar's steep fall had by then disappeared.

A factor beyond macroeconomic considerations that explains the resilience of imports is the methodology used to measure computer imports. Specifically, the price index for computers used in the National Income and Product Accounts (NIPA) reflects the steep decline in the price of computing power over time. Consequently, this index is driven entirely by technological progress rather than by dollar movements or foreign production costs (Chart 2).<sup>8</sup> Since the volume measure for computers is defined as the nominal value divided by the technology-adjusted price index, its very rapid

\*Ellen Meade discusses the construction of the NIPA computer price deflator in "Computers and the Trade Deficit: The Case of Falling Prices," in Peter Hooper and J. David Richardson, eds., *International Economic Transactions* (Chicago: University of Chicago Press, 1991), pp. 61-81. Also see Dan Citrin, "The Recent Behavior of U.S. Trade Prices," *IMF Staff Papers*, December 1989, pp. 934-49; and Robert Lawrence, "The Current Account Adjustment: An Appraisal," *Brookings Papers on Economic Activity*, 1990:2, pp. 343-92.

Table 1

### Price and Volume Regressions

	Price					Augmented Dickey-Fuller Statistic
	Constant	Trend	Foreign Production Costs	Dollar	Adjusted R-squared	
<b>1974-I to 1985-I</b>						
Non-oil	1.4 (3.2)	-0.002 (1.1)	1.1 (11.1)	-0.7 (13.1)	0.99	4.9
Non-oil, noncomputers	1.3 (3.1)	-0.002 (1.4)	1.1 (11.3)	-0.7 (13.4)	0.99	4.6
<b>1981-IV to 1992-IV</b>						
Non-oil	1.2 (1.6)	-0.003 (2.8)	1.1 (4.3)	-0.6 (10.5)	0.95	2.9
Non-oil, noncomputers	0.4 (0.5)	-0.002 (2.2)	1.3 (5.9)	-0.7 (13.3)	0.98	3.9
	Volume				Adjusted R-squared	Augmented Dickey-Fuller Statistic
	Constant	Trend	Domestic Demand	Relative Price		
<b>1974-I to 1985-I</b>						
Non-oil	-12.7 (6.7)	-0.002 (0.2)	2.6 (11.1)	-0.7 (5.2)	0.97	5.3
Non-oil, noncomputers	-12.8 (6.8)	-0.001 (0.3)	2.6 (11.2)	-0.7 (4.9)	0.97	5.3
<b>1981-I to 1992-IV</b>						
Non-oil	-13.2 (13.6)	-0.002 (2.5)	2.7 (22.7)	-0.8 (9.7)	0.99	4.5
Non-oil, noncomputers	-13.8 (13.5)	-0.004 (5.3)	2.8 (23.9)	-0.8 (10.2)	0.99	4.5

Notes: Data are in log levels. Data from the National Income and Product Accounts reflect August 1993 revisions. The MacKinnon ADF critical values are 4.1 (10 percent) and 4.4 (5 percent).



growth is also a reflection of technological progress, making this component of imports essentially independent of domestic demand and relative price development.<sup>9</sup>

The measurement of computers has become increasingly important in interpreting the connection between imports and macroeconomic forces over time since computers have grown much more rapidly than total imports. In 1985, the difference between import prices with and without computers was small, but by 1992, the deflationary impact of computer prices had become quite large. Excluding computers reduces the 1992 gap between import prices and foreign production costs

<sup>9</sup>The impact of computers on the growth of real non-oil imports after 1985 was much greater when the NIPA data were calculated in 1982 dollars.

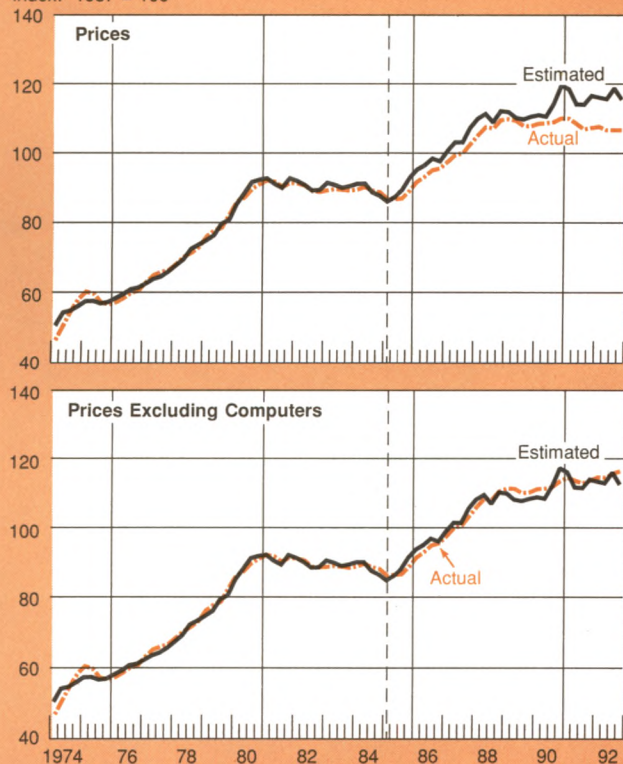
seen in Chart 1 by almost half. In addition, the ratio of import to domestic prices, whose decline since the late 1980s indicates a loss of U.S. price competitiveness, falls only half as much if computers are not included (Chart 2). As for import volume, the contribution of computers accounts for much of the resilience of non-oil imports after 1985. If computers are excluded from the ratio of imports to domestic purchases, the increased penetration of U.S. markets by foreign goods in the second half of the 1980s disappears, while the jump in the ratio in 1991 and 1992 is much more modest than the earlier calculation suggested (Chart 2).

In sum, an examination of the data indicates that the robust demand for foreign goods after 1985 can be explained, at least in part, by domestic inflation that offset the rise in import prices following the dollar's decline and by the special technology adjustment used

Chart 3

### Comparison of Actual and Estimated Non-Oil Imports

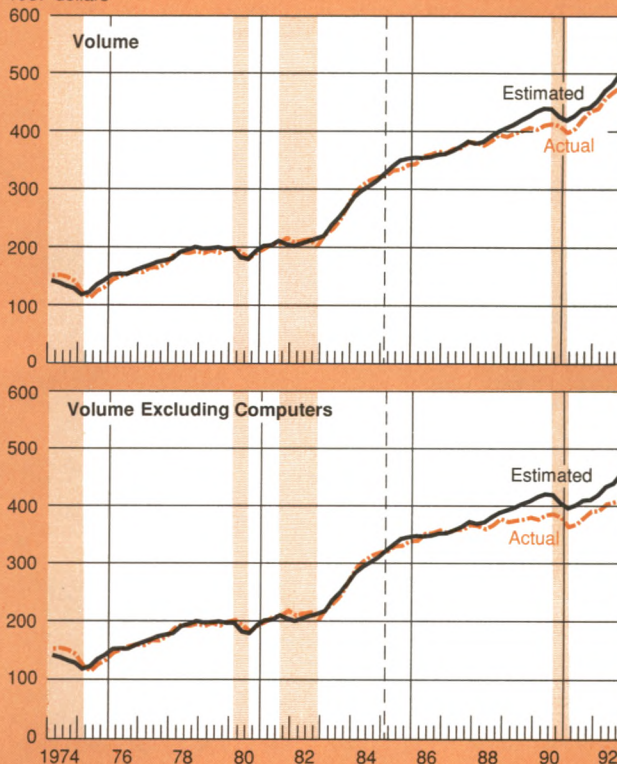
Index: 1987 = 100



Note: Estimated values are based on regressions from 1974-I to 1985-I.

Sources: National Income and Product Accounts; Bureau of Labor Statistics.

1987 dollars





to measure computer imports. Still, given the complicated relationship between imports and macroeconomic forces, this initial examination is not sufficient to determine whether import behavior has changed over time. The statistical analysis in the next section addresses this question by comparing import behavior before and after 1985.

### Empirical analysis

The simple model of U.S. non-oil imports developed here has two equations: one for dollar import prices dependent on foreign production costs and the dollar and another for volumes based on domestic purchases and relative prices. The equations, estimated in log level form and without lags, initially use data only up to the dollar's peak in the first quarter of 1985 to create a baseline representation of import behavior before the dollar's fall.<sup>10</sup> These results are interpreted as representing the expectations held in 1985 of how imports

would respond to the dollar's fall and other macroeconomic developments.

Using this framework, one can then search for changes in import behavior. The regressions are rerun in a sequence, each time subtracting the first year in the estimation period and adding a more recent year to identify any systematic change in the estimated elasticities over time. To get another perspective, the base model is used to project price and volume behavior since 1985 and these out-of-sample results are compared with actual imports over the last eight years. This procedure visually underscores any behavior diverging from pre-1985 expectations and, in those cases where the elasticities appear to remain constant, highlights important developments not captured by basic macroeconomic determinants.

Once a model for non-oil imports is constructed, the analysis is extended to the four major commodity groups to see if particular industries have experienced structural changes not evident when imports are con-

<sup>10</sup>Spurious results from using levels are avoided if the residuals from the regressions are stationary. The test for stationary used here is the augmented Dickey-Fuller statistic. See Robert Engle and Clive Granger, "Co-integration and Error Correction: Representation, Estimation, and Testing," *Econometrica*, March 1987, pp. 251-76. James Stock shows that using levels is more efficient than using

Footnote 10 continued

first differences ("Asymptotic Properties of Least Squares Estimators of Cointegrating Vectors," *Econometrica*, December 1987, pp. 1035-56). Note that the equations have high serial correlation, a feature that makes the t-statistics unreliable. All the variables involved are nonstationary.

Table 2

### Import Prices by Commodity Group

	Constant	Trend	Foreign Production Costs	Dollar	Adjusted R-squared	Augmented Dickey-Fuller Statistic
<b>1974-I to 1985-I</b>						
Industrial supplies	1.0 (2.3)	-0.014 (5.3)	1.7 (14.9)	-0.7 (6.4)	0.98	4.8
Capital goods (excluding computers)	2.5 (4.5)	-0.002 (0.9)	0.8 (6.1)	-0.5 (9.2)	0.94	4.6
Autos	2.7 (4.1)	0.015 (6.1)	0.6 (3.5)	-0.7 (8.2)	0.98	4.7
Consumer goods	3.6 (6.0)	0.003 (1.4)	0.6 (4.2)	-0.5 (7.9)	0.95	4.2
<b>1981-IV to 1992-IV</b>						
Industrial supplies	2.3 (2.4)	-0.004 (3.7)	0.8 (4.0)	-0.8 (8.1)	0.79	2.2
Capital goods (excluding computers)	0.9 (0.9)	-0.004 (2.8)	1.4 (4.6)	-0.8 (11.4)	0.97	3.9
Autos	7.3 (9.2)	0.009 (11.9)	-0.6 (3.1)	-0.2 (5.0)	0.99	2.2
Consumer goods	3.2 (3.9)	0.002 (2.0)	0.6 (2.6)	-0.4 (7.2)	0.98	3.0

Note: The MacKinnon ADF critical values are 4.1 (10 percent) and 4.4 (5 percent).

sidered as a whole.<sup>11</sup> There are significant gains in evaluating volume behavior in this manner since the demand and price determinants can be chosen to correspond narrowly to developments in each commodity group. The commodity-specific approach is less useful for understanding prices because data on foreign production costs for each commodity group are not available. Price equations, therefore, rely on cost information that is essentially the same as that used for total imports to capture significant differences in price behavior.<sup>12</sup> Even with this limitation, the results offer some insight into how the dollar's impact may or may not have changed over time.

<sup>11</sup>The components of real non-oil imports not modeled are food (\$26 billion in 1992), computers (\$60 billion), aircraft (\$10 billion), and "other" (\$31 billion).

<sup>12</sup>Exchange rate and foreign cost data were reweighted on the basis of import shares in each category.

### Non-oil imports

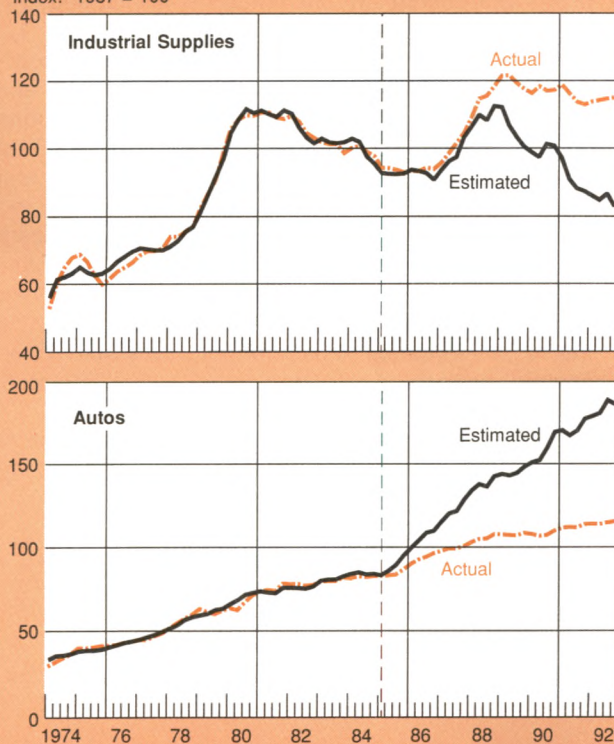
The price equations, estimated only with data up to the dollar's peak in the first quarter of 1985, indicate that foreign firms reacted less than fully to the dollar before 1985 (Table 1).<sup>13</sup> The dollar elasticity of  $-0.7$  suggests that a 10 percent fall in the dollar tends to raise import prices by 7 percent. This estimate is in line with those reached in previous empirical studies that found foreign firms absorbing part of any exchange rate swing into their profits. A 1986 survey reported that most dollar price elasticity estimates

<sup>13</sup>For a theoretical justification, see Peter Hooper and Catherine Mann, "Exchange Rate Pass-through in the 1980s: The Case of U.S. Imports of Manufacturers," *Brookings Papers on Economic Activity*, 1989:2, pp. 297-329. Another common specification views import prices as dependent on foreign export prices in dollar terms. See Lawrence, "The Current Account Adjustment," and Citrin, "The Recent Behavior of U.S. Trade Prices." U.S. prices are also sometimes included to capture the practice of pricing to market, but they are not found to be significant in this study.

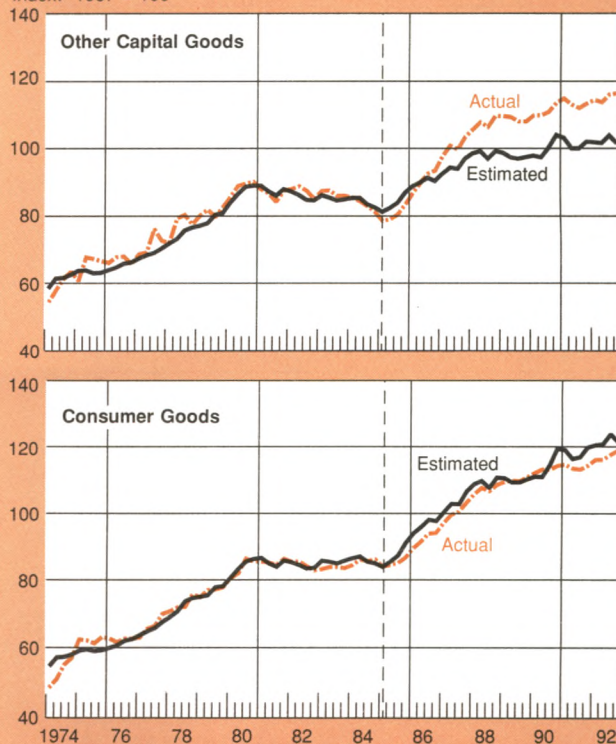
Chart 4

### Comparison of Actual and Estimated Import Prices

Index: 1987 = 100



Index: 1987 = 100



Note: Estimated values are based on regressions from 1974-I to 1985-I.

Sources: National Income and Product Accounts; Bureau of Labor Statistics.



were between  $-0.5$  and  $-0.7$ , while a 1989 survey found that elasticity estimates were centered around  $-0.8$ .<sup>14</sup> The foreign production cost elasticity is 1.1, indicating that any increase in costs borne by foreign firms is fully incorporated into their dollar prices.<sup>15</sup> Earlier studies tended to find a somewhat lower cost elasticity of between 0.7 and 1.0.<sup>16</sup> The estimated equation

<sup>14</sup>For the survey results, see Catherine Mann, "Prices, Profit Margins, and Exchange Rates," *Federal Reserve Bulletin*, June 1986, pp. 366-79; and Hooper and Mann, "Exchange Rate Pass-through in the 1980s." Hooper and Mann's own analysis found elasticity estimates of between  $-0.5$  and  $-0.6$ .

<sup>15</sup>An alternative measure of foreign production costs, unit labor costs, yielded a lower estimate of 0.7.

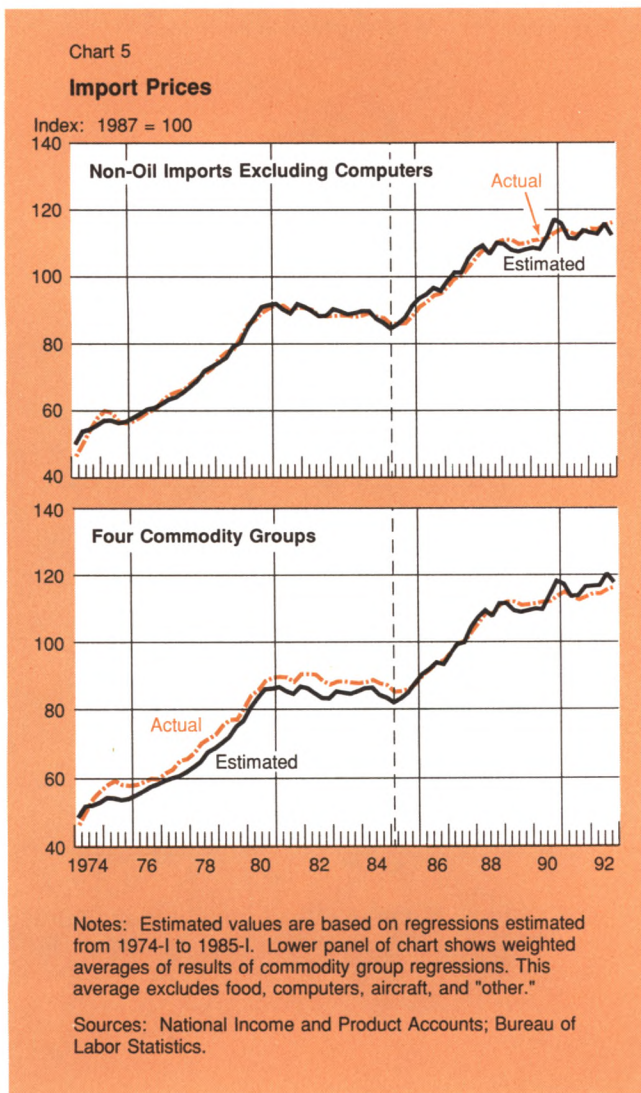
<sup>16</sup>Estimates included 0.9 in Helkie and Hooper, "An Empirical

for import prices with computers excluded is essentially the same since computers represent a small share of imports during the estimation period.

The coefficients in the volume equations are also similar to those found in other studies (Table 1).<sup>17</sup> The estimated elasticity for changes in import prices relative to domestic prices is  $-0.7$ , implying that a 10 percent rise in import prices lowers real imports 7 percent. Price elasticities in previous models tended to be in the range of  $-0.7$  to  $-1.0$ .<sup>18</sup> The coefficient on domestic demand, meant to reflect the demand for both domestic and foreign goods, is 2.6, indicating that U.S. consumers spend 2.6 percent more on imported goods for every 1.0 percent increase in domestic purchases of goods and services. As a consequence, real imports typically rise faster than domestic demand when the economy is growing and fall faster when the economy is in a recession. In previous studies, the domestic demand or income (depending on the model) elasticity tended to be around 2.0, although a higher value was not unusual. For example, a model developed by Lawrence in 1989 found a domestic demand elasticity of 2.5.<sup>19</sup> Like the results for the two price equations, the elasticity estimates are essentially unchanged when computers are excluded.

The price and volume equations estimated are roughly consistent with previous empirical work and so will be interpreted as reasonable representations of import behavior up to 1985. The lower half of Table 1 lists the final regressions from a series of rolling regressions, with the interim set of estimates left to the appendix (Table A1). The results from the last estimation period indicate little change in the response of imports to the dollar after 1985: both the dollar elasticity in the price equation and the relative price elasticity in the volume equation remain roughly the same in the two sample periods. This conclusion is not affected by computers.

The importance of computers becomes clear, however, when the regressions are used to project import



Footnote 16 continued

Analysis of the External Deficit," 0.8 in Lawrence, "The Current Account Adjustment: An Appraisal," and 0.8 in Michael Moffet, "The J-Curve Revisited: An Empirical Examination for the United States," *Journal of International Money and Finance*, September 1989, pp. 425-44.

<sup>17</sup>Actual rather than projected import prices are used for the volume regressions.

<sup>18</sup>Elasticities in other models are listed in Ralph Bryant, Gerald Holtham, and Peter Hooper, *External Deficits and the Dollar* (Washington D.C.: Brookings Institution), pp. 133-34.

<sup>19</sup>Many studies use gross domestic product (GDP) instead of domestic demand, which is GDP minus net exports. Using GDP in these regressions raises the elasticity by roughly 0.5.



behavior after the first quarter of 1985 (Chart 3). For non-oil import prices, the projected path closely tracks the substantial rise in prices that immediately followed the dollar's fall. But over time a large gap develops, with import prices falling in recent years while the projected path rises. Once the deflationary impact of computers is eliminated, this gap disappears and the projected path closely tracks prices through 1992. The influence of computers on import volumes is also evident: the projection of non-oil imports is fairly accurate through 1992, while the equation without computers indicates that imports were unexpectedly weak starting in 1988. The conclusions from this analysis—that import prices behaved in an expected fashion and that real imports have been surprisingly weak—are consistent with the findings of other recent empirical studies. With computers excluded, the volume equation here overpredicts real imports in 1990 by \$20

billion, a discrepancy that remains roughly unchanged through 1992. A model developed by Lawrence found that non-oil, non-computer imports were \$30 billion less than expected in 1990, while the Helkie-Hooper model found that non-oil imports were \$20 billion less.<sup>20</sup>

#### Major commodity groups

The estimated import price equations for each of the major commodity groupings—industrial supplies, capital goods, autos, and consumer goods—tend to be similar to the non-oil price equation (Table 2). The dollar elasticity of  $-0.7$  for both industrial supplies and autos is the same as the estimate for non-oil imports, while capital goods and consumer goods, with elasticities of

<sup>20</sup>See Lawrence, "The Current Account Adjustment: An Appraisal," including Peter Hooper's comments.

Table 3

#### Import Volume by Commodity Group

	Constant	Trend	Demand	Price	Adjusted R-squared	Augmented Dickey-Fuller Statistic
<b>1974-I to 1985-I</b>						
Industrial supplies	0.0 (0.0)	-0.007 (4.5)	1.8 (9.6)	-0.9 (6.5)	0.82	5.2
Capital goods (excluding computers)	0.7 (0.7)	0.015 (4.4)	1.2 (7.9)	-0.8 (5.2)	0.98	4.2
Autos	3.5 (3.1)	0.012 (8.6)	0.8 (8.2)	-0.8 (3.3)	0.84	3.9
Consumer goods	-4.2 (2.7)	-0.013 (2.8)	2.7 (8.0)	-1.4 (5.4)	0.96	4.3
<b>1981-IV to 1992-IV</b>						
Industrial supplies	1.9 (2.3)	-0.003 (3.2)	1.7 (11.3)	-1.1 (11.9)	0.95	3.4
Capital goods (excluding computers)	-2.2 (2.2)	0.011 (10.4)	1.6 (11.9)	-0.6 (4.7)	0.96	4.3
Autos	-1.4 (1.1)	0.002 (1.0)	1.1 (13.9)	-0.0 (0.1)	0.92	2.8
Consumer goods	-5.4 (6.3)	-0.012 (7.2)	2.6 (18.5)	-1.0 (7.4)	0.97	3.5

Notes: Demand and domestic price variables are defined for each commodity group as follows:

Imports	Specific Demand	U.S. Producer Prices
Non-oil	Domestic purchases (GDP minus net exports)	Finished goods excluding food and energy
Industrial supplies	Industrial production	Intermediate goods excluding food and energy
Capital goods, excluding computers, aircraft	Producers' durable equipment excluding autos, aircraft, and computers	Capital goods
Autos	Personal consumption of autos	Motor vehicles and equipment
Consumer goods	Personal consumption of selected items	Finished consumer goods

The MacKinnon ADF critical values are 4.1 (10 percent) and 4.4 (5 percent).

-0.5, appear to be somewhat less responsive to the dollar. The production cost elasticities for all categories but industrial supplies fall in the range of 0.6 to 0.8, below the 1.1 estimate for non-oil imports, while the estimate for industrial supplies is 1.7.

When the equations are reestimated using recent data, the dollar's influence either stays roughly the same or becomes stronger for all the categories except autos, while the cost elasticities change dramatically in three of the four categories: the elasticity for autos falls from 0.6 to -0.6 and for industrial supplies from 1.7 to 0.8; it rises from 0.8 to 1.4 for capital goods (see appendix, Table A2). These large shifts in the cost elasticities should be interpreted with caution since they may be due more to the lack of production cost data by commodity group than to any systematic change in the response of import prices to costs.

The instability of the production cost elasticities prob-

ably explains why the regression projections do a poor job of tracking import prices, particularly for autos and industrial supplies. One factor specific to autos is the impact of the voluntary export constraints on prices in the first half of the 1980s (Chart 4).<sup>21</sup> These restrictions distorted price behavior from 1981 to 1985 by pushing up import prices to match demand just when the rising dollar would have suggested more modest price increases.<sup>22</sup> They became nonbinding in 1985, at a time

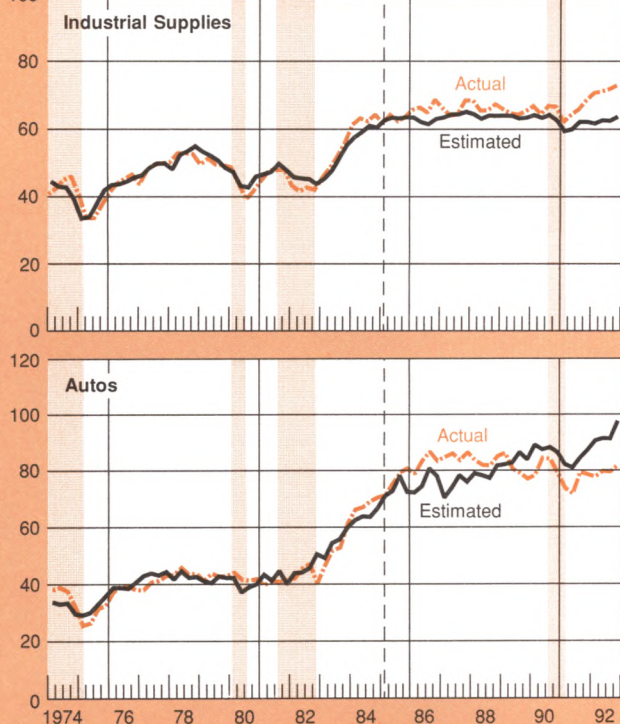
<sup>21</sup>Efforts to use either a dummy for the period of import restraints or a measure of domestic prices to catch any response to market prices were not successful.

<sup>22</sup>Charles Collyns and Stephan Dunaway estimated that the base price of Japanese cars was \$600 higher in 1984 because of the voluntary restraints ("The Cost of Trade Restraints: The Case of Japanese Automobile Exports to the United States," *IMF Staff Papers*, March 1987, pp. 150-75).

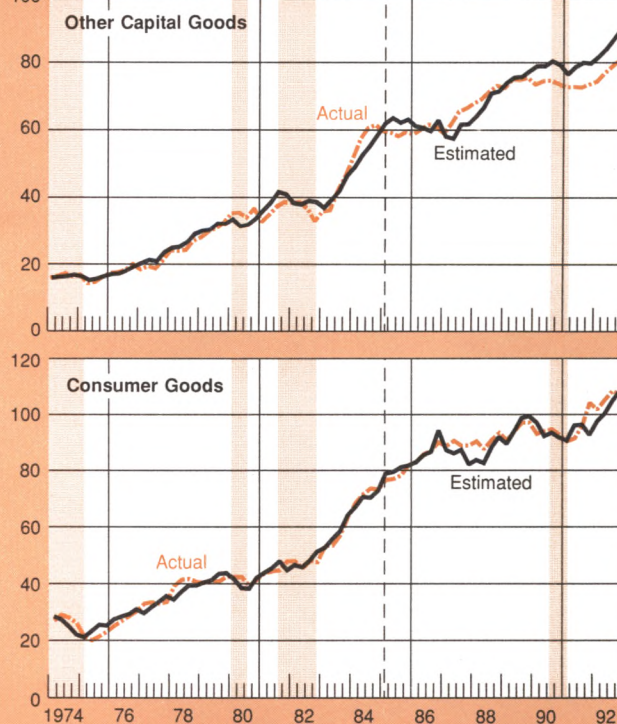
Chart 6

### Comparison of Actual and Estimated Import Volumes

1987 dollars  
100



1987 dollars  
100



Note: Estimated values are based on regressions from 1974-I to 1985-I.

Sources: National Income and Product Accounts; Bureau of Labor Statistics.



when the dollar was beginning to fall, and thereby took upward pressure off prices just when the dollar would have suggested a pickup in prices. The effort to capture the rapid price inflation in the first half of the 1980s forces the regression to greatly overestimate import price inflation in the second half of the decade.

The inability to track import prices after 1985 does not prevent the four projections, when averaged according to their import shares, from being consistent with the close fit achieved by the non-oil price equation seen above (Chart 5). The errors of the four projections, driven in part by the use of broad production cost measures for each category, roughly offset each other, with the less than expected increase in auto prices after 1985 matched by the larger than expected price hikes for industrial supplies and, to a lesser extent, for capital goods.

The import volume regressions by commodity group differ from the non-oil equation in that they have somewhat more important relative price elasticities and substantially different demand elasticities. Using the more narrowly defined price ratios puts the relative price elasticities for all four categories between  $-0.8$  and  $-1.4$ , compared with the  $-0.7$  estimated for non-oil imports. The demand elasticities for autos and capital goods are roughly  $1.0$ , while the demand estimate for industrial supplies, using overall industrial production, is  $1.8$ .<sup>23</sup> Only in the case of consumer goods is the demand elasticity of  $2.7$  near the  $2.6$  estimate for non-oil imports.<sup>24</sup>

The high domestic demand elasticity for non-oil

imports has been interpreted by some as reflecting a secular decline in the competitiveness of U.S. goods.<sup>25</sup> The argument is that the demand elasticity is affected by the failure of price data to provide a suitable measure of the relative attractiveness of imported goods. In particular, import prices do not adequately capture the impact of the steady stream of new, increasingly sophisticated imported goods entering U.S. markets. As a result, the declining competitiveness of U.S. goods finds expression in either a large positive trend term or a high elasticity estimate for domestic demand.<sup>26</sup>

The lower demand elasticities in three of the four categories suggest that the high domestic demand elasticity estimates for non-oil imports as a whole may arise because too broad a definition of demand is used in conventional models of import behavior. To illustrate the point, the non-oil equation can be reestimated with a measure of domestic demand that excludes two large components not associated with trade, consumption of services and government spending. The narrow domestic demand measure lowers the demand elasticity from  $2.6$  to  $1.4$ , leaving the relative price elasticity and trend term essentially unchanged.

As for changes in import behavior over time, the rolling regression results show a decline in the importance of import prices only in the case of autos (Table 3). The decline in relative price elasticity for capital and consumer goods occurs once 1974 data are dropped and 1985 data are added, and from then on, the sequence of regressions shows no further decline for capital goods and a recovery for consumer goods (see appendix, Table A3). This finding suggests that the drop

<sup>23</sup>Unfortunately, a more accurate measure of purchases for industrial supplies is not available.

<sup>24</sup>The demand measure for consumer goods is composed of goods that tend to be imported: small appliances, consumer electronics, jewelry, toys, sports equipment, clothes, and shoes. The major consumer goods excluded are food, energy, autos, large appliances, rugs, and computers.

<sup>25</sup>See Paul Krugman, *Has the Adjustment Process Worked?* (Washington, D.C.: Institute of International Economics, 1991); and Lawrence, "The Current Account Adjustment."

<sup>26</sup>Helkie and Hooper try to compensate for this problem by adding a relative capital stock measure to their model ("An Empirical Analysis of the External Deficit, 1980-86").

Table 4

### Auto Retail Sales

Market Share

Market Share	1983	1985	1987	1989	1991	1992
U.S. firms	73	72	63	62	57	59
Japanese firms	22	22	27	30	36	35
Imports	21	20	21	20	18	18
Transplants	1	2	6	10	18	18
Other imports	4	5	10	8	7	7
Total	100	100	100	100	100	100

in the two price elasticities largely developed before 1985 and that they have not undergone any systematic decline in importance in recent years. The demand elasticities showed some movement over the sequence of regressions, increasing for capital goods and autos and remaining unchanged for industrial supplies and consumer goods.

The projection of real imports based on the pre-1985 regressions is very close to actual values for consumer goods and somewhat less close for industrial supplies, which are stronger than expected, and for capital goods, which are weaker than expected. The projection for autos is the least reliable; it shows an increase in imports after 1986, while actual imports declined (Chart 6). A key development not captured by the equation

helps explain the unexpected weakness in auto imports. Concerned that import quotas might be imposed to limit market share gains, Japanese auto firms shifted a significant amount of their assembly operations to the United States. The number of cars produced by Japanese plants in the United States rose from 0.2 million units in 1985 to 1.4 million in 1992. During the same period, auto imports from Japan declined from 2.2 million to 1.5 million units. In market share terms, the shift in production allowed Japanese firms to raise their share of retail sales from 22 percent in 1985 to 35 percent in 1992, entirely through increased production in their U.S. plants.

The effect of this direct investment in U.S. facilities on imports is hard to measure since it depends on unknown factors. If one assumes that 50 percent of transplant production was sold to consumers who would otherwise have bought an imported auto and that 50 percent of the value of the transplant-produced autos was created in the United States, then Japanese plants in the United States reduced auto imports by roughly \$5 billion in 1992.<sup>27</sup> Alternatively, if one assumes that transplants replaced imports one for one, then auto imports were \$10 billion lower than they would otherwise have been. This factor likely accounts for much of the \$13 billion difference between the projected and actual values of auto imports in 1992.

Quality improvements by domestic auto producers may also have contributed to the reduced demand for auto imports. After experiencing a decline in market share from 72 percent of U.S. retail auto sales in 1985 to 57 percent in 1991, U.S. firms managed in 1992 to

<sup>27</sup>This figure is based on the 1.4 million units assembled in 1991 and an assumed average price of \$14,500. For more details, see James Orr, "Foreign Direct Investment in the United States: Effects on the Trade Balance," Federal Reserve Bank of New York *Quarterly Review*, Summer 1991, pp 63-76.

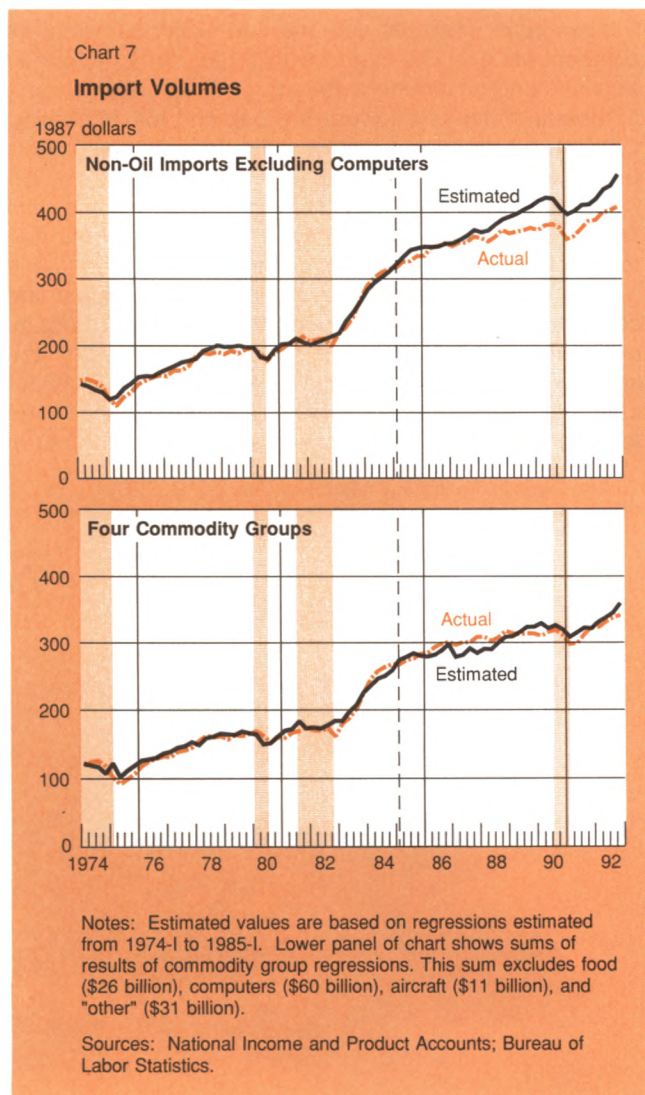


Table 5

**Import Volume: 1992**

Billions of 1987 Dollars

	Actual	Estimated	Difference
Industrial supplies	72	63	9
Other capital goods	78	86	-8
Autos	80	93	-13
Consumer goods	105	102	3
Total	335	343	-8
Non-oil imports	401	437	-36



raise their share to 59 percent (Table 4).<sup>28</sup> Indeed, imports fell significantly below projected levels in 1992, while production by Japanese transplants remained unchanged.

Imports for the other three categories since 1985 tend to match their projected levels. The slight growth of industrial supplies and the somewhat more rapid growth of consumer goods imports after 1985 are captured, although industrial supplies rebound much more strongly than expected following the recent recession. Imports of capital goods fall below their expected path in 1989-90, creating a gap that remains roughly unchanged through 1992.

Together, the sum of these projections for the four major commodity groups, each of which relies on narrow measures of the relevant macroeconomic determinants, anticipates import behavior better than the projection derived for non-oil imports as a whole (Chart 7). In this case, the weakness in autos and capital goods is offset by stronger than expected demand for industrial supplies (Table 5). This result suggests that the size of the unexpected weakness in imports found in the aggregate non-oil regression may be somewhat overstated because of that regression's reliance on broad measures of domestic demand and prices.

<sup>28</sup>Total retail sales were 8.2 million in 1992. An assumed average price of \$14,500 means that a 1 percent share of the market equals \$1.1 billion.

## Conclusion

This article began with the observation that the volume of non-oil imports grew three and a half times faster than overall domestic purchases from 1980 to 1985 and three times faster from 1985 to 1992. The apparent failure of imports to slow substantially relative to domestic purchases after 1985 would seem to indicate that the dollar's decline has had a surprisingly modest restraining influence on imports. A more detailed analysis of import behavior, however, confirms the continuing importance of the dollar. It is significant that import growth after 1985 has been concentrated in computers. This category needs to be considered separately because measures of computer import growth reflect improvements in technology and are largely unaffected by the dollar's value. Once computers are excluded, an empirical investigation of non-oil import behavior indicates that imports have for the most part responded in a conventional fashion to the dollar and other macroeconomic developments, particularly the rise in U.S. prices. As a consequence, concerns that the strong dollar caused significant structural changes that gave foreign producers long-term advantages in U.S. markets appear to be unfounded. Although U.S. markets for foreign goods may have changed significantly in the 1980s, the change has not been sufficient to prevent imports from behaving in ways broadly consistent with long-term historical experience.



## Appendix

The tables below, listing the results from rerunning the trade equations over different sample periods, shed

light on the stability of trade elasticities over time.

Table A1

### Non-Oil Imports

Excluding Computers

Estimation Period	Price				Augmented Dickey-Fuller Statistic
	Constant	Trend	Foreign Costs	Dollar	
1974-I to 1985-I	1.3	-0.002	1.1	-0.7	4.6
1975-I to 1986-I	2.5	-0.003	1.2	-0.6	4.2
1976-I to 1987-I	2.5	-0.003	1.2	-0.7	4.6
1977-I to 1988-I	2.7	-0.003	1.1	-0.6	4.3
1978-I to 1989-I	2.8	-0.002	1.1	-0.7	3.8
1979-I to 1990-I	3.1	-0.002	1.0	-0.7	2.7
1980-I to 1991-I	2.7	-0.002	1.1	-0.7	3.6
1981-I to 1992-I	2.2	-0.003	1.3	-0.7	2.8
1981-IV to 1992-IV	1.3	-0.002	1.3	-0.7	3.9
1974-I to 1992-IV	1.4	-0.002	1.1	-0.7	4.9

Estimation Period	Volume				Augmented Dickey-Fuller Statistic
	Constant	Trend	Demand	Relative Price	
1974-I to 1985-I	-12.8	-0.001	2.6	-0.7	5.3
1975-I to 1986-I	-12.5	-0.003	2.4	-0.5	4.4
1976-I to 1987-I	-11.5	-0.002	2.3	-0.5	4.6
1977-I to 1988-I	-10.8	-0.002	2.3	-0.6	4.7
1978-I to 1989-I	-10.5	-0.000	2.3	-0.8	4.6
1979-I to 1990-I	-11.0	-0.001	2.4	-0.8	4.2
1980-I to 1991-I	-14.6	-0.005	2.8	-0.8	4.5
1981-I to 1992-I	-14.0	-0.004	2.8	-0.8	4.0
1981-IV to 1992-IV	-13.8	-0.004	2.8	-0.8	4.5
1974-I to 1992-IV	-13.0	-0.003	2.7	-0.8	4.8

# Appendix (Continued)

Table A2

## Import Prices

Estimation Period	Industrial Supplies					Other Capital Goods				
	Constant	Trend	Foreign Cost	Dollar	Augmented Dickey-Fuller Statistic	Constant	Trend	Foreign Cost	Dollar	Augmented Dickey-Fuller Statistic
1974-I to 1985-I	1.0	-0.014	1.7	-0.7	4.8	2.5	-0.002	0.8	-0.5	4.6
1975-I to 1986-I	1.2	-0.013	1.7	-0.8	4.2	2.8	-0.004	0.9	-0.5	4.1
1976-I to 1987-I	1.3	-0.013	1.7	-0.8	3.9	3.6	-0.002	0.8	-0.5	3.9
1977-I to 1988-I	1.3	-0.013	1.7	-0.8	3.9	3.9	-0.001	0.7	-0.6	3.2
1978-I to 1989-I	1.6	-0.012	1.6	-0.8	3.9	3.9	-0.001	0.8	-0.6	2.7
1979-I to 1990-I	2.0	-0.011	1.6	-0.9	2.3	3.7	-0.001	0.9	-0.7	2.5
1980-I to 1991-I	2.4	-0.010	1.5	-0.9	1.9	2.6	-0.002	1.2	-0.7	3.2
1981-I to 1992-I	4.4	-0.006	1.0	-0.9	2.2	1.7	-0.003	1.5	-0.8	3.6
1981-IV to 1992-IV	2.3	-0.004	0.8	-0.8	2.2	0.9	-0.004	1.4	-0.8	3.9
1974-I to 1992-IV	0.3	-0.007	1.4	-0.9	2.7	3.4	-0.005	0.6	-0.6	4.1

Estimation Period	Autos					Consumer Goods				
	Constant	Trend	Foreign Cost	Dollar	Augmented Dickey-Fuller Statistic	Constant	Trend	Foreign Cost	Dollar	Augmented Dickey-Fuller Statistic
1974-I to 1985-I	2.7	0.015	0.6	-0.7	4.7	3.6	0.003	0.6	-0.5	4.2
1975-I to 1986-I	1.8	0.010	0.8	-0.6	4.3	3.5	0.001	0.6	-0.4	4.2
1976-I to 1987-I	1.3	0.009	0.9	-0.6	4.3	3.6	0.002	0.6	-0.4	4.2
1977-I to 1988-I	1.1	0.008	0.9	-0.5	4.9	3.7	0.002	0.6	-0.4	4.3
1978-I to 1989-I	1.3	0.009	0.6	-0.3	4.1	3.8	0.002	0.6	-0.4	2.7
1979-I to 1990-I	1.7	0.009	0.6	-0.3	3.8	3.9	0.003	0.6	-0.5	2.6
1980-I to 1991-I	2.5	0.007	0.8	-0.3	3.1	3.3	0.002	0.7	-0.5	3.0
1981-I to 1992-I	6.3	0.010	-0.4	-0.2	2.7	3.3	0.002	0.7	-0.5	3.0
1981-IV to 1992-IV	7.3	0.009	-0.6	-0.2	2.2	3.2	0.002	0.6	-0.4	3.0
1974-I to 1992-IV	-0.3	0.004	1.3	-0.5	4.5	3.4	0.002	0.6	-0.4	4.6

# Appendix (Continued)

Table A3

## Import Volume

Estimation Period	Industrial Supplies					Other Capital Goods				
	Constant	Trend	Demand	Relative Price	Augmented Dickey-Fuller Statistic	Constant	Trend	Demand	Relative Price	Augmented Dickey-Fuller Statistic
1974-I to 1985-I	0.0	-0.007	1.8	-0.9	5.2	0.7	0.015	1.2	-0.8	4.2
1975-I to 1986-I	0.2	-0.006	1.9	-1.0	4.9	0.2	0.018	1.1	-0.6	4.0
1976-I to 1987-I	0.1	-0.007	2.0	-1.1	4.7	0.1	0.020	1.1	-0.6	4.1
1977-I to 1988-I	-0.3	-0.007	2.1	-1.0	4.3	-1.4	0.018	1.2	-0.6	4.0
1978-I to 1989-I	-0.3	-0.007	2.0	-1.1	5.0	-0.1	0.017	1.1	-0.6	4.5
1979-I to 1990-I	-0.3	-0.007	2.1	-1.0	4.9	0.6	0.016	1.1	-0.6	4.1
1980-I to 1991-I	-0.4	-0.007	2.1	-1.0	4.4	-0.7	0.014	1.3	-0.6	3.6
1981-I to 1992-I	0.7	-0.005	1.9	-1.1	3.9	-0.1	0.014	1.4	-0.8	3.1
1981-IV to 1992-IV	1.9	-0.003	1.7	-1.1	3.4	-2.2	0.011	1.6	-0.6	4.3
1974-I to 1992-IV	0.7	-0.004	1.7	-0.9	5.9	0.3	0.013	1.3	-0.9	4.4

Estimation Period	Autos					Consumer Goods				
	Constant	Trend	Demand	Relative Price	Augmented Dickey-Fuller Statistic	Constant	Trend	Demand	Relative Price	Augmented Dickey-Fuller Statistic
1974-I to 1985-I	3.5	0.012	0.8	-0.8	3.9	-4.2	-0.013	2.7	-1.4	4.3
1975-I to 1986-I	0.4	0.012	0.8	-0.2	4.3	-7.1	-0.006	2.6	-0.7	4.0
1976-I to 1987-I	0.5	0.012	0.8	-0.2	4.3	-5.2	-0.007	2.4	-0.9	4.5
1977-I to 1988-I	0.3	0.013	0.8	-0.2	4.9	-4.9	-0.007	2.4	-0.9	4.1
1978-I to 1989-I	1.6	0.012	0.8	-0.5	4.1	-5.2	-0.010	2.6	-1.0	4.2
1979-I to 1990-I	2.1	0.010	0.9	-0.7	2.4	-4.0	-0.009	2.5	-1.2	3.3
1980-I to 1991-I	-0.1	0.004	1.1	-0.3	3.1	-5.7	-0.014	2.8	-1.2	3.7
1981-I to 1992-I	-0.2	0.004	1.1	-0.3	3.1	-5.0	-0.012	2.7	-1.2	3.7
1981-IV to 1992-IV	-1.4	0.002	1.1	-0.0	2.8	-5.4	-0.012	2.6	-1.0	3.5
1974-I to 1992-IV	-2.1	0.009	0.9	-0.7	3.3	-4.3	-0.012	2.6	-1.3	5.4



# Update on the Second District's Economy

*by Rae D. Rosen*

The recovery in the Second District continues to lag the recovery in the nation as a whole. On balance, the economies of New York and New Jersey appear to have shown no significant growth in recent months.<sup>1</sup> Over the January-August period, only a few indicators showed some limited signs of improvement while others were flat or continued to decline. Personal income has continued to increase in real terms, but real retail sales have been more or less unchanged over the past year. Regional inflation has been decelerating more rapidly than at the national level, although the slowdown may simply reflect weak demand. Weakness is also evident in the regional labor market, especially in the manufacturing sector. Continued declines in manufacturing employment have more than offset gains in the service sector,<sup>2</sup> and total household employment has fallen. Unemployment rates have dropped this year, but almost entirely because of a decline in the labor force. In turn, the decline in the labor force appears to reflect, at least

in part, the migration of workers out of the region in search of better job opportunities as well as the dropout of discouraged workers.

## **Labor market developments**

**Employment.** Overall, the District's labor market appears to be the weakest of the regional indicators. While employment at the national level is growing at a modest pace after recovering the jobs lost during the recession (Chart 1), employment in New York and New Jersey has continued to decline, although the rate of decline slowed markedly late in the fall of 1992. The data suggest that neither New York nor New Jersey has yet to make any progress in recovering the more than 800,000 jobs lost during the recession, even after an allowance is made for possible undercounting of jobs in New Jersey.<sup>3</sup> Although the New York-New Jersey area is not the only region posting net job losses, it has had a poorer post-recession labor market than the Pacific region, the Mountain region, the broad swath of Mid-

<sup>1</sup>The term "New York and New Jersey" is used interchangeably with the "Second District" in this article, partly because of limitations on data availability and partly in the interests of defining a reasonably meaningful economic unit. The Second Federal Reserve District technically comprises New York State, the northern counties of New Jersey (Middlesex, Somerset, Hunterdon, Bergen, Passaic, Union, Essex, Sussex, Warren, Morris, Monmouth), and Fairfield County, Connecticut; the District has oversight responsibilities for Puerto Rico and the Virgin Islands. In aggregate, the northern New Jersey counties in this District account for 70 percent of New Jersey's personal income and population.

<sup>2</sup>Services are defined narrowly to include business, personal, health, and legal services, but not service-producing activities such as trade and utilities. For a more detailed discussion, see Rae D. Rosen, "Recent Developments in New York City's Economy," Federal Reserve Bank of New York *Quarterly Review*, Summer 1993.

<sup>3</sup>Employment in New Jersey may not be as weak as it appears from these statistics. The declines in manufacturing and local government that dominate the losses in New Jersey are consistent with other reports. But the declines in construction and the slow growth in service employment are somewhat at odds with other measures of New Jersey's economy, including reasonably moderate gains in personal income and continued growth in new business starts (both measures are discussed more fully in a later section of this report). As a result, it appears that New Jersey's current employment count in sectors other than manufacturing and government may be understated. Such a miscount is particularly likely during the initial phase of a recovery period, when new service and construction firms may remain outside the range of some statistical surveys for several quarters. However, the weaker payroll tax collections in New Jersey suggest that if, indeed, there has been some undercounting of employment, the shortfall is unlikely to be extensive.

America, or New England (Chart 2).

More recently, from December 1992 to August 1993, the rate of decline in the District's employment slowed from the annual rate of 2 to 4 percent characteristic of the 1990-92 period to an annualized rate of 0.6 percent. Manufacturing losses of 50,000 jobs so far this year more than offset the small gain in nonmanufacturing employment, with the District losing a total of 44,000 jobs from December to August. New Jersey suffered the greater decline, accumulating a total loss of 37,000 jobs as employment dropped at an annual rate of 1.6 percent. In New York, the annual rate of decline slowed to near zero (0.1 percent), and just 7000 jobs were lost.

*Manufacturing, the weakest sector.* Somewhat contrary to popular perception, manufacturing employment in the District is only slightly less important than in the nation overall (13 percent of all employment compared with 16 percent nationally), yet the District is losing manufacturing jobs at an annual rate of 5 percent (December 1992 to August 1993) whereas the rate of loss for the nation is about 3 percent. Rates of decline in most of the District's manufacturing industries have exceeded the comparable national rates of loss and, even adjusted for the difference in composition, the

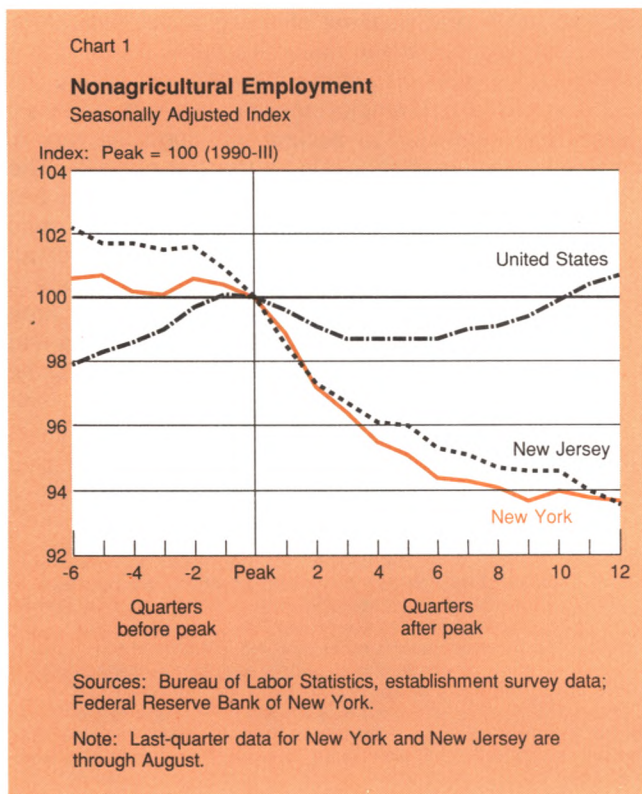
District's aggregate manufacturing losses exceed those of the nation.

An unusual confluence of problems appears to be undermining the manufacturing sector in the Second District. Intense competition from abroad, reductions in defense spending, weak export markets, corporate restructuring, and uncertainties caused by health care reform proposals are all working to the detriment of the District's manufacturing sector. Manufacturing employment losses in the District are occurring in the context of relatively weaker demand, production, and profits than in the United States as a whole. The losses stem in part from a combination of production and marketing problems: the District has a high concentration of older, less efficient plants, and many of its firms face intense domestic and international competition. Because of these competitiveness problems, the stronger national economy and increased national demand for manufactured goods apparently have had minimal spillover effects in the District's manufacturing sector.

In addition, cutbacks in defense spending have reduced demand and employment in the electronic equipment and aerospace industries. Weak European markets have limited export demand for instruments and industrial machinery, important exports from New York State. Demand for health-related instruments and equipment has also fallen sharply in the absence of details on the national health policy as institutional buyers adopt a "wait and see attitude."

At the same time, manufacturers in New York and New Jersey, including some of the nation's largest companies, are reducing their work force as part of a larger restructuring effort to meet the demands of the 1990 marketplace. Some of these manufacturers have suffered poor earnings or major losses and are reorganizing their corporate structures to handle saturated markets, markets that have shifted from original product lines (such as the market for computers, which has evolved from mainframes to mini and personal computers), or markets that are perceived to be threatened with price regulation. These reorganizations, which could be substantial over the next few years, feed the continuing loss of manufacturing jobs.

*Stability in the nonmanufacturing sector.* Overall, the District's nonmanufacturing employment in the first three quarters of this year showed a slight improvement that reflected growth in nonfinancial services and construction employment. All other nonmanufacturing sectors—transportation and public utilities, retail and wholesale trade, financial services and public employment—declined. Within the District, New Jersey had a disproportionate share of the regional weakness. Virtually all nonmanufacturing sectors declined in that





state, with the exception of transportation and utilities employment, which was unchanged.

In New York, ongoing mergers and acquisitions continued to reduce banking employment, and budget constraints held down state and local government employment (although government payrolls increased temporarily in the third quarter of 1993 because of summer job programs). From December 1992 to August 1993, New York's service sector actually expanded by 29,200 jobs, an annual rate of increase of 1.9 percent, but this growth rate was considerably slower than the 5.6 percent pace of the nation's service sector. If the service sector in New York had grown at the same pace as the nation's, the state's economy would have gained 87,000 service jobs instead of just 29,200.

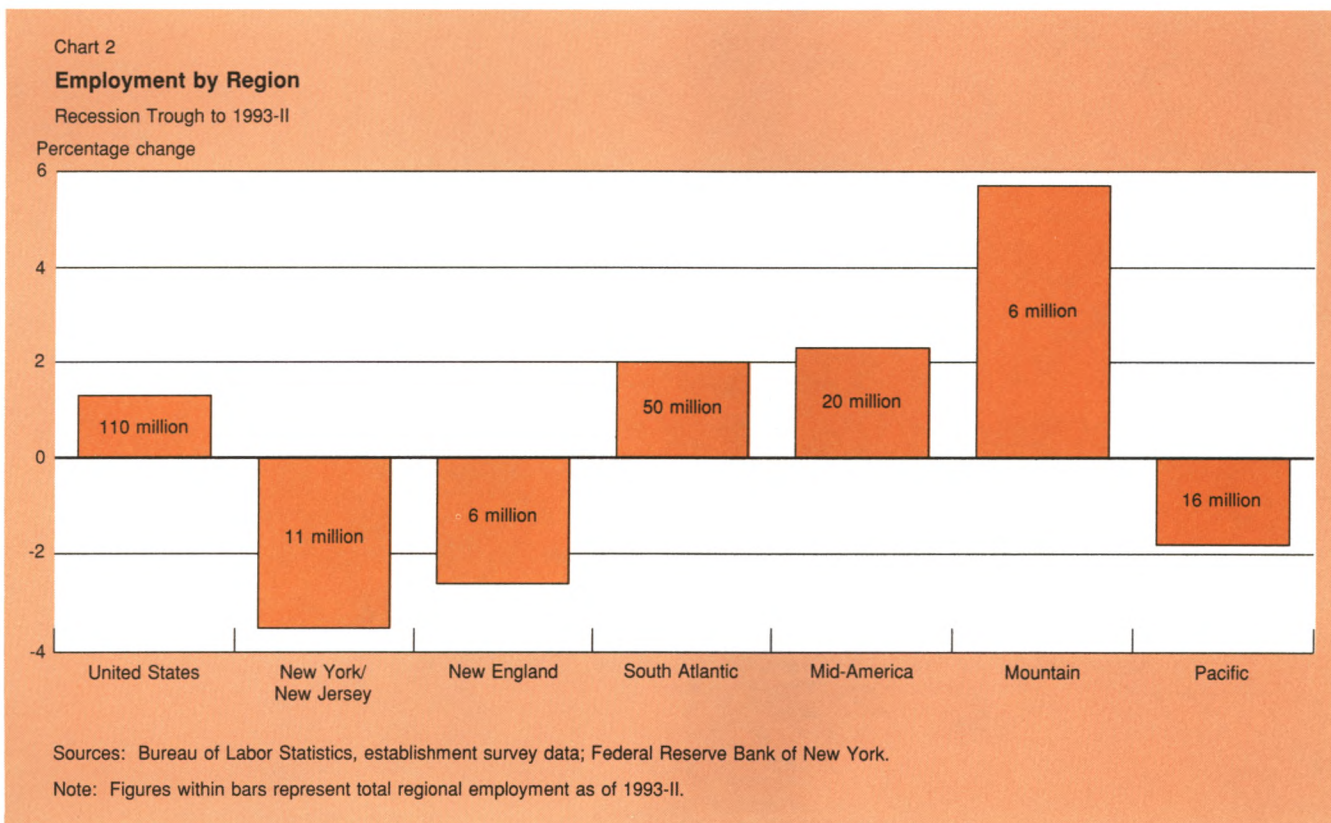
*Employment effects of defense spending reductions.* The ongoing contraction in military spending has also trimmed employment in both New York and New Jersey through the reduction of prime contract awards<sup>4</sup> and the prospective realignment of several military bases.

<sup>4</sup>Prime contract awards are all contracts of \$25,000 or more made by the Department of Defense to nonmilitary suppliers.

Although neither New York nor New Jersey receives above-average awards of prime contracts on a per capita basis, some local areas *within* each state do receive concentrated levels of defense contracts and spending. Several of these local economies are vulnerable to the deep cutbacks that have been proposed by the Administration (see box). In addition, the military base realignments that are scheduled to occur over the next four years will produce a net loss of 7,400 jobs in this region.

The employment losses due to base realignments in the Second District are almost wholly confined to New York State. The Plattsburgh Air Force Base and the Staten Island Naval Station are scheduled to close, and Griffiss Air Force Base and Fort Monmouth are to be scaled back, creating a net reduction of 9,300 jobs in New York. In New Jersey, the Ewing Naval Test Center will be closed, but McGuire Air Force Base (outside the Second District) will be expanded, bringing a net *addition* of 1,900 jobs to New Jersey. That the realignments are stretched out over a four-year period should help to ease the loss of jobs, but the effects of the change will still be pronounced at the local level.

*The unemployment rate.* The rate of job loss in the



## Box: Focus on Cuts in Prime Defense Contracts at the Local Level

New York and New Jersey are affected not only by base closings and expansions but also by ongoing and extensive nationwide reductions in defense expenditures for procurement of military hardware and by lesser reductions in research and development. On a statewide

basis, military spending is not a major contributor to employment or income in New York and New Jersey, although in absolute dollar volume, such spending is quite substantial. On a per capita basis, however, neither New York nor New Jersey ranks high on the list of

### Prime Contract Awards to Metropolitan Statistical Areas in New York and New Jersey

	Prime Contracts Fiscal Year 1992 (Thousands Of Dollars)	Personal Income 1991 (Thousands Of Dollars)	Contracts as a Percentage of Personal Income (Percent)	Estimated Defense Industry Employment†	"Deep Cut" Defense Industry Job Losses‡	"Deep Cut" Job Losses as a Per- centage of 1992 Nonagricultural Employment (Percent)
<b>New York MSAs</b>						
Albany-Schenectady- Troy MSA	297,664	17,195,830	1.7	8,993	(3,669)	-0.9
Binghamton MSA	513,936	4,783,196	10.7	15,527	(6,335)	-5.6
Buffalo PMSA	118,806	22,037,690	0.5	3,589	(1,464)	-0.3
Nassau-Suffolk PMSA	2,860,779	72,912,550	3.9	86,428	(35,263)	-3.4
New York PMSA	755,924	208,543,923	0.4	22,838	(9,318)	-0.2
Rochester MSA	99,045	22,293,290	0.4	2,992	(1,221)	-0.3
Syracuse MSA	350,002	13,531,500	2.6	10,574	(4,314)	-1.4
Utica-Rome MSA	118,266	5,197,213	2.3	3,573	(1,458)	-1.2
All other MSAs	118,731	19,230,729	0.6	3,588	(1,464)	-0.4
<b>Total New York MSA</b>	<b>5,233,153</b>	<b>385,725,921</b>	<b>1.4</b>	<b>158,102</b>	<b>(64,506)</b>	<b>-0.9</b>
<b>Total New York</b>	<b>5,429,802</b>	<b>407,522,000</b>	<b>1.3</b>	<b>164,042</b>	<b>(66,929)</b>	<b>-0.9</b>
<b>New Jersey MSAs§</b>						
Bergen-Passaic PMSA	565,112	37,002,490	1.5	14,199	(5,495)	-0.9
Jersey City PMSA	147,567	10,616,110	1.4	3,708	(1,435)	-0.6
Middlesex-Somerset- Hunterdon PMSA	130,451	28,559,722	0.5	3,278	(1,269)	-0.2
Monmouth-Ocean PMSA¶	450,536	24,410,799	1.8	11,320	(4,381)	-1.4
Newark PMSA	642,974	49,249,150	1.3	16,155	(6,252)	-0.7
Trenton PMSA††	315,380	8,902,203	3.5	7,924	(3,067)	-1.6
All other MSAs	45,785	10,468,243	0.4	1,151	(445)	-0.2
<b>Total New Jersey MSA§</b>	<b>2,297,805</b>	<b>169,208,717</b>	<b>1.4</b>	<b>57,735</b>	<b>(22,344)</b>	<b>-0.8</b>
<b>Total New Jersey</b>	<b>3,318,777</b>	<b>196,691,568</b>	<b>1.7</b>	<b>83,386</b>	<b>(32,270)</b>	<b>-0.9</b>

Sources: U.S. Department of Defense; Bureau of Economic Analysis; Defense Budget Project; Bureau of Labor Statistics.

Notes: MSAs (metropolitan statistical areas) and PMSAs (primary metropolitan statistical areas) are economic communities defined by the Office of Management and Budget. MSAs are areas with a population nucleus of at least 50,000. An area qualifies as an MSA if it contains: (1) a city of at least 50,000 population or (2) a Census-defined urbanized area of at least 50,000 with a total metropolitan population of 100,000. PMSAs are cities and/or counties that define a cohesive economic unit or a multicounty intrastate portion of an interstate MSA.

†Estimates are based on Department of Defense Prime Contract Awards to the state in fiscal year 1992, indexed to total state defense industry employment for fiscal year 1992.

‡Job losses for fiscal years 1992-98 stemming from military cutbacks under the Defense Budget Project's "deep cut" scenario. The Defense Budget Project estimates that New York State would lose 40.8 percent of its military-related employment and New Jersey, 38.7 percent.

§Includes MSAs entirely contained within the State of New Jersey. Does not include New Jersey areas that are part of the Philadelphia PMSA, the Allentown-Bethlehem MSA, or the Wilmington PMSA.

¶Located partially in the Second, and partially in the Third, Federal Reserve District.

††Located in the Third Federal Reserve District.



### Box: Focus on Cuts in Prime Defense Contracts at the Local Level (Continued)

recipients. According to the prime contract awards data from the Department of Defense,<sup>†</sup> the average per capita award to a state was about \$450 in fiscal 1992. New York received \$300 on a per capita basis; New Jersey received \$430. Spending on a per capita basis was two to three times higher in states such as Virginia, Massachusetts, Maryland, Mississippi, and Connecticut.<sup>‡</sup> Indeed, an earlier *Quarterly Review* article analyzing the effects of defense reductions found that neither New York nor New Jersey would be severely harmed by the ongoing and proposed reductions in defense spending.<sup>§</sup>

Although neither state is the recipient of proportionately large military expenditures, defense spending is not disbursed evenly throughout New York and New Jersey. Some local areas within the states are heavily concentrated points of military expenditure. For example, Long Island, with just 14 percent of New York's population, typically receives over 50 percent of the state's prime contract awards. The accompanying table examines the importance of the prime contract awards to the large metropolitan areas in New York and New Jersey by looking at the ratio of the value of prime contracts to local personal income.<sup>||</sup> The numbers reported in the table

confirm the significance of the awards in Long Island and indicate that military contracts are also important in the New York cities of Binghamton, Syracuse, and Utica-Rome, and in the New Jersey communities of Monmouth-Ocean and Trenton (Trenton is in the Third Federal Reserve District).

The potential job loss for each community is calculated by distributing statewide defense-related employment losses, as estimated by the Defense Budget Project under the option of "deep budget cuts" of approximately 40 percent over the 1992-98 period, across localities by their share of state prime contracts.<sup>††</sup> The results suggest that the potential job losses range from negligible (1.2 percent) to significant (as much as 5.5 percent of local employment) under the "deep budget cuts" assumption.<sup>‡‡</sup> Clearly, in addition to Long Island, several other communities in New York and New Jersey are sensitive to the defense build-down. The estimated reductions should not, of course, be viewed as precise forecasts, but as signals that highlight the local areas within, or bordering, the Second District that may be particularly vulnerable to future defense budget cuts.

<sup>†</sup>Department of Defense, Atlas/Data Abstract for the United States and Selected Areas, Fiscal 1992.

<sup>‡</sup>Note, however, that proportionately little military spending occurs in Fairfield County, the sole Connecticut county included in the Second District.

<sup>§</sup>Ronnie Lowenstein and Richard Peach, "The Impact of the Current Defense Build-down," Federal Reserve Bank of New York *Quarterly Review*, Autumn 1992.

<sup>||</sup>The ratio of prime contracts to personal income is used as a measure of the relative importance of the military contracts to the local community. Because estimates of gross

*Footnote § continued*

production are not typically made at the substate level, personal income is a reasonable indicator of the size of a local economy.

<sup>††</sup>The index is computed by dividing the prime contracts awards for each state by total civilian defense-related employment. The defense-related state employment numbers are drawn from the Defense Budget Project, Bureau of Economic Analysis, Washington Headquarters Services Directorate for Information Operations and Reports, U.S. Department of Defense.

<sup>‡‡</sup>These estimates represent the extreme losses that might occur if the most severe of the defense budget proposals were enacted.

District has slowed from a pace of 3.2 percent in 1992 to an annualized rate of 0.6 percent in the first eight months of 1993 (December 1992 to August 1993, the latest data). At the same time, the unemployment rate has shown a noticeable decline, dropping to around 7.1 percent in New York and 7.7 percent in New Jersey in September 1993—well below the respective rates of 8.8 and 9.0 percent in September 1992 (Chart 3).

Although a falling unemployment rate is usually associated with an improving economy, this is not always the case, especially at the regional level, if unemployed people are dropping out of the labor force or migrating

to other regions in search of jobs. Such a situation appears to have developed recently in New York and New Jersey. As Chart 4 indicates, the outright decline in the regional labor force since 1990 is in sharp contrast to the recent national trend and to the national and regional trends before 1990. This sharp break in the regional labor force pattern suggests not only substantial discouragement and withdrawal from the work force but also *outmigration* from the region. Indeed, the U.S. Census Bureau estimates that New York and New Jersey had a net outmigration averaging about 40,000 persons per year over the five-year period from 1985 to

1990. Since then, deteriorating economic conditions appear to have accelerated the rate of outmigration to an estimated 74,000 people in 1992, with New York accounting for over 80 percent of the outflow.<sup>5</sup> Hence, the improvement in the unemployment rate in New York and New Jersey is not an unambiguous sign of economic health, but rather, at least in part, a sign of distress and adjustment.

Overall, the current employment situation remains weak, exacerbated by the realignment of military bases, restructuring in the manufacturing sector, and the outmigration of households seeking more attractive conditions elsewhere. The decline in the unemployment rate appears to be primarily due to outmigration and the withdrawal of discouraged workers. The underlying data are consistent with a contracting labor market.

### Personal income

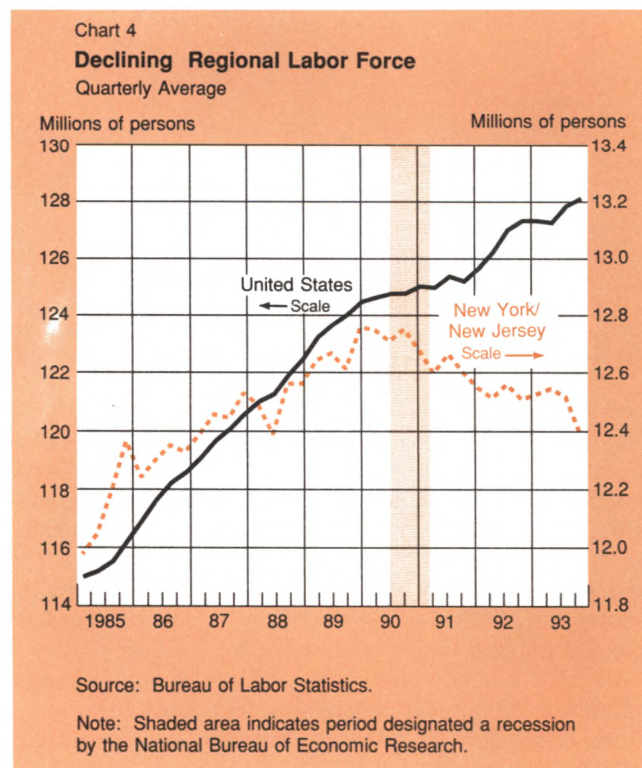
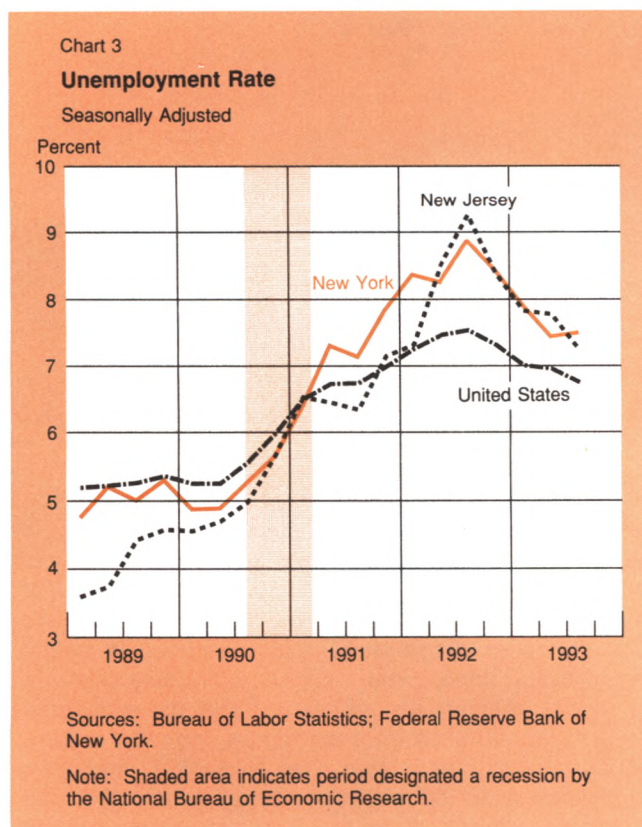
In nominal terms, personal income in New York and New Jersey appears to have been increasing (Chart 5), although it is difficult to know how much personal income has risen in 1993 because of the early payment

of bonuses in 1992. In the chart, we have attempted to remove this distortion by averaging fourth-quarter 1992 and first-quarter 1993 income and calculating the average year-over-year percentage change for the combined quarters. It appears that personal income has grown in the two most recent quarters relative to the preceding two quarters in New York and New Jersey as well as the nation. Nevertheless, this region's rate of growth remains below the national rate of growth. The recent gains in nominal regional income, combined with slower inflation (discussed below), suggest that the region continues to experience some increase in real personal income (perhaps 1 to 2 percent over the past year).

### Retail sales

Total retail sales for the first six months of the year advanced just 1 percent over the past year (year over year), an increase well below the 4.5 percent rise in the nation's retail sales. The quarterly regional pattern in the first half of 1993 reflected the effects of severe winter weather and a subsequent snapback (Chart 6). The District's sales in recent months appear to have been more volatile than national sales as well as some-

<sup>5</sup>U.S. Bureau of the Census, Population Estimates Branch.





what weaker. Overall, the rate of increase in the District's retail sales has roughly matched that for the goods component of the regional consumer price index, suggesting relatively flat real sales over the past year. For the second half of 1993, only July data for New York are available and the preliminary nominal estimate of sales growth is rather strong (about 16 percent at an annual rate), with the gains spread across most categories. Although the strong gains in the second quarter of 1993 probably reflected a weather-related reversal, the gain in July sales is promising because it extends that trend for a fourth consecutive month.

## Inflation

**The regional CPI.** Rates of inflation have fallen sharply in the District. Measured by the consumer price index for the New York–northeastern New Jersey region, price inflation averaged 3.3 percent during the first nine months of 1993 and slowed to around 2.6 percent as of September (year over year). The quarterly data in Chart 7 indicate that this decrease is an extension of the

cyclical decline in regional inflation, which had peaked above 6.0 percent in 1990.

In a welcome change from the situation that prevailed in the 1980s and early 1990s, the data also suggest that the difference in the inflation rates of the greater New York City metropolitan area and the rest of the nation has narrowed. Although the Second District, particularly the greater New York metropolitan area, remains one of the most expensive regions in the country, local price increases are moving closer to the national rates of inflation, a development that could help to improve the region's competitiveness over the longer term. The narrowing spreads may also reflect relatively weaker demand locally than at the national level.

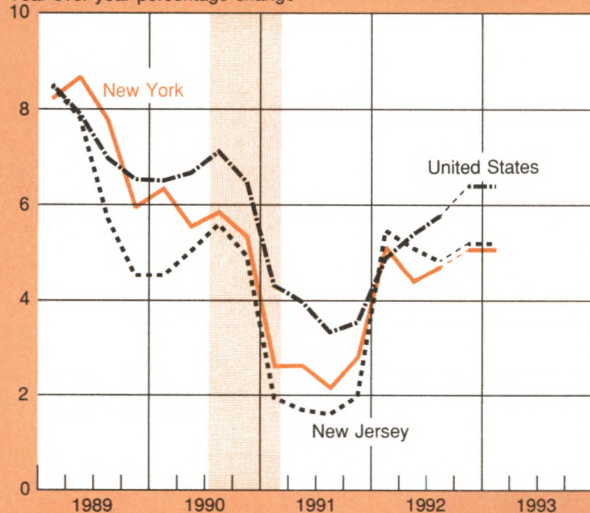
**Housing costs.** Home prices throughout the downstate New York metropolitan area rose just 0.7 percent over the last four quarters (through June 1993) and remained well below 1989 peak levels. Many owners of cooperatives, condominiums, and single-family homes chose to rent out their properties over the past two to three years in lieu of sale at distressed prices. As a result, a surplus of rental housing drove the cost of renting down in many parts of the greater metropolitan area. The cost of shelter, a major component of the regional consumer price index and an important source of inflation in recent periods, declined. Elsewhere in the District (and outside of the area surveyed for the consumer price index), home prices advanced moderately, on the order of 0.5 to 6 percent (Chart 8).

**Labor costs.** Despite the weak demand for labor, most evidence points to regional salary gains in excess

Chart 5

### Personal Income

Year-over-year percentage change



Source: Bureau of the Census.

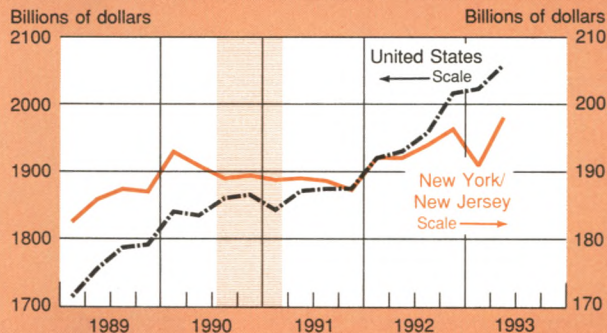
Notes: Levels of personal income for the fourth and first quarters of 1991-92 and 1992-93 were averaged before calculating the year-over-year percentage change for the fourth and first quarters of 1992-93. This adjustment minimizes the distortion in the quarterly pattern produced by the early payment of bonuses in fourth-quarter 1992.

Shaded area indicates period designated a recession by the National Bureau of Economic Research.

Chart 6

### Retail Sales

Quarterly Total, Seasonally Adjusted Annual Rate



Source: Bureau of the Census.

Note: Scales increase at comparable rates of growth. Shaded area indicates period designated a recession by the National Bureau of Economic Research.



of the local rate of inflation. In 1992, aggregate wages and salaries paid in New York rose 5.9 percent even as employment fell 3 percent.<sup>6</sup> In addition to the large salary gains in the finance, insurance, and real estate sector (boosted by the accelerated bonuses), moderate gains were reported in many service categories as well. Although similar data are not available for 1993, recent surveys suggest that the trend continues in 1993, with salaries rising on average 4 to 5 percent. Indeed, the employment cost index for all workers in the Northeast rose at a 4.1 percent annual rate from December 1992 through September 1993, compared with a national gain of 3.6 percent. The relatively stronger performance in the Northeast was probably in large part fueled by a 4.1 percent rate of growth in the finance, insurance, and real estate sector. These gains in the employment cost index also suggest that wages in the Second District have continued to rise at a moderate pace through the third quarter of 1993. Such an outcome could reflect an increase in demand for highly skilled, highly paid workers even while the overall demand for labor is declining.

<sup>6</sup>Wages and salaries rose 40 percent in 1992 in New York's finance, insurance, and real estate sector. This striking increase was primarily due to the payment of 1992 year-end bonuses in December 1992 instead of January 1993, the more typical payment date. The bonuses were accelerated in anticipation of higher marginal tax rates in 1993. See the discussion of personal income.

## Real estate

**Residential real estate.** In the aggregate, existing home sales in New York and New Jersey maintained a steady pace of about 260,000 units (annual rate) for the five quarters ending in March 1993. However, sales fell 3 percent in the second quarter of 1993, the most recent quarter for which data are available. A large rise in New York was more than offset by an even larger slide in sales in New Jersey. Poor regional consumer confidence, documented by various surveys, and the weakness in the regional job market appeared to be discouraging some home buyers despite the availability of attractively low mortgage rates.

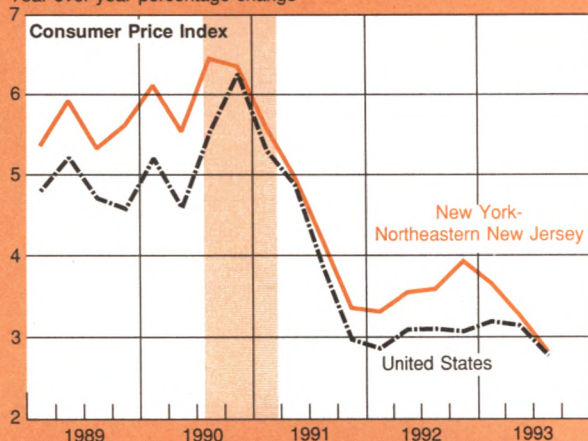
The market for new one-to-four-family homes performed in a similarly weak and irregular manner. Permits for construction of one-to-four-family homes, which closely track new home sales, were unchanged in New Jersey during the first eight months of the year and declined 6.1 percent in New York relative to their level during the same period one year earlier (Chart 9). The cumulative volume of permits followed the same weather-driven pattern as retail sales, falling sharply in the first quarter because of severe winter weather and then rebounding in the spring and summer months.

**Commercial real estate.** In the past, commercial real estate has tended to be a lagging indicator of the District's economy, so it is significant that much of the

Chart 7

### Declining Inflation Rates

Year-over-year percentage change



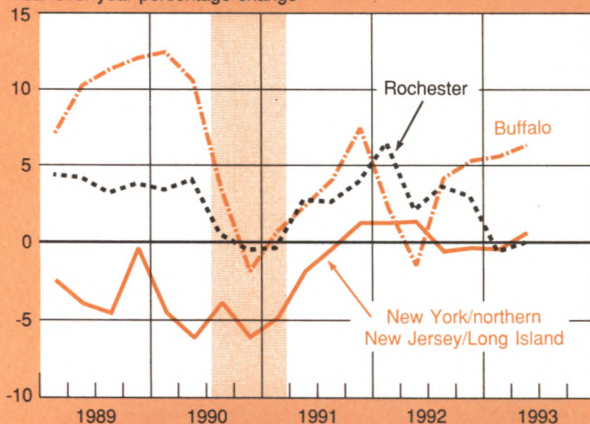
Source: Bureau of the Census.

Note: Shaded area indicates period designated a recession by the National Bureau of Economic Research.

Chart 8

### Median Sales Price of Existing Single-Family Homes

Year-over-year percentage change



Source: National Association of Realtors.

Note: Shaded area indicates period designated a recession by the National Bureau of Economic Research.



market in the major urban areas throughout the District appears to have reached a trough. The markets for prime space in Manhattan,<sup>7</sup> the Westchester/Mid-Hudson area, and central New Jersey all appear to have bottomed out. In the second quarter of 1993, vacancy rates for prime commercial space in midtown Manhattan receded to 13.4 from 13.8 percent in the previous quarter (and fell nearly 2 percentage points from one year earlier). Prime space vacancies in downtown Manhattan declined slightly from 22 percent to 21.6 percent in the second quarter. In the Westchester/Mid-Hudson market, the vacancy rate fell from 23.3 to 22.5 percent. In the suburban markets in central New Jersey, the vacancy rate in the second quarter was unchanged at 19.8 percent, but that rate was a full percentage point below the rate a year earlier. These prime vacancy rates, however, are somewhat misleading as a reflection of the market as a whole since the improvement in part represents a significant amount of tenant upgrading from secondary to primary space. Indeed, vacancy rates for secondary space are rising sharply. Less expensive prime leasing rates may also be encouraging some lessees to increase their square footage and create more generous office space for each employee.

Even with the recent improvements in the absorption rate for prime space, the contract data for new office construction suggest that office construction continues

to decline throughout most of the District. Other forms of nonresidential building, however, have made some gains in New York and New Jersey. Year-to-date through August, contract awards for total nonresidential buildings have risen 9 percent in New York and 8 percent in New Jersey.<sup>8</sup> The mixed performance of the nonresidential market also seems consistent with the overall assessment of a basically flat District economy with emerging pockets of growth.

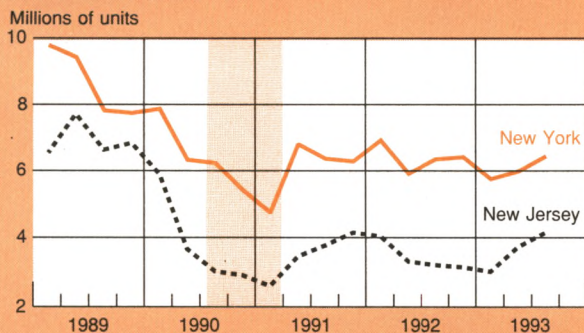
### Business starts and failures

The number of business failures, generally conceded to be a lagging indicator, appears to have peaked in both New York and New Jersey. In 1990, the failure rates in New Jersey and New York were, respectively, 54 and 59 per 10,000 business firms, compared with a national rate of 74. By 1992, the failure rate per 10,000 firms, had doubled to 103 in New Jersey and 117 in New York (while the national rate rose to 110). Reflecting the losses in regional employment, regional business failures were heavily concentrated in wholesale and retail trade: these sectors claimed roughly one-third of the failures in 1992.

<sup>8</sup>Dodge Construction Potentials Bulletin.

<sup>7</sup>The central business district in Manhattan alone has more office space than all the District's other central cities combined.

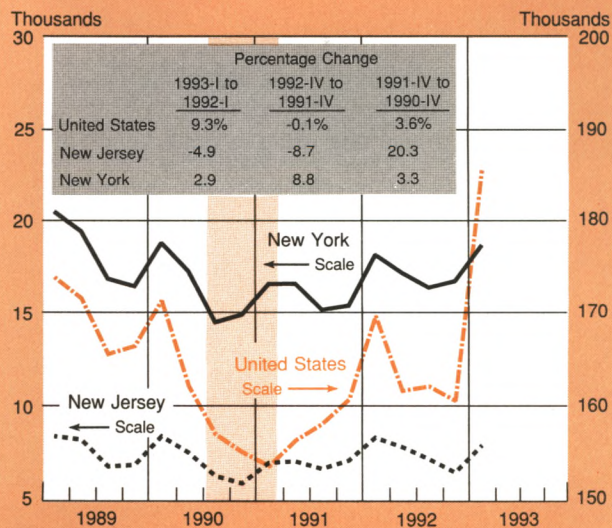
Chart 9  
**Permits for One-to-Four-Family Homes**  
Seasonally Adjusted Data



Source: Bureau of the Census.

Notes: Values for 1993-III are estimates based on average growth rates during July and August. Shaded area indicates period designated a recession by the National Bureau of Economic Research.

Chart 10  
**New Business Incorporations**  
Not Seasonally Adjusted



Source: Dun and Bradstreet.

Note: Shaded area indicates period designated a recession by the National Bureau of Economic Research.

More encouraging news is that in the first half of 1993, the number of business failures began to subside, falling about 10 percent in New York and about 6 percent in New Jersey. Equally important, businessmen's expectations have evidently been improving. New business formations continued to rise at a moderate pace in the first three months of the year in New York and New Jersey (Chart 10).

### **Conclusion**

In general, it appears that the District's economy has not yet begun to expand. The labor market is performing poorly, with continuing job losses concentrated in the manufacturing sector. Several major employers

headquartered in New York and New Jersey have recently announced restructuring plans that are likely to result in significant job losses over the next few years. Unemployment rates remain quite high despite declines in recent months; these declines are due largely to a contraction in the labor force resulting from outmigration and the dropout of discouraged workers. There have also been some positive developments. Thus, the continuing rise in real income as well as the bottoming out of the market for prime commercial real estate are encouraging signs. Overall, however, the recovery in the Second District may continue to be slower than in the United States as a whole.

# U.S.-Japan Relations

It is a great pleasure to be here today with so many old friends in such handsome surroundings. In meetings over the past two days, this conference has covered in some depth a great many of the most critical issues facing the U.S. and the Japanese economies. It has explored the nature of our countries' mutual interests in banking, securities, and related financial markets. It has had a look at issues raised by the ways in which both our economies function in a global and regional context. And it has not lost sight of the macroeconomic and regulatory environment in which our two economies play major roles.

What I would like to do, therefore, is to stand back and examine with you some of the reasons why I believe the U.S.-Japan economic and financial nexus is so critical and why I attach so much importance to continuing the superb relationship we at the Federal Reserve Bank of New York have enjoyed over the years with our counterparts in the Bank of Japan.

I go back a long way in my interest in Japan—to my days in the Navy in 1959 when I first visited the country. I have, in fact, spent much of my professional life working in one way or another with Japanese financial institutions. In the late 1970s, I had the good fortune to serve as chairman of the University of Chicago's Center for Far Eastern Studies.

As President of the Federal Reserve Bank of New York, I again have an opportunity to contribute actively to deepening U.S.-Japan relations, this time in an official capacity. My involvement focuses on the cooper-

ative efforts that characterize relations among central banks. While these cooperative efforts have many dimensions, they take their most tangible form in the coordinated operations undertaken in the foreign exchange markets.

As you know, the Federal Reserve Bank of New York operates in the foreign exchange markets on behalf of both the Federal Reserve System and the United States Treasury Department. At the same time, we act as agents for foreign central banks in these markets. In the course of our daily work, we routinely confer with our colleagues around the world. Our ties with our counterparts in the Bank of Japan are among our closest. I certainly don't have to underscore to this group the nature or importance of the dollar/yen relationship.

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**But much more than the foreign exchange markets binds the Japanese and U.S. economies together. We are all well aware of the trade linkages that have engaged our two economies for decades.**

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But much more than the foreign exchange markets binds the Japanese and U.S. economies together. We are all well aware of the trade linkages that have engaged our two economies for decades. Japan currently accounts for almost 18 percent of U.S. merchandise imports, while the United States accounts for about 20 percent of Japan's merchandise imports.

These market shares, however, although roughly equivalent, apply to markets of rather different size, resulting in the chronic imbalance that has charac-

Remarks by William J. McDonough, President of the Federal Reserve Bank of New York, before the Japan Society, New York, New York, October 22, 1993.



terized our two countries' bilateral trade position over the past decade. The fact is that for some time now—the past ten years to be exact—the United States has run, on average, a \$45 billion annual merchandise trade deficit with Japan. Last year the deficit reached \$50 billion.

Why have these imbalances been so persistent, and are they sustainable? The answers to these questions are not simple. Even very large swings in exchange rates have not qualitatively altered the problem. Such persistence suggests that fundamentally the trade imbalance is rooted in the different structures of our two economies and the different traditions of our people. In particular, I cannot help but cite the high savings rate in Japan compared with that in the United States.

While our two countries have had their share of differences over the years when it comes to trading issues, there is no denying the importance each of us attaches to access to the other's markets. Our two economies are simply too large and too important for each of us to strive for anything less than full and free access, over time, and sooner rather than later.

I would be remiss in failing to cite the considerable efforts our countries have undertaken—and continue to undertake—to seek mutually acceptable solutions to overcoming obstacles we face in achieving that goal.

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For example, the Clinton administration places a very high priority on the successful outcome of the Framework agreements announced in July by our two countries.

Under these agreements, our two countries have pledged to undertake bilateral talks on market liberalization in five principal areas over the next six to twelve months. The areas covered include: 1) increasing Japanese government purchases of foreign computers, supercomputers, satellites, medical technology, and telecommunications; 2) expanding trade in such sectors as autos and auto parts; 3) seeking reform of Japan's regulated industries, including insurance and other financial services; 4) harmonizing foreign direct investment and access to technology in both countries; and 5) implementing and monitoring existing U.S.-Japan trade

agreements.

In terms of market access, the Framework agreements contain no specific numerical goals for increasing Japanese imports. Under discussion, however, are various ways for the two countries to evaluate progress in measuring market access and encouraging Japan to reduce its overall trade surplus.

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**The linkages between our two economies in trade, of course, have their financial counterparts, and each country has, particularly over the past decade, significantly increased its presence in the other's financial markets. Today, both our countries hold substantial stakes in each other's economies and financial well-being.**

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The linkages between our two economies in trade, of course, have their financial counterparts, and each country has, particularly over the past decade, significantly increased its presence in the other's financial markets. Today, both our countries hold substantial stakes in each other's economies and financial well-being.

Japanese official institutions and private creditors, for example, hold roughly 25 percent of all foreign-held U.S. government debt and about 3.5 percent of total U.S. government debt. These figures, I should note, take account only of direct sales to Japan. They do not account for sales of U.S. government debt through third countries, such as might take place in London and the Euromarkets.

Both countries actively participate in each other's equity markets. Moreover, U.S. and Japanese securities firms seem to have roughly equal representation in each other's markets, although this assessment may not take full account of some of Japan's acquisitions of and minority investments in U.S. securities firms in the late 1980s. In terms of foreign direct investment, however, Japan, which had holdings of some \$100 billion in the

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**As to our banking relationships, it is clear that the presence of Japanese banks in the U.S. markets is far more dominant than the presence of U.S. banks in Japan's markets.**

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United States at the end of 1992, has invested far more in the United States than the roughly \$26 billion the United States has invested in Japan.

As to our banking relationships, it is clear that the presence of Japanese banks in the U.S. markets is far

more dominant than the presence of U.S. banks in Japan's markets. By the end of 1992, for example, Japanese bank branches, agencies, and subsidiaries in the United States accounted for about \$100 billion in commercial and industrial loans, equivalent to roughly 17 percent of all such loans and a dramatic increase from the 5.5 percent share these institutions held in 1985. In aggregate, Japanese banks in the United States held some \$400 billion in assets by the end of 1992 at the same time as U.S. banks in Japan held only about \$70 billion in assets, not a very large market share by any measure.

The dramatic increase in the presence of Japanese banks in the U.S. markets over the past decade has taken place in a broader context of an overall explosive growth of Japanese banks in the international markets. This growth has been driven by such macroeconomic considerations as Japan's expanding role as an international trading and investing country and net changes in dollar exchange rates.

At the same time, however, changes are taking place in the nature of our financial relationships. Some of these changes can be traced to the falloff in Japan's equity markets beginning in the spring of 1990 and the piercing of the Japanese real estate bubble at about the same time.

The loss of wealth stemming from these developments has obliged Japanese banks, which have held significant equity stakes in industrial companies for some time, to slow the growth of their balance sheets, in some cases rather dramatically. (Today, limitations on Japanese banks' equity investments in industrial com-

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**The dramatic increase in the presence of Japanese banks in the U.S. markets over the past decade has taken place in a broader context of an overall explosive growth of Japanese banks in the international markets.**

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panies are very similar to those prevailing in the United States.) The shrinkage in their balance sheets has inevitably begun to alter the dominant role these banks have played over the past decade in intermediating credit worldwide.

U.S. banks, by contrast, have begun to see their profit margins grow over the past two years as they reap the benefits of a low-interest-rate environment and measures taken to control expenses in the wake of the LDC debt crisis and the falloff in real estate values. U.S. banks today have improved their capital ratios and diversified their earnings, and are working off their problem loans. Overall, they are looking better than they

have in many years.

Finally, the financial linkages between our two economies embrace our macroeconomic relationships as well. In these relationships, both our countries have much work ahead of us.

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**U.S. banks today have improved their capital ratios and diversified their earnings, and are working off their problem loans. Overall, they are looking better than they have in many years.**

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The Japanese economy currently is in recession, largely reflecting declines in private investment and net exports, despite growth in the first quarter. With domestic demand weak, import growth has slowed, and the current account surplus has widened, inviting pressures for protection and acting as a drag on world growth.

The Japanese government's announcement on September 16 of a new expenditure package of some 6 trillion yen, coupled with the fiscal stimulus measures put in place earlier in the year and the cut in the official discount rate on September 21, can be expected to support the resumption of modest growth next year. Inflation continues to be subdued.

In the United States, I am pleased to say, we have finally begun to address our fiscal imbalance. There will, however, be a health plan for next year that will have to be financed in a credible way so as to avoid hemorrhaging on the fiscal front.

Our efforts to reduce our fiscal deficit have been aided by low inflation, the outlook for which remains reasonably good. Long-term interest rates have finally come down and are now at their lowest levels in nominal terms in roughly two decades. While growth has been more sluggish than we might have hoped for, the bene-

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**Like a number of other industrial countries, but excluding Japan, the United States has reached the point at which the level of its public sector debt and its persistently large budget deficit are such that fiscal policy is no longer available as a tool of macroeconomic policy.... Therefore, in the current environment, price stability is critical not only for the classic reasons but also because it takes on a social importance as well.**

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fits provided by the declines in long-term interest rates have made possible record refinancings in our bond and mortgage markets, lowering costs for a wide spectrum of borrowers, including state and local governments as

well as households, and leading to a recent pickup in housing.

Like a number of other industrial countries, but excluding Japan, the United States has reached the point at which the level of its public sector debt and its persistently large budget deficit are such that fiscal policy is no longer available as a tool of macroeconomic policy. If fiscal policy is unavailable to address some of the social needs that now confront so many of our economies, inflation must remain under control, largely because of its regressive tax aspects. Therefore, in the current environment, price stability is critical not only for the classic reasons but also because it takes on a social importance as well.

This brings me to my last point and that has to do with the structural problems the U.S. and the Japanese economies face. As mature industrial societies, our countries share a number of problems in common having to do with such issues as care for the elderly, health benefits for all our citizens, investment in education, and attention to the environment. The success we have

in addressing these problems will affect our ability to compete and prosper in the next century. In the United States we are just beginning to deal with these issues. In Japan, there are signs of change beginning to take hold, including the possibility of more flexibility in labor practices.

As both our countries begin to improve the efficiency of our economies and the welfare of our citizens, I believe it is absolutely critical that we, as the two wealthiest economies in the world today, work together in making choices that may—more often than we might like—be politically difficult. In my view, our common goals are so obvious we simply cannot afford to allow our cooperation to lapse or to permit ourselves the luxury of tending single-mindedly to our own gardens. We each share major responsibility for the future of the global economy in which we live, and I, for one, welcome the opportunity to work together with my counterparts in the Bank of Japan and elsewhere in the government to contribute however I can to further the goals of our mutual interests and concerns.

# Treasury and Federal Reserve Foreign Exchange Operations

**May-July 1993**

The dollar appreciated against most major currencies during the May-July period, more than reversing its decline earlier in the year. It rose 9.9 percent against the German mark, for example, and 6.6 percent on a trade-weighted average basis.<sup>1</sup> The one major exception was the dollar's performance relative to the Japanese yen: the dollar extended its earlier decline by dropping 5.8 percent and hitting successive new lows in June and July.

These exchange rate movements occurred in a context of cumulating evidence that several major industrialized countries were experiencing less growth than had been expected at the start of the year. At the same time, central banks in many of these countries, including the Federal Reserve, demonstrated by their actions and policy statements that they remained cautious about the extent to which they would provide more monetary accommodation, and long-term interest rates continued to decline in the United States and in most of the Group of Ten (G-10) countries.

The U.S. authorities intervened on three occasions during the period, purchasing a total of \$1067.5 million against the yen to show that they were willing to cooperate with other monetary authorities as appropriate and were not favoring a weak dollar as a matter of policy.

This report, presented by Margaret L. Greene, Senior Vice President and Deputy Manager for Foreign Operations, describes the foreign exchange operations of the United States Department of Treasury and the Federal Reserve System for the period from May 1993 through July 1993. Frank Keane was primarily responsible for preparation of the report.

<sup>1</sup>The dollar's movements on a trade-weighted basis are measured using an index developed by staff at the Board of Governors of the Federal Reserve System.

## **The dollar's depreciation against the yen resumes**

During the first few weeks of the period, the dollar was relatively stable against the yen, trading cautiously around ¥111 after having declined about 11 percent against the yen earlier in the year. Market participants had taken note of Japan's widening trade surplus and tried to assess the extent to which the exchange rate might be expected to adjust to help redress this growing imbalance. In April, just prior to the period, the U.S. monetary authorities had intervened in the exchange market. They had also issued a public statement that underscored the Administration's belief that exchange rates should reflect economic fundamentals and that attempts to influence artificially or manipulate exchange rates were inappropriate. However, with the passage of time, intense trade negotiations with Japan, and the release of worse than expected U.S. trade data on May 19, many market participants came again to believe that a dollar decline against the yen would be welcomed by the U.S. authorities.

In this context, the yen again began to strengthen against the dollar as well as all other currencies. In the weeks between the beginning of May and June 15, the yen's strength was reflected in a decline of the dollar against the yen of 5.6 percent from ¥111.05 to a low of ¥104.80 and a drop of the mark against the yen of 8.5 percent from ¥70.09 to a low of ¥64.12. For much the same reasons as in April, the U.S. authorities intervened as the dollar moved lower on three days—May 27, May 28, and June 8—buying \$200 million, \$492.5 million, and \$375 million against the yen. These operations were shared equally between the Federal Reserve and the Treasury's Exchange Stabilization Fund (ESF).

Around mid-June the yen's rise temporarily reversed course and the dollar rose to a high of ¥111.80 when



the Miyazawa government lost a confidence vote in the Diet, an event that presaged the end of thirty-eight years of Liberal Democratic Party rule in Japan. For a time, market participants were uncertain whether trade negotiations would continue in the midst of a change in leadership. They were also unsure what changes in economic policy might emerge from this unusual government transition. But then the dollar eased below ¥110 as market participants focused on the upcoming Economic Summit of the Group of Seven (G-7) in Tokyo on July 7-9.

Although the dollar received some lift from the perception that greater than expected progress on trade negotiations was made around the time of the summit, the dollar's gains against the yen proved temporary. During the balance of the period under review, market participants came to believe that achieving near-term progress on trade issues with Japan would be difficult. In addition, anxieties about the effects of the change in leadership on Japan's economic policy began to dissi-

pate. Moreover, with the renewal of exchange rate pressure in Europe, market participants bid up the yen as Japanese and other investors hedged their assets denominated in European currencies. As a result of these factors, the dollar again declined against the yen as the period ended, recording a historic low against the yen of ¥104.23 on July 30.

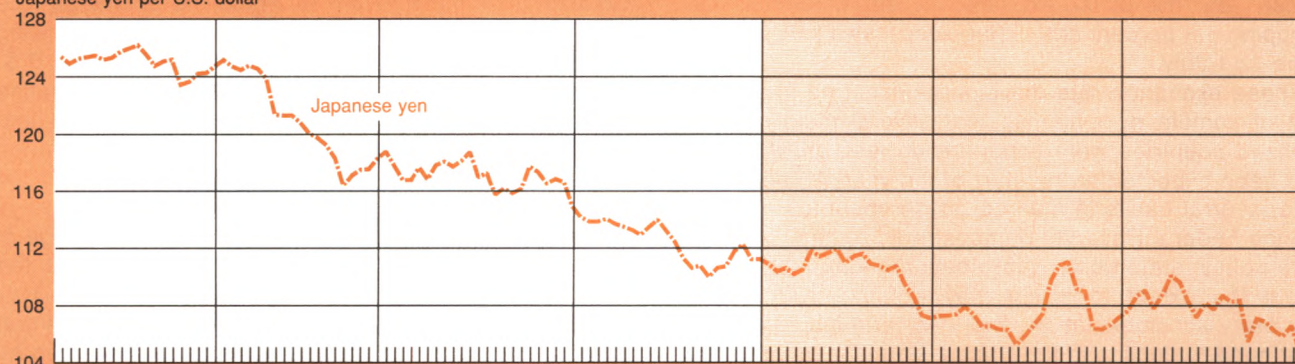
### **Dollar appreciates against the mark and other European currencies on expectation of narrowing interest rate differentials**

The dollar, as well as many other currencies, was firming against the German mark, especially during June when the market focused on growing evidence of recession, a widening fiscal deficit, and high labor costs in Germany. From the beginning of May to the end of June, the dollar rose against the mark by nearly 8 percent. During this period, market participants expected that the German Bundesbank would continue to ease short-term interest rates in response to the

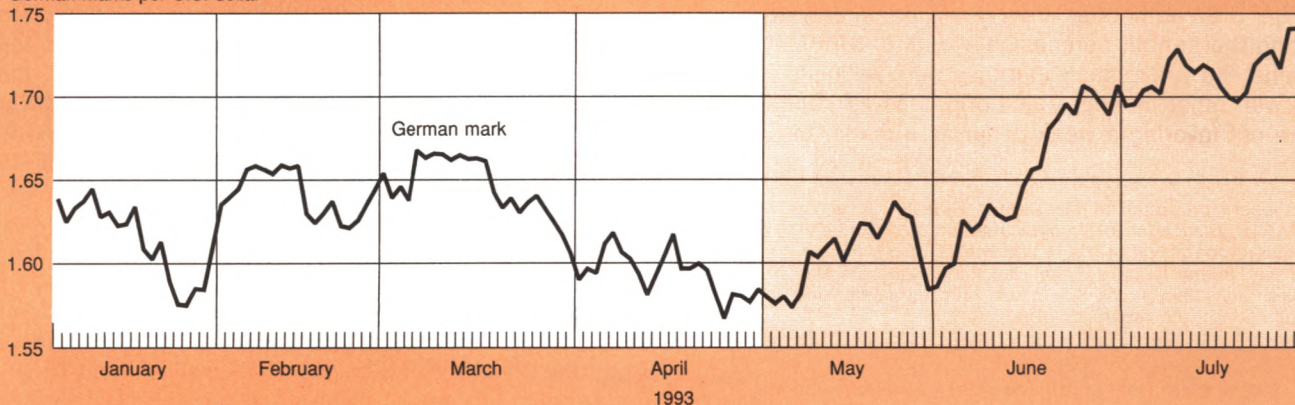
Chart 1

### **The Dollar against the Japanese Yen and the German Mark**

Japanese yen per U.S. dollar



German marks per U.S. dollar





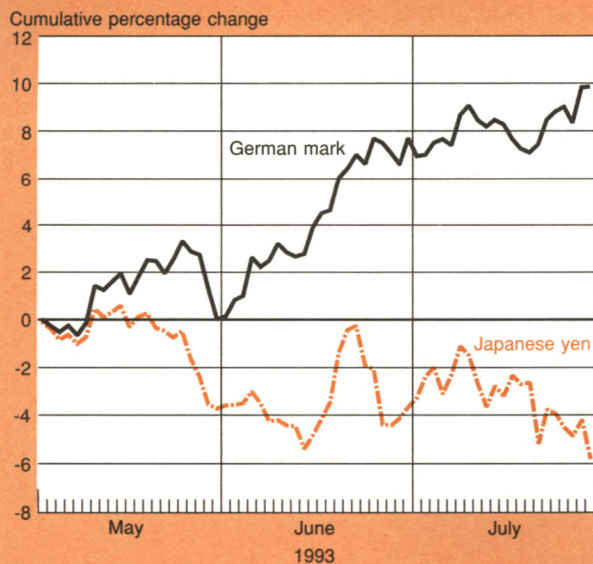
weakening German economy. These expectations contributed not only to the firming of the dollar against the mark, but also to a general diminishing of strains within the Exchange Rate Mechanism (ERM) of the European Monetary System (EMS) that permitted other European countries, either within or outside the ERM, to rebuild their foreign currency reserves, lower interest rates, or do both. Indeed, on July 1 the Bundesbank announced a reduction in its official discount and Lombard rates of 50 and 25 basis points to 6.75 and 8.25 percent, respectively.

As July progressed, however, it became evident that further easing of German interest rates would come only gradually and cautiously. Germany's money market rates continued to trend downward during the month. The Bundesbank accepted a drop in the rate at which it routinely supplies liquidity to the banking system and announced a further reduction in its Lombard rate of  $\frac{1}{2}$  a percentage point to 7.75 percent. However, the Bundesbank did not further reduce the discount rate, an adjustment that many market participants had expected and hoped might pave the way for a new round of official interest rate cuts throughout Europe.

Under these circumstances, other European curren-

Chart 2

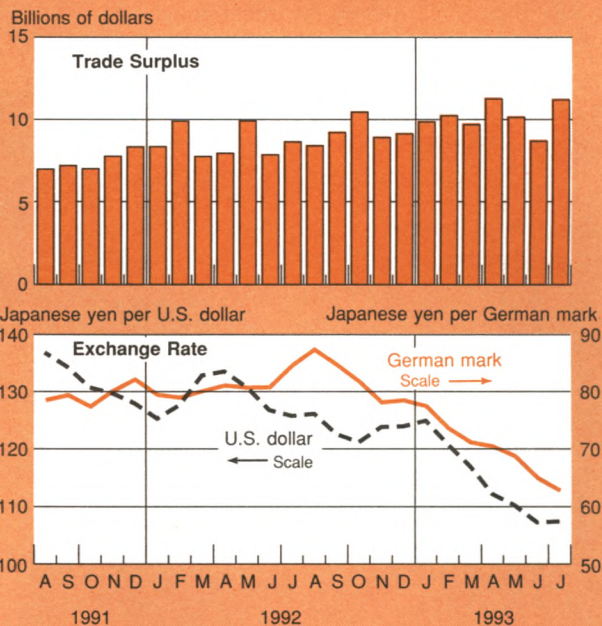
### Percentage Change of the Dollar against the German Mark and the Japanese Yen



Notes: The chart shows the percentage change in daily rates for the dollar from May to July 1993. All figures are calculated from New York closing rates.

Chart 3

### Japanese Trade Surplus and the Exchange Rate



Notes: Trade data are seasonally adjusted monthly surplus figures. Exchange rate is monthly average.

Chart 4

### Short-Term Interest Rates for Selected Countries

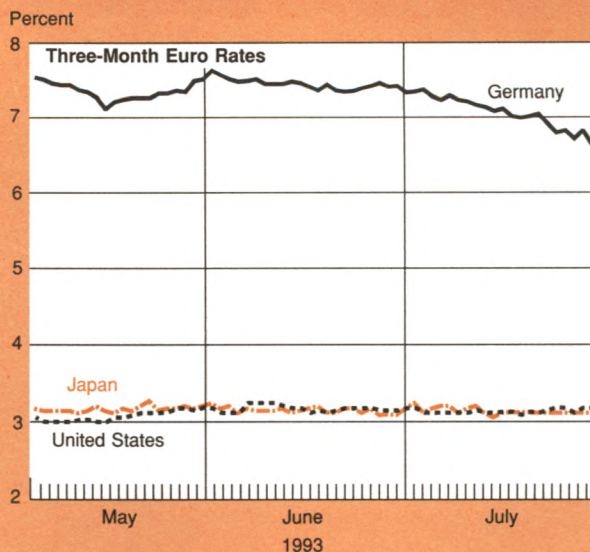


Table 1

**Federal Reserve  
Reciprocal Currency Arrangements**

Millions of Dollars

Institution	Amount of Facility July 31, 1993
Austrian National Bank	250
National Bank of Belgium	1,000
Bank of Canada	2,000
National Bank of Denmark	250
Bank of England	3,000
Bank of France	2,000
Deutsche Bundesbank	6,000
Bank of Italy	3,000
Bank of Japan	5,000
Bank of Mexico	700
Netherlands Bank	500
Bank of Norway	250
Bank of Sweden	300
Swiss National Bank	4,000
Bank for International Settlements:	
Dollars against Swiss francs	600
Dollars against other authorized European currencies	1,250
Total	30,100

cies came under increasing selling pressure as market participants came to question how long European monetary authorities could justify using interest rates to support existing ERM parities in the face of high unemployment and slowing or negative growth. During the month, pressures within the ERM intensified. Several currencies fell toward their intervention floors against the mark, leading to a decision on August 1 to widen temporarily, by a significant amount, the obligatory intervention bands in the ERM.

The dollar was at times caught up in these pressures as market participants attempted to gauge the impact of these developments and of possible policy responses on the dollar-mark exchange rate. On balance, the dollar benefited somewhat as investors either hedged exposures resulting from investments in European currencies other than the mark or otherwise turned to the dollar as a refuge from the currency turmoil in Europe. As a result, the dollar firmed on balance during July, gaining roughly another 2 percent, to close near the period high at DM 1.7410.

**Other operations**

The Federal Reserve and the Treasury's Exchange Stabilization Fund realized profits of \$128.0 million and \$127.7 million, respectively, from the sales of yen in the market during the period. Cumulative bookkeeping or valuation gains on outstanding foreign currency balances as of the end of July were \$3,226.6 million for the Federal Reserve and \$3,005.5 million for the ESF.

The Federal Reserve and the ESF regularly invest their foreign currency balances in a variety of instruments that yield market-related rates of return and that have a high degree of liquidity and credit quality. A portion of the balances is invested in securities issued by foreign governments. As of the end of July, the

Table 2

**Net Profit (+) or Losses (–) on  
United States Treasury and Federal Reserve  
Foreign Exchange Operations**

Millions of Dollars

	Federal Reserve	U.S. Treasury Exchange Stabilization Fund
Valuation profits and losses on outstanding assets and liabilities as of April 30, 1993	+ 4,152.0	+ 3,221.8
Realized profits and losses May 1–July 31, 1993	+ 128.0	+ 127.7
Valuation profits and losses on outstanding assets and liabilities as of July 31, 1993	+ 3,226.6	+ 3,005.5

Note: Data are on a value-date basis.



Federal Reserve and the ESF held either directly or under repurchase agreements \$9,784.6 million and

\$10,115.8 million, respectively, in foreign government securities valued at end-of-period exchange rates.

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