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SM/93/242

November 17, 1993

To: Members of the Executive Board

From: The Secretary

Subject: Review of Research Activities in the Fund

Attached for the information of the Executive Directors is a paper reviewing research activities in the Fund. This paper, together with the paper on current and prospective research in the Fund (SM/93/243, 11/17/93), will serve as background material for the Board discussion on the budgetary outlook in the medium term (to be issued shortly), which is tentatively scheduled for discussion on Friday, December 10, 1993.

Mr. Mohsin Khan (ext. 34518), Mr. Wickham (ext. 34792), or Mrs. Reinhart (ext. 37732) is available to answer technical or factual questions relating to this paper.

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INTERNATIONAL MONETARY FUND

Review of Research Activities in the Fund

Prepared by the Interdepartmental Working Group
on Fund Policy Advice

Approved by Mohsin S. Khan

November 16, 1993

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I. Introduction

This paper reviews research activities in the Fund from 1991 onwards. It represents a collaborative effort by departments to synthesize research work across the Fund, and has been coordinated by the Interdepartmental Working Group on Fund Policy Advice.

The Interdepartmental Working Group on Fund Policy Advice was established by management in October 1989 to serve as a forum for identifying country-related, analytical, policy issues and strengthening research collaboration on these issues so as to enhance the effectiveness of Fund policy advice. 1/ Management may refer to the Working Group analytical and empirical issues that arise in individual country cases but which have wider implications. The Working Group may recommend to management and department heads special studies that draw on the experience of member countries and, as in the case of the present paper, it may coordinate collaborative efforts on projects that involve work by various departments. It has responsibility for the appropriate dissemination of information about current and planned research work to the staff, management and Executive Board, and in this connection, maintains a list of all ongoing projects in the Fund in the Document Management Facility (DMF) database of the Secretary's Department.

Coverage of this paper builds on a survey that was undertaken by the Research Department in late 1991. 2/ While the Research Department is specifically charged with undertaking policy-oriented research relevant to the work of the Fund, other departments contribute importantly to the Fund's overall research effort. As such, in contrast to the earlier review, research activities of these other departments are covered in this paper. Furthermore, for purposes of this review, research is broadly defined and not restricted to work appearing in the Fund's standard outlets. 3/ Research in the Fund also appears in the form of policy and operational papers, as appendices to Article IV recent economic developments reports, or as separate specialized publications, e.g., statistical and methodological

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1/ The members of the Working Group include representatives from the seven area departments (AFR, CTA, EURI, EURII, MED, SEA, and WHD) and from seven other departments (FAD, MAE, PDR, RES, SEC, STA, and TRE). The Chairman and Secretary are from RES and all members of the Working Group are appointed by the Deputy Managing Director.

2/ SM/91/238, 12/11/91. This earlier paper surveys work undertaken by the Research Department from 1987 to mid-1991.

3/ The Fund's primary research documents and publications include: Working Papers (WP); Papers on Policy Analysis and Assessment (PPAA); World Economic and Financial Surveys (WEFS); Occasional Papers; as well as periodic publications such as Staff Papers, Finance and Development, IMF Survey, and books.

manuals. Where relevant, examples of these other forms are also described in this review.

In examining research activities in the Fund, three central questions arise. First, what are the principal objectives of research undertaken in the Fund? Second, what is the scope of this research? And third, how is this research designed?

The main objectives of research in the Fund are to further the staff's understanding of policy and operational issues of relevance to the institution, and to improve the analytical quality of the work prepared for management and the Executive Board, and of the advice provided to member countries. Different departments have differing objectives, depending on their particular institutional responsibilities. Generally speaking, the research programs of area departments are oriented toward country-specific and regional issues, and seek to: (1) deepen the staff's understanding of country situations for purposes of surveillance and the formulation of programs supported by the Fund; (2) strengthen the analytical basis for policy advice provided to country authorities; (3) assist the authorities in developing their analytical and policy-making capacities; and (4) disseminate the staff's experience with policy approaches to economic problems and issues.

As functional departments have a greater diversity of interests and responsibilities, their research programs are more varied. These departments engage in research so as to: (1) improve surveillance of developments in the international monetary and financial systems, and in the world economic situation; (2) strengthen the analysis related to the design of adjustment and reform programs; (3) improve technical assistance provided to countries; (4) support the development and implementation of the Fund's financial policies and operations; and (5) provide a set of up-to-date international statistical standards, as well as guidance on the statistical treatment of new issues and priorities in statistics.

The scope of research in the Fund is defined by the purposes and functions of the institution. The research undertaken in recent years, and described in this review, demonstrates this quite clearly. Fund staff have engaged in research predominantly in the following areas: the international monetary and financial system; stabilization and structural policies; monetary, fiscal, and exchange rate policies; economies in transition; financial policies of the Fund; and statistical issues. For subjects such as the international monetary system the Fund has the mandate and is singularly well placed to examine and analyze the issues that arise. However, what is less well-known is that a substantial proportion of the body of research on macroeconomic issues in developing countries is undertaken in the Fund. This reflects partly the interests of the Fund, but also perhaps the fact that the economics profession has generally not given this area the attention it deserves.

Developments in the international economy and changing circumstances of member countries have been important factors governing the recent orientation of research activity in the Fund. A retrospective look at certain elements of research completed earlier is quite instructive in this respect. Two examples are particularly worth highlighting. First, a major section of the 1991 survey dealt with work on external public debt issues and the conceptual basis for, and the policy implications of, debt and debt-service reduction operations. From the Fund's operational viewpoint, net external public indebtedness remains an important issue in the dialogue with member countries, but somewhat fewer research resources have been devoted to analytical and empirical work on external public debt issues over the last several years. Indeed, while the difficulties of external public transfers and the problems of capital flight were central to the earlier research agenda, it has been research on regaining market access, and into the nature and effects of private capital flows to developing countries that has more recently captured the attention of researchers.

Second, while research on the economics of transition for the former centrally planned economies was essentially in its infancy in the earlier period, the last two years have seen a surge in research activity in this area. This work is a direct response to an urgent need for the Fund to provide soundly-based policy advice to its growing membership. It is important for the Fund to continue to be in a position to adapt its research agenda to what is often a rapidly-changing international environment, and by and large it has demonstrated the ability to do so.

The design of research encompasses issues relating to how research is initiated and how it is organized. Insofar as the first of these issues is concerned, research is typically undertaken in response to specific operational or policy issues identified by management, or that have arisen in Executive Board meetings, in mission-related work at headquarters or in the field, and at interdepartmental meetings. A key input in the direction of research in the Fund is the work program of the Executive Board. Research projects may also result from an assigned operational task, for example, the establishment of improved databases, or from departmental initiatives in response to emerging analytical and policy issues.

The effective execution of the Fund's research programs depends much on the initiative of individual staff or staff teams. This decentralized approach, with most research projects designed and initiated at the departmental level, has worked well in the past because, to an important degree, it allows resources to be directed toward the most important policy and operational problems confronting each department. Furthermore, when the issues on which the Fund is seeking insight are very broad in nature, the quality of the output depends largely on whether the staff selected as most qualified to conduct the necessary research are given ample scope to define the specific questions to be analyzed. Collaborative research across departments typically arises when departments have shared responsibility for particular policy issues or functions, in the provision of technical assistance, or on an ad hoc basis where staff in different departments have a shared interest in an analytical topic.

This largely decentralized approach in the design of research does, however, require coordination to prevent duplication and achieve economies of scale through collaborative efforts across departments. The Interdepartmental Working Group on Fund Policy Advice plays an important role in this context. By maintaining an up-to-date list of all ongoing research projects in the Fund, and making it readily available to staff, overlaps and duplication of efforts are minimized. This information has also proven useful in arranging collaborative efforts between staff in different departments with shared interests. The Working Group has further identified specific topics on which interdepartmental collaborative efforts would yield significant benefits, and work on some of these is currently underway.

In order to foster innovation and ensure quality control, the Fund makes much of its research output widely available outside the institution and encourages staff interaction with academia and other research organizations through conferences, seminars, and on occasion joint research efforts. The visiting scholars program is also an important element in improving the quality of the research done in the Fund. This program brings to the Fund leading members of the economics profession from around the world to assist the staff in the preparation of papers for the Executive Board and to conduct research on Fund-related issues. As well as providing valuable input for the World Economic Outlook and the International Capital Markets Report, visiting scholars have contributed to improvements in the econometric and simulation models used in the Fund, to research on economies in transition, and to the analysis of capital inflows in developing countries.

The Fund complements its own research activity by drawing on that undertaken by other international organizations such as the OECD and the World Bank. Just as the Fund, because of its mandate and interests, concentrates on particular research issues, so also do these organizations. The OECD, for example, has devoted considered research resources to the issues of structural reform and unemployment in the industrial countries and has been a leader in analyzing the international repercussions of implementing multilateral agricultural reform. Similarly, the World Bank's research into environmental issues, sectoral reforms, and the role of the state in fostering growth provides valuable input to the work of the Fund. These organizations in turn draw on Fund research in its areas of expertise, such as that conducted on developments in international financial and capital markets, exchange rate policies, and macroeconomic stabilization and adjustment.

The review here identifies ten major areas of research activity in the Fund, with emphasis on the links of this research with the Fund's policy and operational concerns. There is necessarily some overlap between certain sections of the paper but that only reflects the fact that many policy issues are quite broad in nature, covering a variety of topics. It should be noted that the research output is cited on a selective rather than an exhaustive basis, although the main areas have been covered.

II. The International Monetary System

A primary purpose of the International Monetary Fund, as stated in the Articles of Agreement, is to provide "the machinery for consultation and collaboration on international monetary problems." In light of the turmoil in currency markets since 1992, this role has taken on increased importance. Over the past several years, a significant amount of research has been devoted to many of the key issues related to the functioning of the international monetary system. These include, among others, the following: an analysis of international monetary stability with emphasis on monetary unions and common currency areas; the effectiveness and importance of policy coordination and the role of surveillance; and issues related to international liquidity. Research in this area will always have a high priority in the Fund and as part of this ongoing process, a large number of Board documents, working papers, and occasional papers analyzing issues that are central to the functioning of the international monetary system have been written. Many of these papers were summarized in SM/91/238. A recent study [Goldstein, et al. (1992)] summarizes several salient aspects of the current international monetary system.

1. The design of the international monetary system

In analyzing the characteristics of a successful exchange rate system, Frenkel, et al. (1991) discuss the role of the exchange rate as a nominal anchor, the contribution of real exchange rate movements to facilitating external adjustment, the distinction between desirable and undesirable current account imbalances, the implications of the structural features of an economy for the choice of exchange regime, and the rationale for economic policy coordination. While emphasizing the collective responsibility of the largest industrial countries for achieving good inflation performance, the analysis finds little evidence that explicit international anchoring rules have yielded superior inflation outcomes. It also argues that current account imbalances arise from a variety of sources, some of which are benign and require no policy intervention, and some of which are undesirable and do require intervention. A more recent study [Frenkel and Goldstein (1991)] maintains that so long as monetary authorities in the largest industrial countries orient monetary policy primarily toward domestic requirements, tight and ambitious exchange rate commitments will lack the credibility they need to be effective. At the same time, there is considerable scope for improving exchange market stability by strengthening policies at the national level and by enhancing multilateral surveillance. In Goldstein, et al. (1992), critical issues in the formation of currency areas or monetary unions are addressed, including the necessary conditions for a successful union (drawing on the literature dealing with optimal currency areas), key aspects of fiscal policy in a union, and convergence and transitional areas. Mussa and Isard (1993b) examine the variability of nominal and real exchange rates for industrial countries over the past two decades. They find that among European currencies, short-term variability of both nominal and real exchange rates has generally been significantly lower during the 1983-92 period than during the 1973-83 period; that longer-term variability of real exchange rates also appears to have declined for many European currencies during the date 1980s and early 1990s, again reflecting the increasing tightness of the nominal link to the deutsche mark; that there is no significant change in the short-term variability of nominal, or real exchange rates of major currencies against the U.S. dollar since the general advent of floating in 1973; and finally, that the longer-term variability of nominal and real exchanges against the U.S. dollar has been smaller since the Louvre Accord than during the wide dollar swing from the late 1970s through the mid-1980s.

One of the major themes in many of the papers in the area is that instability in exchange rates largely reflects undisciplined or ineffective macroeconomic policies rather than the choice of exchange rate arrangement. For example, a speculative attack and a balance of payments crisis may not reflect an exogenous shock, but instead may be a profit-maximizing response by rational agents in the face of inconsistent monetary and exchange rate policies [Agénor, et al. (1992)]. In a similar vein, the collapse of a crawling peg regime can be attributable to an attempt by the government to sustain inconsistent fiscal and exchange rate policies; under certain circumstances there can actually be two equilibria, the resolution of which depends on the government's capacity to make credible policy announcements [Savastano (1992)].

Several papers analyzing the choice of exchange regimes have focused on the continuing debate concerning the benefits and costs of fixed and flexible exchange rate systems. 1/ These studies seek to demonstrate that the degree of capital and labor mobility and the source of shocks should affect the choice of regime. A conclusion from the analysis in a number of these papers is that the criteria bearing on the choice of exchange rate arrangement are suggestive rather than indicative and that the circumstances and needs of individual countries must be taken into account. 2/

2. Policy coordination and systemic stability

Given the role of the Fund in the surveillance and coordination process, it is important to access the usefulness of policy coordination and what the necessary conditions are for it to operate effectively. The benefits of coordinated policy, especially in the area of fiscal

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1/ See Aizenman and Flood (1992), Aizenman (1992), Flood and Marion (1991), Gulde and Wolf (1992), Kawai (1992), Masson and Symansky (1993), and Mundell (1991).

2/ Some of these issues are discussed in more detail in subsection 4 below.

consolidation, have been demonstrated through the use of MULTIMOD simulations in several WEO chapters and annexes. 1/ The relationship between interest rates and debt has been empirically shown to be global rather than national, which has provided more support for the need to pursue fiscal discipline and reduce fiscal deficits [Tanzi and Lutz (1991)]. Several studies have analyzed related issues, such as the importance of relying on external enforcement to stabilize currencies [Santaella (1993)], and the specification and performance of policy rules. 2/ Not surprisingly, studies of policy rules generally suggest that the choice should depend on the source of the shocks, the precise implementation of the rule, and the amount of international integration and spillover. Attempts have also been made to measure the gains from policy coordination under uncertainty [Masson and Symansky (1993), Masson (1992)].

Policy coordination within a country is also important. For example, the inability to coordinate actions can generate an incentive for accommodation because of inflationary indexation [De Gregorio (1992)]. Several recent proposals for improving the policy coordination process are also critically reviewed in Goldstein (1993). Aspects of policy coordination related to indicators and the European Monetary System (EMS) are discussed further below.

3. The role of indicators in the surveillance process

There have been both analytical and empirical studies on the choice of indicators in the policy coordination process. The general theme which emerges is that there is no simple indicator or group of indicators that can serve this purpose. At times, every indicator can be somewhat misleading; nevertheless, if used discriminately they can provide useful information. The WEO process itself is an application of the use of indicators in the surveillance process. There have been several papers on the traditional use of price and real exchange rate indicators and which discuss some of the pitfalls of many traditional measures and suggest improvements in existing indices and offer alternative measures. 3/ A number of analytical papers have examined the relationship between certain indicators and macroeconomic behavior, several of which demonstrate that some preconceived notions regarding these relationships can be misleading. 4/ For example, it is shown that a change in any one of several assumptions can change the relationship between savings, investment, and current account correlations

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1/ See WEO (1991), (1992b), (1992d), (1993a), (1993d).

2/ See Argy (1991), Guitian (1992), Masson and Symansky (1991), McCallum (1992), and Meredith (1992).

3/ See De Gregorio, Giovannini, and Krueger (1993), Lipschitz and McDonald (1991), and Wickham (1993).

4/ See Artis and Taylor (1993), Barrionuevo (1992), De Gregorio (1993), Ghosh and Ostry (1992), Goldsborough and Teja (1991), Masson, Kremers and Horne (1993), Masson (1991), Mendoza (1992a) and (1992b), and Pitchford (1992).

with the result that the current account can be a very imperfect indicator of the appropriateness of policies. Rather, it is necessary to consider the current account position in relation to the fiscal balance, structural policies, investment, and the debt position. Importantly, the traditional relationship that explains changes in the current account as resulting from changes in the exchange rate and income level--and serves as the basis for a real exchange rate indicator--was reaffirmed in the case of Japan [Meredith (1993)].

4. Issues related to successful economic and monetary integration

After several years of relative calm in European financial markets, 1992 and 1993 have been years of substantial market turmoil. In particular, two countries temporarily left the Exchange Rate Mechanism (ERM), others have had significant realignments, and the parity bands have been widened. The ability to manage fiscal, monetary, and exchange rate policies within a closely integrated market affects the international economy, just as events in the rest of the world have implications for Europe. The criteria for a successful currency arrangement were examined in a paper that foreshadowed some subsequent developments in the ERM [Goldstein, et al. (1992)]. The paper relates the degree of success of a currency union to the extent of: intra-union trade, labor mobility, nominal wage and price flexibility, diversity of the industrial structure; and whether shocks were common or country specific. The difficulties with fiscal policy in a currency area and the risks involved in moving to monetary union when real and nominal convergence have not been obtained were also examined. Finally, the paper discusses a number of factors working for and against the success of forming a monetary union in the European Community (EC) and concluded that, in light of low labor mobility, there was a need to address structural problems in EC economies. Mussa and Isard (1993a) also take a look at the macroeconomic causes of recent exchange market turbulence in the ERM and conclude that, for the most part, the economic pressures underlying last fall's crises reflected a buildup of macroeconomic imbalances within Europe. That study also draws lessons from the crisis, on, inter alia, the effectiveness of official intervention, on the vulnerability of a pegged exchange rate arrangement to divergences over time in economic performance of the participating countries, and to the need for a single monetary policy for countries that wish to keep their bilateral exchange rates fully fixed.

There has been a substantial amount of research touching on many of the areas discussed in the above paper. Aizenman and Flood (1992), for example, showed that if labor is mobile and prices sticky, then supply-side shocks have larger efficiency gains in a fixed-rate regime. Tavlas (1993) analyzed the costs and benefits of participating in a currency bloc, particularly in terms of the gain in anti-inflation credibility. Lane (1992) concluded that although a currency union provides some market discipline, it is not necessarily enough to prevent unsustainable borrowing. In an empirical application involving the U.S. municipal bond market, Goldstein and Woglom (1991) found that greater fiscal prudence tends to lower interest rates paid by U.S. municipalities. Miller and Sutherland (1992) argued it was the lack of credibility, rather than sticky prices, that has impaired inflation convergence. Bayoumi (1992) concludes that although ERM countries have experienced no increase in the correlation of their shocks, the system has tended to elongate the responses to these shocks. Also, it was shown that Italy was able to integrate its capital markets before credibility had been established, and by raising the costs of exchange rate instability, devaluation expectations were reduced [Bartolini and Bodnar (1992)]. The staff discussed in SM/92/129 and the accompanying supplements and appendices the issues related to economic convergence and the short- and long-term problems leading to the turmoil in EC currency markets during September 1992. 1/

For the North American Free Trade Agreement (NAFTA) countries (Canada, Mexico and the United States)--a potential common currency area--the disturbances are more diverse and it has therefore been argued that the costs of abandoning flexible rates are likely to be higher for these countries than in the EC [Bayoumi and Eichengreen (1993)].

In the midst of the turmoil in 1992, and as Europe moves toward Stage 2 of EMU, the debate about monetary stability and the appropriate choice of monetary aggregates has taken on increased importance. Several papers have dealt with this issue. 2/ They have pointed out that an ERM-wide monetary aggregate has proved more useful in assessing and predicting future inflation than national money supplies and that cross-border substitution has an important influence on single-country money demand. One of the papers showed that the errors in money demand are negatively correlated, across countries, which is likely attributable to currency substitution rather than to similarities in money demand functions. This general proposition was reinforced in a WEO Annex (1993b), which showed that too strong an adherence to the use of monetary aggregates may have been responsible for excessively tight monetary conditions in Europe. In addition, one study [Gardner and Perraudin (1993)] found growing evidence that the German leadership role within the ERM disappeared after German Unification. Finally, Galy (1992) found some empirical support for the proposition that after 1981 there was an increasing interdependence between French and German monetary policies that is related to strengthened credibility, while in Italy and Spain the monetary authorities have acted more independently.

5. Issues related to international liquidity and the SDR

In recent years, the staff's research on issues relating to the SDR has focused primarily on four broad topics. These include the monetary and economic effects of SDR allocations; the prolonged net use of SDRs and the potential for undesirable resource transfers; the functioning of the SDR as

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1/ See also Section III below.
2/ See Angeloni, Cottarelli, and Levy (1991), Bayoumi and Kenen (1992), Georgiou (1991), Kremers and Lane (1992), and Lane and Poloz (1992).

a reserve asset and the case for hardening the SDR (see Section X.1 below); and the pros and cons of alternative potential mechanisms for a post-allocation redistribution of SDRs. Most of the staff's analysis of these topics has been presented in papers prepared for the Executive Board.

Papers analyzing the monetary and economic effects of an SDR allocation have emphasized several points. 1/ First, under the system of managed floating exchange rates, the demand for international reserves has continued to expand substantially. An SDR allocation that is limited in scale to a moderate proportion of the projected growth in the demand for reserves would not affect the monetary or fiscal policy stances in major industrial countries and thus would not contribute to global inflation. Second, without an SDR allocation, most developing countries and countries in transition would only be able to acquire additional reserves at costs that substantially exceed the true economic opportunity cost to the world of creating reserves through SDR allocations. And third, by alleviating the need for countries to acquire reserves through capital inflows and to rely heavily on private sources of credit when reserve needs increase unexpectedly, an SDR allocation would act in the direction of reducing the risk of systemic instability.

One of the papers addressing the prolonged net use of SDRs (EBS/93/104) noted that in recent years this phenomenon has reflected a reluctance by countries to release SDR holdings in excess of their cumulative allocations, or to make them available under two-way trading arrangements with the Fund. An earlier paper [Coats, et al. (1990)] had argued that neither the allocation or prolonged net use of SDRs gives rise to undesirable resource transfers within the SDR system when the SDR interest rate is competitive and holding SDRs is riskless. In recent papers, the staff has emphasized that in a broader sense the question of whether an SDR allocation gives rise to undesirable resource transfers in the world economy depends on the size of the allocation and if it exceeds the growth in the demand for reserves to hold.

Building on earlier work (SM/89/45), alternative potential mechanisms for a post-allocation redistribution of SDRs have been compared in two papers (EBS/93/90 and SM/92/106). These papers focus largely on institutional and distributional issues, including the question of how to distribute the credit risk that would arise under such mechanisms.

6. The interaction between the financial system and macroeconomic policy

The extremely slow recovery of several industrial countries in the current cycle has caused macroeconomic forecasters to look more closely at certain structural changes that may have altered the patterns and the strength of responses to policy changes. There was some expectation, for example, that the relatively low nominal and real interest rates, especially

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1/ See SM/92/106 and SM/93/123.

in North America and Asia, could lead to an increase in demand, in particular through investment in consumer durables. The recovery was, however, extremely weak, in part because financial deregulation changed the effectiveness of monetary policy. The WEO included a number of analyses of the roles played by financial liberalization, demographic factors, and monetary policy in the asset price inflations/deflations and the impact of subsequent balance sheet adjustments on macroeconomic developments.

Other papers studied aspects of the asset price inflations in selected industrial countries. SM/93/142 examined the impacts of asset price inflation in Japan. Schinasi and Hargraves (1993) and Hargraves, Schinasi, and Weisbrod (1993) examined from a flow-of-funds perspective the asset price inflations in the United States, Japan, and the United Kingdom. The paper concludes that greater attention to the scope and pace of financial deregulation and the interplay of macroeconomic and regulatory policies may have limited the asset price inflations in the 1980s. Samiei and Schinasi (1993) develop a model of real property prices to test the hypothesis that there was a structural change in the 1980s in the effect of monetary policy on real property prices in both the United States and Japan. The paper finds that there was such a change in both countries.

III. International Capital Markets

Fund research on capital markets is motivated by the potential systemic consequences arising from problems in the financial sector of a country or group of countries, and by the challenges that such systemic risks pose to the regulators in the formulation and implementation of sound and internationally consistent financial policies. Over the past two years, considerable research has been devoted to the analysis of systemic issues in capital markets. These issues include, among others: the nature and extent of recent banking problems in several industrial countries, along with the policy responses to those difficulties; the implications of the growth and integration of international capital markets for the management of exchange rates, with particular attention to the inferences that can be drawn from the currency turmoil that shook the European Monetary System (EMS) in the Fall of 1992; the potential risks associated with the rapid expansion of the over-the-counter derivative markets; recent initiatives to strengthen financial stability through improved regulation and supervision--with emphasis on the capital adequacy standards for banks and security firms; and the systemic implications of the evolving pattern of developing-country financing.

1. The integration of world capital markets

After surveying the empirical literature on the measurement of capital market integration, Goldstein and Mussa (forthcoming 1993) conclude that there are indeed important linkages between national capital markets and that the extent and strength of those international linkages have been increasing significantly over the past decade or so. Integration has proceeded farthest for those liquid, financial instruments widely traded in the major financial centers. That market is now large enough and integrated enough to place tighter constraints than before on the conduct of macroeconomic policies, especially under fixed exchange rate regimes. Increasingly, more countries and a wider range of assets are being drawn into the more integrated portion of the market, as financial liberalization and innovation proceed, as the cost of acquiring information and of executing trades of financial assets falls, and as securitization and the role of institutional investors grow. This increase in integration is expected to continue. It is still premature to speak of a single, world capital market since large components of world saving and wealth are not traded, since a clear home bias in portfolio decisions persists, and since the threat of government intervention, currency risk, and the difficulties of dislodging established domestic firms in retail markets, all still operate to keep the bulk of national saving at home and to segment some national markets from others.

There are concerns about the impact of increased international capital mobility on the effectiveness of macroeconomic policies and on the management of systemic risk, but neither of those concerns will be allayed by efforts to thwart liberalization and globalization, or to make ex ante distinctions between productive and unproductive capital flows. A more promising approach is to attempt to improve the functioning of market discipline, to see that risk is appropriately priced, and to ensure, where possible, that liberalization is accompanied by a strengthening of supervision on a coordinated, international basis.

2. Banking problems

Banking problems, either confined to large national banks or across the balance sheets of major internationally-oriented institutions, have received considerable attention in the Fund's research agenda. For industrial countries, research has aimed at determining the common causes of banking difficulties. Weisbrod, Lee and Rojas-Suarez (1992) attribute increased risk taking by banks in the United States and Japan to a reduced franchise value of wholesale banking stemming from reduced corporate dependence on banks for liquidity. Goldstein and Folkerts-Landau (1993) analyze the simultaneous banking crises in the Nordic countries, the strains in the Japanese banking system, and the recent difficulties of commercial banks in the United States. Also, Pazarbasioglu (1993) studied the evolution of the Norwegian banking crisis. Goldstein, et al. (1992) investigate the changing nature of liquidity provision in financial markets across countries, the diminished role of banks in the evolving system, and the central bank tendency for liquidity support in more securitized financial markets.

Troubled banking systems have had major budgetary impacts through the financial safety nets in several industrial countries. The cost of such bank bailouts has led to a questioning of the operation of the guarantee mechanisms for financial institutions. Fries and Perraudin (1991) develop a model for pricing government deposit guarantees, derive optimal financial reorganization rules, and examine the role of capital requirements in deposit insurance. Isard, Mathieson, and Rojas-Suarez (1992) analyze the macroeconomic effects of financial reforms in developing countries and the cost of maintaining financial safety nets in the course of such reforms.

3. Exchange markets

The nature of exchange markets has always been at the heart of the Fund's research interests. Recent research has been directed toward the operation of foreign exchange markets during exchange crises, the evolving nature of foreign exchange products, and the degree of liquidity in foreign exchange markets.

The recent European exchange market crises highlighted the rapid evolution of exchange markets brought about by cross-border capital flows held in liquid instruments, the ascendancy of institutional investors currency, and the surging growth in interest rate and currency derivative products. Goldstein, et al. (1993) analyze the structure of the global foreign exchange market (market participants, instruments, payments systems), the uses of foreign exchange instruments, regulatory constraints on foreign exchange trading and positions, and the financial mechanics of speculative attacks. IMF (1993a, 1993b) describe recent trends and developments in international financial markets and international capital flows and analyze the macroeconomic causes of the European exchange market turbulence. In Appendix III of SM/92/232, the staff examine the unfolding of the ERM crisis in Italian financial markets both, before and after the lira's departure from the mechanism.

4. Trading mechanisms in securities markets

Trading mechanisms and liquidity provisions in securities and capital markets are key determinants of the location of trading and more generally, of the capital and personnel in the securities industry. A market whose trading system provides efficient price discovery and is subject to few trading abuses is likely to attract business.

Fund research on trading mechanisms has centered on the development of automated securities trading systems and on auction techniques. Domowitz (1992a, 1992b) describes automated trading systems currently operating in 16 countries and considers the potential for trading abuses in these systems. Feldman and Mehra (1993) assess a number of auction techniques for pricing and allocating government securities, foreign exchange, and other assets. Using a variety of theoretical criteria, they evaluate the advantages and disadvantages of different auction formats.

The liberalization and cross-border integration of financial markets has stimulated an increased interest in regulatory arbitrage, that is, the tendency for financial activities to gravitate to the least regulated market. Goldstein, et al. [(1992) and (1993)] analyze efforts to create capital adequacy standards for banks and securities dealers, to harmonize disclosure regulations, and to establish a single European financial market through the implementation of EC banking and securities market directives.

The integration of the European financial markets and the drive to monetary union have stimulated the development of the European Currency Unit (ECU) securities and banking markets. Innovative methods to provide liquidity, either to the ECU-clearing system or to bond markets, have been developed by the Bank for International Settlements (BIS) and by central banks interested in attracting the ECU financial markets to their national financial centers. These efforts are described in Goldstein and Folkerts-Landau (1993).

5. Market access and capital inflows

International marketability of developing country debt and the requirements for successful issuance in major financial centers influence the ability of developing countries to attract capital inflows. Fund research on market access is presented in two annual publications: Private Market Financing for Developing Countries and a section in the International Capital Markets. 1/ In these documents, the staff analyzes the current issues associated with commercial bank debt restructurings, private market financing, and market re-entry for developing countries. Also, Collyns and El-Erian (1993) describe the framework for a country's international debt strategy and discuss the main lessons for the process of negotiation with commercial bank creditors and debt restructuring packages.

The key factors facilitating the initial stages of restoration of developing country access to voluntary capital market financing are discussed in El-Erian (1992a). The analysis highlights the role of economic policies, the debt restructuring approach, regulatory aspects as they influence transaction cost for accessing markets, and the design of financial instruments. These factors are discussed further for the case of Mexico in El-Erian (1992b) and Szymczak (1992). The role of macroeconomic policies and financial market liberalization in fostering growth in equity markets of developing countries discussed in Papaioannou and Duke (1993).

Mathieson and Rojas-Suarez (1993) examined issues dealing with the liberalization of capital account transactions and the effect on capital flows. They discussed the problems that can arise when countries move toward capital account convertibility; domestic financial institutions, for example, may encounter serious difficulties for which the monetary authorities need to be prepared. They also concluded that the effectiveness of capital controls has diminished over time and that a larger number of countries face situations where greater financial openness prevails. A related avenue of research has been that undertaken into the recent phenomenon of surges in private capital inflows, particularly those affecting developing countries. This research has aimed at achieving a

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1/ See Collyns, et al. (1992) and Goldstein, et al. (1992).

greater understanding of the reasons for the inflows, the nature of the inflows, and the policy options available to the national authorities when faced with such shocks. 1/

6. Clearing and settlement

Risks arising from payment or securities clearing and settlement and the efforts to reduce such risks have attained increased prominence on central bank agendas. Central banks are sensitive to the credit risks they are assuming, either directly by guaranteeing payments over systems they manage, or indirectly through implicit guarantees of privately-operated payments systems that are "too big to fail." Thus, for the past five years efforts have accelerated to control such risks through the restructuring of payment systems in the United States, with the movement to gross settlement systems in European countries, and by control of daylight overdrafts. The evolution of payments systems, is chronicled in Goldstein, et al. (1992), while the operation of foreign exchange payment systems during the ERM crisis is described in Goldstein, et al. (1993).

Concern about the risks that are inherent in the operation of a payments system extend to the payments mechanisms in force in the transition economies. Hook (1992) analyzes the functions of payments systems in planned economies, compares them to payments systems in market economies, and considers the exposure of private participants to credit, liquidity, and operational risks under these payments systems.

7. Financial liberalization and innovation

Financial liberalization and innovation have produced significant benefits for the world economy, including a higher rate of return for savers, a lower cost of capital for firms, improved hedging possibilities, and greater liquidity. At the same, liberalization and innovation have entailed certain types of systemic risk, as markets have become more closely linked. Goldstein and Folkerts-Landau (1993) examine the nature of credit, market, liquidity, and legal risks associated with the rapid expansion of derivative markets, especially the over-the-counter markets dominated by banks. That study also discusses measures that might help to reduce systemic risk, including ensuring the legal certainty of netting arrangements, greater recourse to "mark to market" evaluation of exposures, and more comprehensive and transparent disclosure of off-balance sheet positions.

Fund research in derivatives products has also proceeded into the more technical areas. For example, Scott (1991) examines the information about expectations of future price movements in underlying securities contained in

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1/ See Bercuson and Koenig (forthcoming 1993), Calvo, Liederman, and Reinhart (1992), (1993a) and (1993b), and IMF (SM/93/113).

futures and options prices. Hooyman (1993) discusses how central banks affect domestic liquidity and manage foreign exchange reserves.

IV. Inflation and Stabilization Policy in Developing Countries

High inflation has been a recurrent problem in many developing countries for the last several decades. 1/2/ More often than not, stabilization programs aimed at stopping high inflation are short-lived and inflation tends to come back with a vengeance. Several countries (most notably, Chile, Israel, and Mexico), however, have been successful in achieving a lasting reduction in inflation. Research on inflation and stabilization policy has focused mainly on the origins and characteristics of high inflation, and on the role of different nominal anchors in the implementation of inflation stabilization programs.

1. Origins of high inflation

In the long-run, inflation is the unavoidable consequence of high rates of growth of the money supply. Massive money printing, in turn, is indicative of the need to finance chronic fiscal imbalances. Hence, high inflation ultimately reflects the inability of a country to finance its expenditures with conventional taxes. Recent empirical evidence for 23 developing countries confirms the positive link between average inflation and fiscal deficits [Barrionuevo and Hoffmaister (1993)]. 3/ Inflation, in turn, may worsen the fiscal situation even more by reducing the real

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1/ Annual inflation rates of two and three digits have been the rule in Israel and many Latin American countries for the last three decades [see, for instance, Végh (1992)]. Inflation has typically been less of a problem in Asian and African countries. In Africa, however, inflation has increased markedly in the last 15 years, with some Sub-Saharan countries experiencing annual inflation rates of 50 or even 100 percent [see Canetti and Greene (1991) and Nord, et al. (1993)].

2/ Numerous recent studies have dealt with the inflationary experiences of developing countries. On Argentina, see Chapter 1 of SM/92/66; on Brazil, see Agénor and Taylor (1992); on Dominican Republic, see Medeiros (1993a) and (1993b); on Mexico, see Lizondo (1992) and Rojas-Suarez (1992b); on Peru, see Rojas-Suarez (1992a); and on Turkey, see SM/93/32, Appendix I. The experiences of market economies with high inflation may provide valuable lessons for the current economies in transition; see Bruno (1992) and the World Economic Outlook (October 1993, forthcoming).

3/ Furthermore, the evidence also suggests that inflation is harmful for growth [see Barrionuevo and Hoffmaister (1993) and De Gregorio (1991a)]. Inflation variability may also adversely affect saving and investment; see the evidence on Uruguay in SM/92/226, Appendix I.

value of revenues due to the presence of collection lags (the so-called "Tanzi effect"). 1/

The monetization of large budget deficits has also been one of the main sources of high inflation in many of the states of the former Soviet Union (WEO, May 1993, Chapter V). In contrast, in the Baltic states, where budgets have been in surplus or deficits have been small, inflation has been contained. The extent to which spending decisions and tax collection authority are decentralized within a country can have an important influence on the size of the national budget deficit. 2/ Although most inflationary episodes have been associated with deficits of the public sector, inflation is sometimes the result of the quasi-fiscal deficit of central banks. 3/

In the short-run, fiscal deficits may also be financed by issuing interest-bearing debt. Hence, there may not be a short-run relationship between fiscal deficits and inflation. As the stock of public debt keeps increasing, however, the government may have no other choice than to generate unanticipated inflation to reduce the real value of the stock of debt. A high stock of nonindexed public debt may also force the government to validate expectations of high inflation so as to prevent high ex-post real interest rates. 4/ Therefore, sustained and large fiscal deficits will still be inflationary even if, in the short-run, they are financed by issuing debt.

2. Characteristics of high inflation

When analyzing high inflation, it is important to distinguish between chronic inflation and hyperinflation. Chronic inflation is characterized by long periods of high (relative to industrial countries) and persistent

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1/ For an examination of the Tanzi effect in a public finance framework, see Dixit (1991) and (1992), Mourmouras (1993), and Tanzi (1992). Choudhry (1991) provides empirical evidence on the Tanzi effect.

2/ See Aizenman and Isard (1993).

3/ In the economies in transition, central bank deficits have usually taken the form of subsidized credit to state enterprises [see, for instance, Lahiri (1991) on the former Yugoslavia, and the WEO, May 1993, Chapter V, and SM/93/66 on Russia].

4/ See Guidotti and Kumar (1991) for a discussion of these issues. Barrionuevo (1992) provides a theoretical analysis of the inflationary effects of debt accumulation. The Mexican experience with high interest rates on the public debt is analyzed by Rojas-Suarez (1992b). The relation between fiscal deficits, debt, and the inflation tax in Turkey is examined in SM/93/32, Appendix I.

inflation. 1/ Countries adapt to living with high inflation by creating various backward-looking indexation mechanisms. 2/ Indexation, in turn, tends to perpetuate inflation, as it lessens the costs of inflation and reduces policymakers' incentives to eradicate inflation [De Gregorio (1991b)]. Chronic inflation does not have an inherent propensity to accelerate and may last for several decades. Domestic or external shocks, however, often push inflation to a higher plateau, as monetary and exchange rate policy simply accommodate such shocks. 3/ As a result, increases in inflation are not always directly linked to a worsening of the fiscal accounts, which tends to obscure the fiscal origin of inflation in countries with chronic inflation.

In contrast, hyperinflation is characterized by short outbursts of very high inflation (over 50 percent a month). 4/ It usually develops in countries as a result of war or political revolution when countries face a sudden and substantial need for revenues. Thus, the fiscal origin of inflation is much clearer in hyperinflations than in chronic inflation. Nominal rigidities also tend to disappear in hyperinflations, since almost all prices and contracts become indexed to the nominal exchange rate.

High and variable inflation (either chronic or hyperinflation) makes domestic money less attractive to hold. As a result, the public often resorts to the use of a foreign currency (usually, the U.S. dollar), a phenomenon referred to as currency substitution (or dollarization) [Calvo and Végh (1992a) and Georgiou (1991)]. Dollarization is a widespread phenomenon in countries such as Argentina, Bolivia, Israel, Mexico, and

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1/ Chronic inflation has been a distinctive feature of several Latin American countries (Argentina, Brazil, Chile, Mexico, Peru, and Uruguay) and Israel for several decades. Argentina, Chile, Israel, and Mexico, however, have recently managed to reduce inflation to below 15 percent a year. Chronic inflation is certainly not confined to market economies: the former Yugoslavia and to, a large extent, Poland also suffered from chronic inflation for many years [WEO, October 1993].

2/ Indexation may apply to both goods and financial markets. Chile, for instance, has a long history of financial indexation [Mendoza (1992)]. Some countries, such as Argentina and Brazil, have resorted to paying interest on money [Calvo and Végh (1991)].

3/ In particular, policymakers often attempt to keep the real exchange rate at a competitive level in the face of shocks that would tend to appreciate it. The inflationary effects of such policies have been analyzed by Lizondo (1991) and (1993), Montiel and Ostry (1991), (1992), and (1993), and Calvo, Reinhart, and Végh (1993).

4/ Various hyperinflations have been analyzed by Garber and Spencer (1992), Santaella (1993), and Végh (1992). Hyperinflation is also threatening in the former Soviet Union [Spencer and Cheasty (1993)].

Peru. 1/ By reducing the tax base of the inflationary tax (i.e., the real stock of domestic money), currency substitution leads to higher inflation for a given fiscal deficit. 2/ Furthermore, small changes in the degree of currency substitution may lead to highly volatile inflation [McNelis and Asilis (1992)]. Once an economy is dollarized, reductions in the inflation rate do not guarantee that the public will revert to using the domestic money because switching from one money to another may be costly [Guidotti and Rodriguez (1992)].

3. Nominal anchors in disinflation programs

The main nominal anchor in a disinflation program can be either the exchange rate (exchange rate-based stabilization) or the money supply (money-based stabilization). Sustained fiscal adjustment is, of course, a necessary condition for any successful stabilization. And, if the program is successful, the inflation rate will eventually converge to the rate of growth of the nominal anchor. 3/ Hence, in the long-run, the choice of a nominal anchor should not matter. During the adjustment period, however, both theory and evidence suggest that the choice of nominal anchor may have important effects on the outcome and the dynamics of a disinflation program. Furthermore, since in the short-run inflation often remains above the pre-set rate of growth of the nominal anchor (that is, there is inflation inertia), the use of additional nominal anchors (most notably, price and wage controls) has been advocated. The effects of resorting to these different nominal anchors are discussed below.

a. Exchange rate-based stabilization 4/

Disinflation programs in chronic inflation countries have often relied on the exchange rate as the main nominal anchor. The outcome of such programs seems to differ depending on whether hyperinflation or chronic inflation is involved. The evidence on hyperinflation suggests that fixing the exchange rate has usually stopped inflation almost overnight and with

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1/ See the evidence presented in Agénor and Khan (1992), Clements and Schwartz (1992), Guidotti and Rodriguez (1992), Perez-Campanero and Leone (1991), Rodriguez (1993), Rojas-Suarez (1992a), Savastano (1992b), and Taylor and Phylaktis (1991). Arrau, De Gregorio, Reinhart, and Wickham (1991) provide empirical evidence on the broader notion of financial innovation. Dollarization has also been an important phenomenon in Turkey (SM/93/32, Appendix I), and in the economies in transition [see Lane (1992) on Poland; Lahiri (1991) on the former Yugoslavia; and SM/93/66 on Russia].

2/ See Calvo and Végh (1992a), Guidotti and Végh (1993), Rojas-Suarez (1992a), Savastano (1992b), and SM/93/32, Appendix I.

3/ Therefore, the long-run rate of growth of the nominal anchor (which, in a steady state, determines the inflation rate) should not be set below the level required for long-run fiscal sustainability.

4/ For a discussion of the pros and cons of fixed exchange rates, see Section IX.4.

small real costs [(Végh, 1992)]. 1/2/ The rapid decline in inflation is explained by the fact that almost all prices are indexed to the nominal exchange rate. Hence, stabilizing the exchange rate is tantamount to stabilizing prices. Real costs are small because (1) hyperinflation has wiped out nominal rigidities, and (2) programs aimed at stopping hyperinflation usually enjoy high credibility, given that the social and economic chaos hyperinflation induces is clearly unsustainable.

In countries with chronic inflation, the evidence suggests that fixing (or predetermining) the exchange rate does not lead to such a quick fall in inflation as it does with hyperinflations. 3/ Inflation normally stays above the rate of devaluation, which leads to a sustained real exchange rate appreciation. The resulting trade and current account deficits often render even fiscally-sound programs unsustainable. 4/ Interestingly, output and consumption booms have usually accompanied the initial stages of stabilization programs. 5/ The contractionary effects traditionally associated with inflation stabilization seem to appear only later in the program, either just before or when the plan ends. Even in successful plans, such as that of Israel, this late recession has occurred. 6/

1/ This conclusion is based on an analysis of nine hyperinflations (four after World War I, four after World War II, and the case of Bolivia). Santaella (1993) stresses the beneficial role of external institutions (mainly the League of Nations) in ensuring the success of the stabilizations of the 1920s. The role of currency reforms is analyzed in Garber and Spencer (1992).

2/ This is not to imply that other costs, which are not associated with the monetary stabilization per se, may not arise. In some cases, for instance, the proceeds from the inflation tax during hyperinflation have been partly used to subsidize some industrial sectors. If those subsidies are discontinued when inflation is stopped, the ensuing industrial restructuring may have real costs (see Bruno, 1992).

3/ See the evidence presented in Végh (1992), SM/92/66, Chapter I, and SM/93/137, Appendix V. On Mexico, see also Lizondo (1992), Khor and Rojas-Suarez (1991), and SM/93/2, Appendix I.

4/ Exchange rate-based programs that lack adequate fiscal support often end in a balance of payments crisis [see Agénor, Bhandari, and Flood (1992), Guidotti and Végh (1992), and Savastano (1992a)].

5/ The initial boom was not observed in the exchange rate-based programs in Poland and the former Yugoslavia in early 1990. The initial output decline in those countries, however, is probably related to supply-side and structural disruptions [see Borensztein and Ostry (1992)], or tight credit policy [Calvo and Coricelli (1992)]. A comparative analysis of disinflation programs in market economies and economies in transition can be found in the WEO, October 1993.

6/ The Mexican plan, however, has proved to be an exception in that no late recession took place.

Several studies have addressed the dynamics of exchange rate stabilization in chronic inflation countries and, in particular, the boom-recession cycle. Calvo and Végh (1993b) emphasize the role played by lack of credibility. Specifically, if the public does not expect the program to last, then aggregate demand will be higher at the beginning of the program when nominal interest rates are relatively low. Inflation persistence leads to a real appreciation of the domestic currency, which eventually pushes the economy into recession. 1/ Roldos (1993) incorporates supply-side considerations into the picture and concludes that an increase in labor supply at the beginning of the program may also contribute to the initial boom. Rodriguez (1993) emphasizes the expansionary effects of a repatriation of foreign assets in the initial stages of stabilization programs. 2/

b. Money-based stabilization

Use of a monetary aggregate as the main nominal anchor in disinflation programs in chronic inflation countries has been less common than the use of nominal exchange rate. There are, however, several experiences from which empirical regularities may be drawn. 3/ In contrast to the initial boom that occurs in exchange rate-based stabilization, the evidence suggests that in chronic inflation countries money-based stabilization leads to an increase in real interest rates and to a sharp initial recession. As in exchange rate-based programs, however, the domestic currency appreciates in real terms as the nominal exchange rate normally stabilizes, but prices keep increasing.

The recession is caused by tight monetary policy that, by design, characterizes a money-based program [see Calvo and Végh (1992b) and Chadha, Masson, and Meredith (1992)]. The reduction in the rate of growth of the money supply reduces expected inflation and, thus, nominal interest rates. As a result, there is an excess demand for real money demand which induces a rise in real interest rates (i.e., the fall in inflation exceeds that of nominal interest rates). High real interest rates, in turn, lead to a recession. The initial recession occurs regardless of the credibility enjoyed by the program, although simulations suggest that the output costs will be smaller the more credible the program [Chadha, Masson, and Meredith (1992)].

1/ Empirical evidence on lack of credibility is provided by Agénor and Taylor (1992) and Reinhart and Végh (1993). Agénor (1993) examines measures aimed at increasing the credibility of a stabilization program, such as granting more independence to the central bank. For an analysis of central bank independence, see Swinburne and Castello-Branco (1991).

2/ On the issue of capital inflows into developing countries, see Calvo, Leiderman, and Reinhart (1993).

3/ Evidence of money-based programs is provided by Medeiros (1993a) and (1993b), Calvo and Végh (1992b), and SM/92/66, Chapter I.

In sum, choosing between the exchange rate and the money supply as the nominal anchor in chronic inflation countries seems to be equivalent to choosing the timing of the contractionary costs associated with inflation stabilization. This choice is summarized by the expression "recession now versus recession later," when comparing money-based stabilization (recession now) and exchange rate-based stabilization (recession later). Also, both theory and evidence suggest that there will be an initial real exchange rate appreciation regardless of what nominal anchor is used.

c. Price and wage controls

In the Southern-Cone programs of the late 1970s, inflation remained higher than the pre-set rate of devaluation throughout the programs, which led to a major overvaluation of the domestic currency. Several factors may cause inflation inertia in a stabilization program. First, wage increases may be tied to past inflation. 1/ Second, the program may suffer from lack of credibility. For instance, if the public expects a reversal of the program in the future [Calvo and Végh (1993b)], or if there is a positive probability of a devaluation [Miller and Sutherland (1993)], inflation will remain above the rate of devaluation. Third, uncertainty about the anti-inflationary zeal of the policymaker may also cause inflation persistence [Agénor (1991) and De Gregorio (1992)].

The problems associated with inflation inertia led to the use of price and wage controls in the heterodox programs in Argentina, Brazil, Israel, and Mexico of the mid-1980s. Price and wage controls have been advocated on the grounds that they would suppress inertial inflation caused by backward-looking indexation or expectations, and would also increase credibility of the program [Agénor (1993)]. As discussed by Calvo and Végh (1992b), however, the short-run benefits of price and wage controls may be more than offset by the resulting distortion of relative prices and the problems related to "when" and "how" to remove price controls. Too early a removal could unleash the same credibility or inertial problems that the controls were supposed to address. Too late a removal might result in highly distorted relative prices. Furthermore, the repeated use of price controls could lead to higher inflation as prices rise in anticipation of the imposition of price controls [Agénor (1992)].

1/ Models of disinflation that incorporate backward-looking indexation can be found in Calvo and Végh (1993a), Chadha, Masson, and Meredith (1992), De Gregorio (1992), and Miller and Sutherland (1993).

V. Structural Issues

1. Policies for sustained growth

The design of policies that support growth-oriented adjustment has been an important area of research activity in the Fund. Recent theoretical and empirical analysis by the staff confirms that a high ratio of domestic savings to national income induces a correspondingly high ratio of domestic investment to national income and thereby leads to more rapid economic growth. 1/ This relationship has led to consideration of what macroeconomic, financial and trade policies can be incorporated in Fund-supported adjustment programs that will best foster domestic savings and investment. 2/ The staff studies of these policy issues have focused on the determinants of savings, the relationship between macroeconomic policies and growth, the impact of government expenditures on investment and growth, the effects of the choice of a trade regime on growth, and the dynamics of growth in the adjustment process.

a. Macroeconomic policies

Macroeconomic policies have been shown to have important effects on savings, investment, and economic growth. For example, unsustainable macroeconomic policies, which create high inflation and macroeconomic uncertainty, divert resources from capital accumulation and innovation toward the acquisition of inflation hedges such as real estate and inventories. Consequently, both the level and the efficiency of investment are reduced. Indeed, inflation has been shown to be an important factor inhibiting growth in Latin American countries [De Gregorio (1992), (1993a) and (1993b)].

b. Government expenditure

Empirical studies examining the effects of economic growth have found that countries with high shares of government expenditure in total output tend to have slow growth for two main reasons. First, such countries rely more on distortionary taxes to finance their high level of government expenditures, which deters capital accumulation. Second, the financing of the deficits associated with high government expenditures crowds out private spending, particularly investment spending. These crowding-out effects have been found to be important in simulations of a reduction in world military expenditures [Bayoumi, Hewitt, and Schiff (1993)]: although a reduction in military expenditure would possibly be contractionary in the short run, the accompanying reduction in fiscal imbalances would crowd in private

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1/ See Adams and Chadha (1992), Asilis and Ghosh (1992), De Gregorio (1993b), Khan and Kumar (1993), and Knight, Loayza, and Villanueva (1992).

2/ For a review of how financial policies may affect growth, see Section VIII.3a below.

investment and increase growth in the long run. Recent work has also documented that the composition of government expenditure is an important determinant of growth; government expenditures in infrastructure have positive effects on growth stemming from the complementarities between public and private capital stock [Knight, et al. (1992) and Sakr (1993)], although public investment, in general, has tended to be less productive than private investment [Khan and Kumar (1993)].

c. Trade regime

Another area of recent research concerns the effects of a country's trade regime on economic growth. Although many individual country studies have shown the importance of outward-looking trade and development policies in stimulating good economic performance, the evidence from large cross-country studies has been mixed. 1/ However, two recent studies [Knight, et al. (1992) and Lee (1993)], which used data from a large cross-section of countries, have provided additional support to the importance of outward-oriented trade strategies. The positive effects of such outward-looking trade policies on economic growth appear to be particularly important in small economies that are more dependent on foreign trade. In part, this reflects the role of trade distortions in generating inefficient domestic production. Empirical evidence also shows that increased tariff barriers have larger adverse effects in countries that have a higher degree of "natural openness." 2/ But when foreign intermediate inputs are important for production, it is possible that even a small tariff can have large negative effects on the steady-state levels of output and consumption, as well as on the rate of growth during the transitional period. Furthermore, the larger the share of these inputs in value added (i.e., the smaller the size of the economy), the more negative is the effect of protection on growth. Despite the substantial evidence that there is a positive link between "outward-oriented" trade regimes and economic growth [WEO (1993)], there is still the question of what degree of trade liberalization is optimal for promoting economic growth. In part, the continuing debate reflects the fact that standard trade theory measures the costs of protection in terms of static production and consumption distortions that affect the level of production but have no bearing on its rate of growth.

Recent developments in the "endogenous growth" literature have also shown that international trade policy may increase long-run growth by permitting the economy to specialize in those sectors with scale-economies that arise from learning-by-doing, human capital accumulation and research and development [WEO (1993)]. Nonetheless, while the theoretical links between tariffs and dynamic efficiency are inconclusive, empirical evidence suggests that the positive dynamic effects of trade come through human

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1/ See Coe and Moghadam (1993) and Loser and Kalter (1992).

2/ "Natural openness" is defined as the share of imports in GDP in a free trade regime.

capital accumulation, learning-by-doing and investment in research and development [Keane and Prasad (1993) and Villanueva (1993)].

2. Labor markets and unemployment

a. Cyclical behavior of unemployment

Research on the cyclical behavior of unemployment has attempted to characterize labor market rigidities that raise unemployment and retard growth. For example, using disaggregated labor market data, the staff have examined the relationship between the cyclical behavior of earning differentials between skilled and unskilled workers and the likelihood of becoming unemployed during a recession in the United States [Keane and Prasad (1993)]. In contrast to earlier studies that used more aggregate data, they find that earning differentials between skilled and unskilled workers do not exhibit marked cyclical behavior. However, unskilled workers faced a much higher probability of becoming unemployed during an economic downturn. These results imply that the average quality of the labor force rises in a recession, so that there is a bias in measuring "average" wages during a recession. In addition, the study found large differences across industry in the cyclical behavior of employment, work hours and wages. In particular, most industries showed more variation in employment than in hours worked.

In Canada, the natural rate of unemployment appears to have risen in the last decade because of a reduced flexibility of the labor market (SM/93/45). In line with earlier studies, for example, Coe (1990), nonwage costs, the level of the minimum wage and the generosity of the unemployment insurance system were found to have significant effects on the estimate of the natural rate of unemployment, as well as on the actual unemployment rate. However, the effect of unemployment insurance was not found to be very large. At a more disaggregated level, the process of industrial restructuring of Canadian industry has affected labor market dynamics. The evidence points to a wide dispersion of employment growth across industries in the manufacturing sector and suggests that the increased productivity has primarily reflected labor shedding.

The biases involved in using the output gap implicit in Okun's law to estimate the natural rate of unemployment in the United States were discussed in SM/92/168. Instability in the statistical estimates of the output gap relationship cautions against the use of this relationship to assess the inflationary potential of the U.S. economy.

European unemployment has proven remarkably persistent during the past decade. The increase in unemployment associated with the 1979-80 oil shock and the subsequent recession has not yet been fully reversed. A number of staff studies have examined the reasons for this sustained increase in unemployment. 1/ For example, the staff compared the labor market institutions in Belgium with those of other European countries [Moghadam (1993)]. As in the other European countries with high unemployment, such as Italy, Spain and Ireland, Belgium's rigid labor market has been characterized by a low participation rate (the lowest male participation in the OECD) and persistent long-term unemployment. Moreover, in contrast to the situation in countries such as the United Kingdom and Sweden, long-term unemployment did not show any significant decline even when total employment expanded. Since Belgium's unemployment benefits are not means-tested, recipients of unemployment insurance often have limited incentives to seek work. Moreover, while the replacement rate (the ratio of benefits to average earnings) is lower than the average in other OECD countries during the first year, it is higher for subsequent years and continues indefinitely. Finally, the "tax wedge" between the cost of labor to the firm and the worker's take-home pay is large. All of these elements enhance the rigidity of the labor market, discouraging hiring and job search.

b. Labor market institutions

Labor market institutions can also affect the duration of unemployment. While the degree of centralization of wage bargaining varies considerably across European countries, it is generally higher than in the United States and Canada. Centralized bargaining is not necessarily detrimental to employment. Indeed, it may force unions to "internalize" the impact of their wage settlements on employment, while this would not happen with decentralized bargaining. However, centralized bargaining implies a loss of flexibility of the labor market, and it reduces the scope for productivity-related wage policies. The advantages and disadvantages of centralized bargaining from the perspective of individual firms has been examined in [Ramaswamy and Rowthorn (1993)]. Although centralized bargaining can eliminate wage differentials between workers undertaking similar jobs, which are created by a difference in "insider power" of workers across firms, inefficiencies are created when firms that need more skilled workers cannot attract them by offering higher wages. Firms that do not favor decentralized bargaining are at both ends of the "skills" spectrum: those for which skilled workers are very important (since they cannot attract them by offering higher wages) and those for which skill levels are not relevant (since under centralized bargaining they are obliged to pay "average" wages).

1/ The WEO (October 1991) briefly discusses the difference in the behavior of unemployment between Europe, Australia and New Zealand on the one hand, and the United States, Canada and Japan on the other.

3. Trade policy and reform

a. Tariff reforms

Fund-supported adjustment programs that have encompassed tariff reforms have emphasized the need to lower the average level as well as the dispersion of the tariff structure. The theoretical and practical rationales for using uniform tariffs were examined in Subramanian, et al. (1993). The optimal tariff structure is naturally affected by the authorities' policy objectives. For example, uniform tariffs would be consistent with the objective of avoiding large balance of payments deficits. However, in most other cases, nonuniform tariff structures, which take into account price elasticity of import demand and supply would appear, on theoretical grounds, to be more appropriate. For example, arguments for using protection to promote industrial development such as the existence of increasing returns to scale, strategic profit-shifting motives, externalities, are generally industry-specific and hence require a nonuniform tariff structure. Furthermore, if the objective is to maximize the revenues obtained from tariffs, then tariff rates should be inversely related to the price elasticity of demand of different goods. Finally, if the country wants to use the tariff structure to improve the distribution of income, tariffs should be relatively high for luxuries and labor-intensive goods.

In practice, however, lack of information (on demand elasticities, market structures, etc.), administrative convenience, and rent-seeking arguments recommend the adoption of fairly uniform tariff structures. In particular, if tariffs are determined by lobbying, adoption of uniform tariff rules creates a free-rider incentive: a tariff resulting from lobbying by one sector becomes applicable to all other sectors. A study of the tariff reforms in Bangladesh, Brazil, Colombia, Egypt, Ghana and Korea indicates that tariff structures prior to reforms had evolved as a result of compromises between the multiple (and sometimes conflicting) objectives mentioned above [Subramanian, et al. (1993)]. In the initial stages of reform, revenue and income distribution objectives were found to be important determinants of the tariff structure. But, as domestic tax reform and other income-support measures were put in place, these objectives should cease to influence tariff structures. In the above six sample countries, a reduction in the number of tariff rates preceded the reduction in the average level and dispersion of tariffs, with the dispersion being reduced primarily through reductions in the maximum tariff rates. The most comprehensive reforms (Colombia and Ghana) were also accompanied by significantly-reduced fiscal deficits and by the adoption of flexible exchange rate policies.

Empirical studies have also been undertaken of the effects of both country-specific protection policies and multilateral trade liberalizations. Studies of the cost of protection in particular sectors (automobiles, textiles and apparel, steel) provide ample evidence that the gains from protection in terms of jobs saved are outweighed by the welfare loss to the economy [Kelly and McGuirk (1992)]. The quantitative effects of Uruguay Round-type of trade liberalization have been compared using three multilateral models. The analysis suggests that a 4.7 percent increase in world trade would occur if a complete liberalization (including elimination of agricultural subsidies) of trade were to be adopted by industrial countries.

b. Volatile export earnings

Volatile export earnings for commodity exporting developing countries can create serious problems for the management of economic activity and the balance of payments, and the staff has therefore examined various strategies for managing these risks. Since export price stabilization schemes have not generally proven successful, one alternative examined by the staff has been a more diversified agricultural sector [Kelly and McGuirk (1992)]. Fund and World Bank supported adjustment programs have often sought to aid the agricultural sector by reducing distortions or policies that artificially raise agricultural production costs or reduce the prices of agricultural prices (e.g., through protection to the industrial sector and inappropriate exchange rates). Nonetheless, DeRosa (1992) has shown that a commodity-exporting country's ability to diversify exports using "neutral" fiscal measures is likely to be constrained by its factor endowment and the tendency of financial markets to direct resources to other sectors of the economy that are less affected by uncertainty.

c. Regional trade arrangements

The recent trend towards regional trade arrangements has been analyzed in de la Torre and Kelly (1992) and Kumar (1993). These studies provide a comprehensive description of the costs and benefits of regional trade arrangements--both in theory and in practice--and were examined for both industrial countries and developing countries. The emergence of these regional arrangements has occurred despite a move toward greater outward-orientation in trade policies among developing countries.

The emergence of regional trade blocks has raised concerns that such regional arrangements could become a substitute for a multilateral approach to formulating trade policies. The risks of regionalism include the possible diversion of scarce skills from multilateral to regional negotiations, the increased potential for frictions among regional groups, and possible adverse effects on excluded countries [de la Torre and Kelly (1992)]. Moreover, the diversion of foreign direct investment across countries could be strongly influenced by the fear that high external trade barriers will be created by regional arrangements. These global spillover effects do not appear to be given great weight when countries contemplate joining a regional arrangement.

While the objectives of the Internal Market Program of the EC are clearly described, it has been argued that the objectives of the EC's external trade regime are being shaped by both the outcome of the Uruguay

Round negotiations and the efforts to eliminate national restrictions within the Community and to develop an EC external trade policy (an area where advancement has been slow). 1/ The desire to protect domestic producers has resulted in the implementation of essentially defensive policies that seek to protect employment in inefficient or declining sectors--as well as in high tech sectors--at the expense of consumers and efficient producers both within and outside the EC.

A number of mechanisms have been suggested to ensure that regionalism complements rather than substitutes for multilateralism [Kumar (1993)]. One potential measure would be to modify Article 24 of the GATT to allow only for customs unions rather than free trade zones (since this would force less liberal members to lower their tariffs). A second mechanism would be to strengthen multilateral rules, in particular Articles 6 and 19 of the GATT, in order to minimize the recourse to nontariff barriers [de la Torre and Kelly (1992)]. Finally, preferential trade agreements should be open to new members.

The principal agreement that includes both developed and developing countries is the North American Free Trade Agreement (NAFTA), whose potential effects were analyzed recently by the staff (SM/93/2). The study concludes that NAFTA is estimated to result in a cumulative increase in Mexico's GDP ranging from less than 1 percent to some 8 percentage points over a period of 10 to 15 years. The most important benefits will come from dynamic effects and capital flows, which are the most difficult to predict.

Studies on regional trade issues have been accompanied by broader analyses of regional issues. These have included assessment of the structural reform issues facing Arab countries [El-Erian and Tareq (1993)], as well as the potential impact on the Middle Eastern economy of a comprehensive peace in the region [El-Erian and El-Naggar (1993)].

VI. Economies in Transition

Neither history nor economic theory could provide much guidance for designing a process to transform centrally planned economies into market systems. Thus, considerable research effort has been devoted to the most pressing issues of the reform strategy and to evaluation of the results of the policies implemented.

1. Strategy

Calvo and Frenkel [(1991a) and (1991b)] identified and studied some of the main obstacles in designing a strategy for the reform of centrally planned economies. 2/ In particular, they stressed the potentially

1/ See Xafa, Kronenberg, and Landell-Mills (1992).
2/ On Russia, see Odling-Smee and Lorie (1993).

destabilizing effects of the anticipation of price increases by consumers and enterprises, the risks that the segmented and underdeveloped financial markets could fail to perform their necessary function, and the advisability of taking early and forceful action to reduce the distortions created by large previously accumulated enterprise debts.

The early experience of economic reform was reviewed by Bruno (1992), who studied the performance under IMF programs of five Eastern European countries. Notwithstanding individual country differences, this paper found generally good adjustment on the macroeconomic front, but much slower progress with other structural reform problems, in particular, those associated with the tax structure, bad loan portfolios and enterprise arrears, and with the management of state-owned enterprises. IMF (1991 and 1992) reviewed the initial experience of stabilization and reform efforts in Eastern and Central Europe. Borensztein (1993) concluded that there was no real alternative to the "big bang" liberalization of domestic prices and foreign exchange markets because the political changes had completely eroded the authority of government agencies to command production and consumption using central planning methods. Aizenman and Isard (1993b) focused on the interaction between macroeconomic stability, political support, and adequate private investment.

2. Price liberalization

Price liberalization is perhaps the most fundamental reform for economies in transition. In fact, it can be considered the defining measure of whether an economic system is still centrally planned or a market-oriented one. In judging the response to price liberalization, it should be considered that price increases--as measured by the usual indexes--overstate the true magnitude of inflation in terms of its impact on consumers' welfare (and, conversely, output indexes overstate declines in production) [Osband (1991)]. The reason is that pre-liberalization prices do not reflect market-clearing values and thus exaggerate the importance of goods that were relatively overvalued before liberalization; in addition, price indexes usually do not correct for improvements in product quality.

Research in this area has pointed out many difficulties associated with a gradual or staged liberalization. In the context of a dual state/private enterprise system, small increases in administrative prices may in fact worsen shortages by pulling resources away from private suppliers [Dinopoulos and Lane (1992)]. This finding argues for a quick and comprehensive price liberalization, as does the study by Agénor (1993) of anticipatory responses by state and parallel market producers to a pre-announced price reform or to an uncertain future course of administered prices. Moreover, Lin and Osband (1992) and Lin (1992) show that the existence of a large monetary overhang does not constitute a reason to fear the onset of a hyperinflationary process provided that destabilizing wage adjustments are avoided. However, pre-existing distortions, such as a monopolistic market structure, may thwart a positive supply response to price liberalization and produce output losses [Fanizza (1992)].

In the Russian context, Koen and Phillips (1993) observed the larger than expected magnitude of price increases after the liberalization of 1992, and the lack of convergence--in contrast to other transition economies in Eastern Europe. Kumar and Osband (1991) focused on the strategy for energy price liberalization, which is especially important given the huge discrepancy between domestic and international prices and its large contribution to export revenues despite sizable domestic consumption.

3. Liberalization of foreign exchange markets

In this context of distorted and insufficiently developed domestic markets, the role of liberalizing foreign exchange markets becomes crucial. Greene and Isard (1991) studied the preconditions necessary for the introduction of currency convertibility. While appropriate exchange rate, international reserves, and macroeconomic policies, together with a market orientation of economic agents, can support the introduction of convertibility for current account transactions, the risks associated with capital account convertibility--relating to capital flight and exchange rate volatility--appear higher.

The pros and cons of different exchange rate regimes for the needs of economies in transition were studied by Borensztein and Masson (1993), focusing particularly on the experiences of five Eastern European economies in 1990-91. While pegged exchange rates have played an important role as nominal anchors and as guides for determining domestic prices initially, they may impose stiff requirements for financial policies in the transforming economies. One particular exchange rate system with especially attractive features for economies in transition is the currency board, where the exchange rate is irrevocably fixed and the domestic currency is 100 percent-backed by foreign reserves. Osband and Villanueva (1992) describe the functioning of this type of exchange rate system, the historical experiences with its application, and its main advantages and disadvantages. Bennett (1992) reviews the experience with the Estonian currency board implemented in June 1992. The distortions created by the complicated multiple exchange rate system of Russia, and the implications of the (partial) unification of July 1992 for different participants and their transactions were studied by Goldberg (1993a and b).

4. Monetary policy

The conduct of monetary policy in transition economies has a number of special difficulties. These difficulties arise not only from the fact that financial markets were perhaps the institutions least prepared for the market in these economies, but also because of the deeply ingrained nonmarket operational modes of state banks and state enterprises. Calvo and Kumar (1993) highlighted the problems of bad loan portfolios, undercapitalization of banks, uncertainty about the true profitability of enterprises, limited competition in the banking system, and the absence of securities markets. These conditions imply that the tightening of monetary conditions may have large output effects because enterprises and consumers may have little flexibility with which to adjust to monetary shocks. 1/

Bennett and Schadler (1992) point out that some institutional features of transition economies may cause interest rates to work in surprising ways. When interest rates are increased, the financial position of state enterprises is negatively affected, which may prompt governments to come to their support, for example by increasing bank credit to enterprises. The paradoxical result of this scenario is that an increase in interest rates may bring about an increase in inflation. Hardy and Lahiri (1992) cautioned about another channel, namely, the public's fears of bank insolvency owing to poor loan portfolios. Market liberalization may thus trigger a run on bank deposits, with ensuing output loss and inflation acceleration as consumption increases and investment collapses. The problems attendant to interstate clearing and settlement in the former Soviet Union were studied in EBS/92/205, which highlights the different sources of risk to the system during the transition and the need for adequate settlement arrangements to restore monetary control, and outlines necessary procedures to reform the payments system.

Many of the newly independent countries of the former Soviet Union decided to issue their own national currencies. The necessary institutional and policy arrangements for the introduction of a new currency are reviewed by Abrams and Cortés-Douglas (1993). The issues covered include exchange rate arrangements, the issuance of coupons, currency reform, production of new notes, and problems relating to the conversion to the new currency. The historical experience of the dissolution of the currency union between the successor states of the Austro-Hungarian empire in 1918 was reviewed by Garber and Spencer (1992). That experience emphasizes the potential emergence of arbitrage opportunities when currency separation is not undertaken simultaneously in all regions. This creates incentives for a rapid breakaway of individual states and the need for defensive currency reforms in countries remaining in the currency union. Bredenkamp (1993) discussed the advantages and disadvantages of different exchange rate arrangements for the republics of the former Soviet Union. He found that some flexibility in the exchange rate system appears to be necessary at least initially, which implies that some monetary aggregate should be chosen as the nominal anchor. Credit ceilings would still be necessary for monetary control in the immediate future, but free interest rates and central bank independence could be rapidly implemented.

1/ The Research Department cosponsored with the World Bank a conference on "Building Sound Finance in Emerging Market Economies" in June 1993. Papers were presented on topics that included the bad loans problem, central bank and payments systems, the creation of a sound financial system, and credit market imperfections.

5. Fiscal policy

The design of fiscal policy in economies in transition also is hindered by a number of unprecedented difficulties, including those arising from an inadequate tax system, the large state enterprise sector, and a host of institutional deficiencies. A volume edited by Tanzi (1992b) compiled research work on the fiscal policy problems of transition economies, including studies on the financing of deficits and public debt management, tax reform and administration, public expenditure policy and social security and safety nets. A second volume published in 1993 [Tanzi (1993b)] collected studies on the implementation of fiscal policy in 15 transition economies in Central and Eastern Europe, Asia, and Africa. This work was also complemented by comparative studies on fiscal adjustment processes by Kopits (1991 and 1993). 1/

One immediate lesson to be drawn from the experience of fiscal policy implementation is that conventional indicators of fiscal policy, such as the budget deficit, might not be as transparent for economies in transition [Tanzi (1993a)]. The reason is that a decline in the revenue-to-GDP ratio is unavoidable under the new system because the most dynamic part of the economy, small service-oriented businesses, is hard to tax, and tax revenue from large, state-owned enterprises falls, either because of a drop in profits or because of arrears [Kopits (1991), Tanzi (1991b)]. At the same time, alternative forms of income taxes may be difficult to implement [Tait (1992)].

Furthermore, some conventional policy prescriptions might not produce the expected results during the transition. Mobilization of savings, for example, is not sufficient when there are still numerous impediments to their rational allocation. While the modernization of financial institutions and markets is a necessary condition for improving the allocation of savings, significant changes in the tax system are also required to assist in their efficient allocation [Tanzi (1991a and 1992a)].

6. Output declines

Despite initial hopes for rapidly becoming prosperous market economies, the first stage of the reform process has involved sizable output declines for economies in transition. While the true extent of the output decline may be exaggerated by available statistics and the drop be partly caused by exogenous factors associated with the demise of the CMEA trade system, the question of what would be an appropriate policy response under the circumstances deserves attention. Calvo and Coricelli (1992) focused on the conduct of credit policy in the underdeveloped financial markets that

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1/ The Fiscal Affairs Department recently launched a seminar series on topical fiscal issues, which has resulted in short analytical notes for mission and policy-oriented work. Many of the seminars and notes have focused on economies in transition.

prevailed in the transition economies of Eastern Europe. They argued that the sharp increases in (the previously highly subsidized) input prices created a squeeze in available working capital and a consequent contraction of supply. Borensztein, Demekas and Ostry (1992) and Borensztein and Ostry (1992) analyzed several aspects of the output declines in a number of Eastern European economies. They found that both supply-side and demand-side factors were important determinants of output changes at different times, and that there was little evidence that a significant reallocation of productive resources had in fact taken place under the guise of an aggregate output fall. 1/

Despite the immediate negative output repercussions of the reforms, longer-term growth prospects appear favorable. Borensztein and Montiel (1991) argue that once unviable investments are weeded out, the productivity of capital should be very high in the transforming economies, which implies that with even moderate rates of investment the rates of output growth can be significant. In addition, the desirability of certain macroeconomic measures to ameliorate unemployment is difficult to assess. Chadha, Coricelli and Krajnuyák (1993) warn about the possibility that using subsidies to support state enterprises to reduce unemployment may have undesired effects in the long run, because such subsidies may retard or even impede the development of competing private enterprises. Aizenman and Isard (1993c) focus on the consequences of future policy uncertainty for effort and the responsiveness of output to market signals.

7. Privatization

Because of the magnitude of the state enterprise sector, privatization is one of the most challenging reforms confronted by transition economies. Compounding this is the absence of capital markets, the difficulties involved in obtaining a valuation of enterprises, the scarcity of domestic savings, and the distributional effects involved. The research effort in this area has been centered on evaluating the desirability of different strategies for mass privatization or conventional sales and their macroeconomic implications, and the lessons that can be drawn from experience with their application [Adam and Schwartz (1992), Borensztein and Kumar (1991), Hemming in Tanzi (1992b), Husain and Sahay (1992), Schwartz (1991a), Schwartz in Tanzi (1993a), Schwartz and Silva Lopes (1993b)]. The experience with privatization in the former East Germany was reviewed in Bös (1992) and that of Hungary by Schwartz (1991b).

1/ In a Fund-Bank conference on the "Macroeconomic Aspects of Adjustment in Eastern Europe" in June 1992, papers were presented on many topics relating to the output decline, including measurement problems, the effect of the CMEA shock, the role of credit, the extent of enterprise adjustment, and case studies of five countries.

8. Reform of state enterprises

Because of the political and technical difficulties in the implementation of privatization, the transition economies are likely to contain a sizable state enterprise sector for a lengthy time. Therefore, the issue of the reform of state enterprises becomes crucial to mitigating some of their distortionary effects. Dooley and Isard (1992) proposed an active role for government agencies in the restructuring of state-owned enterprises in view of the still insufficient institutional development in areas such as bank regulation and bankruptcy laws. Hardy (1991) warned about the lack of credibility of efforts to enforce adjustment on loss-making enterprises without the existence of appropriate safety net provisions.

Some specific distortionary aspects of the performance of state enterprises were also investigated. Milesi-Ferretti (1992) analyzes the tendency of state enterprises to grant excessive wage increases; this tendency reduces fiscal revenues (through a fall in the profits tax), and generates a decapitalization of enterprises, contributing to increased inflation. Aizenman and Isard (1993a) propose tax and subsidy measures to counteract production externalities by certain state enterprises that may generate "bottlenecks" for the economy. Husain (1992) studies the interaction between state and private enterprises which compete with demand for the same (nontraded) productive inputs.

Several studies have focused on country experiences in dealing with attempts to impose financial discipline on state enterprises. Khan and Clifton (1992) reviewed the experience of Romania in dealing with large interenterprise arrears. Bigman and Leite (1993) and Ickes and Ryterman (1993) also studied the interenterprise arrears problem in Russia.

9. Case studies

In addition, the specific experiences of several economies in transition were examined in case studies, comparative studies, and other projects dealing with particular aspects of the reform experience, including studies that were incorporated in Board documents on certain countries. 1/

1/ Among these are Blejer, et al. (1992) on Albania, SM/93/28 on Algeria, SM/93/56 and Bell and Kochhar (1993) on China, Aghevli, et al. (1992) on the Czech and Slovak Federal Republic, SM/92/84 on Laos, Milne, et al. (1991) on Mongolia, Lane (1991) on Poland, Demekas and Khan (1991) on Romania, and Lipworth and Spitaller (1993) on Vietnam.

VII. Fiscal Issues

1. Fiscal policy and management

a. Overall fiscal positions

There is continuing research work on properly measuring fiscal positions and on developing and refining fiscal indicators. A substantial part of the recent work is collected in a volume edited by Blejer and Cheasty (1993a). 1/ Among the topics covered in this volume are: the basic measurement issues, by Tanzi (1993); the informational content of various indicators, by Mackenzie (1993); and Chand (1993) focuses on the traditional fiscal impulse measure. 2/ Among the papers dealing with adjustments to traditional fiscal accounts, the impact of inflation is considered by Tanzi, Blejer, and Teijero (1993). On coverage issues, Robinson and Stella (1993) focus on the amalgamation into the overall accounts of the central bank's position, an appropriate precursor to discussion of the public sector's intertemporal budget constraint. The papers by Blejer and Cheasty (1993c) and Buiter (1993), for example, then bring into focus the advantages (and difficulties) for fiscal analysis of integrating public sector stocks and flows in a forward-looking framework. 3/

The increased emphasis by the major industrial countries on medium-term fiscal strategies to consolidate their public finances has led to further research re-examining the informational content of fiscal indicators. While the fiscal impulse measure has been an important tool for analyzing the stance of fiscal policy over short-term horizons, research has more recently been directed to the development of indicators for the medium term of structural budget positions--broadly defined as the budget balance adjusted for the effects of the business cycle [WEO Annex I (1993)].

An important additional contribution to the discussion of fiscal positions comes from the work on quasi-fiscal operations of central banks and other public financial institutions [Fry (1993)]. Experiences of 26 developing countries illustrate how fiscal abuse of central banks takes place as they are obliged to undertake quasi-fiscal activities on behalf of the government. To the extent that these operations do not appear in the budget, measures of fiscal positions are subject to severe limitations.

For developing countries, recent work has included an assessment of fiscal adjustment in low-income countries with Fund-supported SAF and ESAF

1/ See also Blejer and Cheasty (1993b) for an overview of the issues and a detailed guide to the papers presented in the volume.
2/ See also Schinasi and Lutz (1991).
3/ See also Guidotti and Kumar (1991).

programs [Nashashibi, et al. (1992), Gupta and Nashashibi (1992)]; 1/ the issue of fiscal sustainability and external viability [Horne (1991), Haque and Montiel (1993)]; appropriate debt-management strategies for a developing country Chelliah (1991); and distributional and employment questions that arise in the context of macroeconomic adjustment Clements (1991). Ongoing work concerns the role of fiscal policy in promoting growth.

b. Taxation

Research on taxation has focused on international comparisons of tax rates, tax policy design, and various aspects of tax policy in an applied, country-specific setting. Mendoza, et al. (1993) present new estimates of effective tax rates on capital income, labor income, and consumption for the G-7 countries, which are to be incorporated in the Fund's MULTIMOD policy simulation model. Ongoing research has also attempted to assess the scope for new taxes, particularly those affecting corporate income. In several instances a tax on the value of assets could have several advantages over a tax on realized income [Sadka and Tanzi (1992)]. For practical reasons, however, an assets tax should be used as a supplement or minimum contribution to an existing corporate income tax, as has been the case in several Latin American countries. A cash-flow tax as an alternative to an existing corporate income tax, while attractive on theoretical grounds, would be difficult to implement in a single country [Shome and Schutte (1993)]. Research has been done on a variety of other issues, for example those relating to taxes and price levels [Kleiman (1993)]; on the implications for tax policy in an inflationary environment [Tanzi (1992)] and on specific tax problems that arise from intercompany transfer pricing [Ikeda (1992)].

Applied country-specific research has focused on the economies in transition, the EC, and on developing countries, with emphasis on Latin America.

For the EC, tax harmonization has received some attention as it raises a number of tax policy issues, including that of corporate tax harmonization. Overall, the static efficiency gains from equalization of tax burdens are likely to be small. However, following the dismantling of barriers to the free flow of capital, EC countries are likely to be under pressure to engage in spontaneous, downward harmonization of their statutory corporate tax rates [Kopits (1992a)]. The scope for reforming European Community tax systems has been analyzed in detail by using the financial sector in Italy as an example [Cangiano (1993)].

For Latin America, research has concentrated on the tax reforms of the 1980s, which simplified tax structures and facilitated tax administration by introducing broad-based, low-rate consumption taxes, while reducing the

1/ A more general assessment of performance under ESAF arrangements is contained in Schadler, et al. (1993).

steeply progressive income and property tax rates [Shome (1992)]. These reforms helped increase revenue as a percentage of GDP. In a more specific study, for the case of Mexico, the fiscal implications of removing quotas and tariffs as a part of trade liberalization have been examined and it was shown that an increase in domestic taxes might be necessary to compensate for short-run revenue losses [Feltenstein (1992)].

Finally, issues pertaining to value-added taxes have been analyzed in a broad cross-country context [Tait (1991b and 1992a)], but also specifically for developing countries [Mackenzie (1991a)]. On the special tax problems facing a specific country, questions relating to the tax treatment of mining companies in Guinea, for example, have been addressed in SM/93/129.

c. Tax administration

Improving tax administration in both developing countries and the economies in transition is important for strengthening fiscal positions [Bird and Casanegra de Jantscher (1992), Casanegra de Jantscher, et al. (1992), Tait (1992b)]. While there is no single recipe for successful tax policy and tax administration reform, experience shows that there are three essential ingredients: the simplification of taxes, a comprehensive strategy that sets priorities and guides the reform process, and a strong commitment by both policymakers and tax administrators [Bird and Casanegra de Jantscher (1992)]. While much of the work has concentrated on conventional reforms, a revival of an approach to tax administration, which involves privatizing tax administration (also called "tax farming"), has been analyzed in Stella (1993).

The tax administration in economies in transition must be modernized to address the various structural changes; failure to modernize could create macroeconomic imbalances owing to an inability to generate sufficient government revenue [Casanegra de Jantscher, et al. (1992)]. Introducing value added taxes is generally recommended, but special attention needs to be given to administrative guidelines, books of account, organizational issues, computerization, and audit procedures [Tait (1991a)].

d. Expenditure policy

Research on expenditure policy has focused on improving the understanding of the macroeconomic and structural implications of the level and composition of expenditures, and on delineating expenditures that are "unproductive." Against this background, a public expenditure handbook has been prepared, which provides an overview of fundamental issues and a summary of recent research [Chu and Hemming (1991)]. The handbook should assist Fund staff in addressing practical policy issues in the expenditure area. Other papers in the handbook address the framework for public policy analysis and issues pertaining to major expenditure categories, including social expenditures, income distribution, social safety net and poverty, and conceptual problems that arise in the context of Fund-supported programs.

Separately, expenditure responses of countries that depend on the export of a few commodities have been analyzed [Gupta and Miranda (1991)].

Research has also been undertaken on specific expenditure categories, for example, government wages, employment, and subsidies. On the basis of wage and employment data for the 1980s for a large number of industrial and developing countries, the determinants of central government wage and expenditures have been studied [Hewitt and van Rijckeghem (1993)]. It seems that countries with a federal system, high population, high per capita income, and large indebtedness tend to have relatively lower wage expenditures. Research is under way to investigate the impact of resource constraints and unemployment on public sector wages and employment separately. Similarly, cross-country trends and determinants of government subsidy practices are being studied. There is a significant variation in subsidies across countries but relatively little variation over time; the former socialist economies have made significantly more use of subsidies than mixed economies, a finding that confirms earlier research by Holzmann (1991). An interesting, though preliminary, result is that the presence of Fund-supported programs significantly reduces subsidies, and that this impact appears to be stronger for the poorest countries in the data set. The research in other expenditure categories (for example, outlays on military and social safety nets) is reported below.

e. Public expenditure management

Much of the research on expenditure management has grown out of technical assistance work. The most complete record of the Fund's experience is contained in a book on public expenditure management [Premchand (1993a)], which builds on an earlier volume [Premchand (1990)]. Research that previously focused on the special problems of developing countries is now more directed toward the problems of economies in transition [Allan (1992)]. This research is concerned with analyzing how conflicts between objectives arise and how to avoid them; adapting procedures used in market economies to economies in transition; formulating strategies for improvements in financial management systems; conceptualizing design of treasury management systems [Premchand (1993b)]; and optimizing the phasing of the budget cycle. 1/

2. Special fiscal issues

a. Intergovernmental fiscal relations

The staff has recently started a work program on the macroeconomic aspects of intergovernmental fiscal relations. Some exploratory work has been completed [Hardy and Mihaljek (1992)], but the bulk of the output is under preparation. The focus is on major theoretical and practical issues

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1/ As a basis for advice to economies in transition, a paper is being prepared on developing the legislative framework for a budget law.

that are associated with the design of revenue sharing and expenditure assignment, and the implications for tax administration, budgeting, and financial management. Consistent definitions and measurements of decentralization across countries are needed most. One possibility that has been explored is based on the Fund's Government Finance Statistics Manual [Levin (1991a)], which has helped to clarify a number of important distinctions between policy, financing, and administrative responsibilities at various levels of government. This work is complemented by a paper discussing transfers to local governments [Hewitt (1991d)] and a discussion on fiscal federalism in economies in transition [Hewitt and Mihaljek (1992)]. More detailed analyses are contained in various case studies from industrial, developing, and transition economies, including: work on Yugoslavia [Mihaljek (1993)], the newly independent countries of the Former Soviet Union (FSU) Kochhar and Mihaljek (1993)), the United Kingdom [Bayoumi and Gordon (1991)], and Ethiopia (SM/93/102).

b. Social safety nets

As the Fund continues to encourage member countries to mitigate the adverse short-run effects of economic reforms on poorer groups during the program period, much of the research on social safety nets has had an applied focus. A number of country-specific studies have been prepared detailing the social safety net measures adopted in different countries during implementation of Fund-supported programs [Gotur (1991) on Bangladesh, Liuksila (1991) on Colombia, Ahmad (1991) on Jordan, Lopes and Sacerdoti (1991) on Mozambique, Maret and Schwartz (1993) on Poland, and Gulde (1991) on Sri Lanka]. Country-specific work has continued mainly on the Russian Federation [Ahmad and Chu (1993)], but has also been extended to FSU countries as a group [Ahmad (1993) and Ahmad and Schneider (1993)]. Issues that arise in the design of social safety nets in economies in transition, particularly the FSU countries, have been studied extensively [Paull (1991), Ahmad (1992a) and (1992b), and Chu and Gupta (1993)].

c. Social security

The aging of the population of industrial countries will raise the dependency ratio, and will require structural reforms of their social security systems to prevent these systems from becoming an increasing burden on the public finances. [Kopits (1993)]. The mature social security systems of Belgium, France, and Italy are posing problems for fiscal consolidation in these countries. In the absence of reform, the combination of adverse demographic trends and the generosity of current policies will increase the burden of social expenditures that are already high. Relatively high levels of payroll taxes in all three countries have resulted in limited room to maneuver on the revenue side; as a result, the focus of reforms will have to be on streamlining benefits. In Belgium, this will entail simplifying an administratively complex systems and cuts in health care expenditures (SM/92/222); in France, it will require changing the indexation system, tightening the links between contributions and benefits, and increasing the contribution period (SM/91/169); in Italy, it will necessitate increasing the standard retirement age, reducing eligibility for early retirement, and extending the contribution period (SM/91/12, Supplement 1). In Japan, the rapid aging of the population poses particular difficulties (SM/92/131, Supplement 1).

The problems of existing social security systems of economies in transition have been analyzed by Kopits (1992b). Apart from imposing a heavy fiscal burden, these systems also encourage waste, inhibit incentives to work and save, and fail to provide a safety net for the very poor.

The Chilean reform, for example, is often cited as a possible solution for other countries; however, the Chilean system may not be appropriate for every country because, inter alia, it requires a reasonably stable financial environment, does not guarantee any given replacement ratio, and does not necessarily lead to an increase in overall savings [Mackenzie (1991b)].

d. Environment

The Executive Board determined that the Fund staff should not carry out basic research on the environment, but should draw on the work of other allied organizations. Within these guidelines, the staff has continued to monitor work being done by other international organizations, national authorities, and with others in areas where there may be linkages between the environment and macroeconomic stability. These linkages take one of two forms; they may refer to (1) the impact of Fund-recommended macroeconomic and structural polices on the environment, or (2) the impact of environmental conditions and policies on macroeconomic aggregates and the effectiveness of macroeconomic policy instruments. The work is reflected in a number of papers that have been prepared by Fund staff, including those on the interaction between the environment and macroeconomic policies [Gandhi and Nellor (1991), Miranda and Muzondo (1991), Nellor (1993)]; tax policies [Herber (1992), Muzondo (1993)]; trade policies [Uimonen (1992)]; and expenditure policies [Gupta, et al. (1993)]. Research has also has been done on the treatment of depletable resources in national accounts [Levin (1991b)], and on providing a possible analytical framework for environmental issues [Levin (1993)]. A paper that is presently being prepared--to be issued as background information for the Executive Directors--highlights the results of the work completed.

e. Military spending

The staff has been conducting research on the economics of military expenditure. The initial work has focused on establishing a consistent and reliable data base for military spending, to analyze trends and determinants over time and to make comparisons across countries [Hewitt (1991a, 1991b, 1991c)]. The net creditor developing countries have spent a relatively larger share of their national income on the military while developing countries have lowered their military spending in recent years, both as a share of GDP and as a proportion of total government spending. Further data has shown that GDP, the availability of external financing, the form of government, and the existence of armed conflict influence military spending levels [Hewitt (1993)]. One of the potential economic effects of a 20 percent worldwide decline in military spending spread over five years would be to initially reduce real GDP, but, over the medium term, an increase in private consumption and investment which would lead to an increase in real GDP. The estimated gains could be substantial, particularly for developing countries, but would accrue mainly in the long run [Bayoumi, et al. (1993)].

VIII. Monetary and Financial Sector Issues

Research on monetary and financial sector issues is a joint product of the functional departments, such as Research, Monetary and Exchange Affairs, and Policy Development and Review, and of the area departments. The combined effort has been substantial, and has dealt with issues in industrial countries, developing countries and countries in transition. While some of the output has been theoretical, the bulk of the work has been empirical and policy-oriented. Most of it has been concentrated in the areas of money demand, design and implementation of monetary policy, and on financial sector reform (including in countries in transition).

1. Money demand

The design and implementation of effective monetary policy hinges on the stability and short-run dynamic properties of the demand for money. As a result, the apparent instability of money demand throughout a wide range of industrial and developing countries during the 1980s, was a major stimulus to empirical research on money demand. Fund research on this topic has covered both industrial and developing countries, and can be categorized around three principal themes: long-run stability properties, short-run dynamics, and the phenomenon of currency substitution.

Recent papers have applied complex dynamic model specifications and advanced time series econometric techniques to data drawn from a large number of industrial and developing countries. These studies have consistently found a stable long-run demand function and have identified a variety of factors which appear to have caused the earlier instabilities in money demand. 1/ These factors include the term structure of interest rates and shifts in income velocity, exchange rate and inflation expectations [Boughton (1992)]. Surprisingly, innovation and financial sector deregulation, once suspected of being the main cause of instability, were not confirmed as quantitatively important in either the industrial or developing countries [Boughton (1992) and Tseng and Corker (1991)]. Other work showed that a stable money demand could extend beyond national

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1/ See Arrau, et al. (1991), Boughton and Tavlas (1991), Citrin, et al. (1992), Traa (1991), Tseng and Corker (1991), Germany (SM/92/199), and United States (SM/92/168).

boundaries and encompass regional monies, as in the case of the EC [Kremers and Lane (1990)].

Work on the dynamic properties of money demand has been dominated by the use of the error correction model, which has facilitated the discovery of more complex theoretical specifications and richer dynamics. In some instances, it appears to have been possible to isolate a stable short-run demand for money [Boughton (1993)]. However, the robustness of the results obtained using the error correction model can be questioned [Citrin, et al. (1992)], and the apparent short-run instability of money demand has continued to create policy difficulties in major industrial countries, for example the United States (SM/92/168) and Germany (SM/92/199).

Currency substitution can be broadly defined as the use in a particular country of multiple currencies as media of exchange and stores of value. Renewed interest in this subject has been stimulated by the need to explain the apparent stability of regional money demand in Europe, as well as by the identification of exchange rate expectations as a cause of unstable money demand more generally. In Lane and Poloz (1992) and Boughton and Tavlas (1991), it is shown that currency substitution is an important determinant of money demand in European countries. In addition, it is argued that pervasive currency substitution effects can explain why an EC-wide monetary aggregate tends to be more stable than individual national aggregates [Lane and Poloz (1992) and Kremers and Lane (1992)]. Also supporting the presence of currency substitution are tests which show that an EC-wide monetary aggregate contains important leading information about inflationary developments in individual EC countries [Bayoumi and Kenen (1992)]. An important implication is that an EC-wide monetary aggregate could be a useful intermediate target to facilitate the coordination of national monetary policies in Europe during the transition to full monetary union.

Currency substitution continues to be a popular research topic in developing country economies. 1/ Analytical work [Calvo and Végh (1992) and Rodriguez (1992)] shows that currency substitution in money demand could exacerbate exchange rate volatility, enhance business cycle fluctuations, or cause destabilizing capital flows. Thus, the phenomenon could have important implications for the design and selection of stabilization policies. Moreover, currency substitution is widespread [Agénor and Khan (1992)], and tends to persist long after its initial causes have disappeared [Clements and Scwartz (1992)]. Finally, currency substitution is an important determinant of money demand in some former centrally planned economies [Lane (1992)].

1/ See Agenor and Khan (1992), Calvo and Vegh (1992), Clements and Schwartz (1992), and Rodriguez (1992).

2. Design and implementation of monetary policy

Research on monetary policy issues has concentrated principally on three topics.

a. Rules versus discretion in policy formulation

The perceived difficulty in estimating a stable demand for money has contributed to a reopening of the old debate on rules versus discretion. To show the limitations of a rules-based approach, the recent Japanese experience with discretionary monetary policy has been compared to counterfactual simulations of an econometric model using simple monetary policy rules that target money supply, nominal income growth and price inflation [Meredith (1992)]. The best economic performance occurred when monetary policy was discretion-based. While the methodology of these simulations can be criticized [McCallum (1992)], the results appears to be robust.

Of course, it does not follow that the Japanese experience can be generalized to encompass countries where the credibility and commitment of the monetary authorities to monetary stability is less well established. In such cases, it can be argued that the balance favors the rules-based approach, which may help to convey the commitment to the long-term objectives of monetary policy, and so help to stabilize inflationary expectations [Guitian (1992)].

A particularly strict form of rule is the currency board, which issues domestic currency only by purchasing foreign currency, thus ensuring its convertibility. Because currency boards can provide instant credibility, they can promote the rapid lowering of inflation expectations [Osband and Villanueva (1992)]. In addition, in countries where government debt markets are not well developed, their use can encourage fiscal restraint. These features make the currency board an attractive option for economies in transition [Bennett (1992), and Schmieding (1993)] and, indeed, Estonia's initial experience in containing inflation by adopting a currency board has been positive. At the same time, it has been recognized that currency boards involve an extreme form of macroeconomic shock therapy, which may imply that good inflation performance will be accompanied by a sharp output decline [Schmieding (1993)].

b. The monetary policy transmission mechanism

The relation between financial developments and real activity has attracted much attention in connection with the deceleration of world economic activity observed in the last few years. The result has been new evidence of a direct relationship between economic activity and movements in asset prices which are sensitive to variations in monetary policy. Real estate prices now appear to be an important transmission channel in the United States and the United Kingdom [Schinasi (1992)], as are equity prices in Japan [Meredith (1991)]. More ambiguous results were obtained from other research on the U.S. economy, which focused on whether there had been a "credit crunch" associated with the weakened financial position of the banking system [United States (SM/92/168)]. There was, however, some evidence of credit rationing in Canada [Lee (1993)]. In former centrally planned economies (particularly in Eastern Europe), the relationship between bank credit and economic activity was quite strong [Calvo and Coricelli (1992)]. Evidently, this was the case because these economies lacked financial markets to provide a direct link between sources (households) and users (enterprises) of saving.

c. Instruments and indicators of monetary policy

Research on monetary policy instruments focused on reserve requirements, both as an instrument of monetary policy and as a tax or fiscal instrument. Reserve requirements are used most actively as a policy instrument in developing countries [Hardy (1993)], but their effects have been of interest also in industrial countries such as Italy, where they have been kept at relatively high levels [Mohlo (1992)].

As to the indicators of the stance of monetary policy, the shape of the yield curve (the term structure of interest rates) has been shown to contain leading information on the evolution of economic activity in some countries [Hu (1993) and Taylor (1991)]. In countries with floating exchange rates, it has been shown that indexes of monetary conditions based on weighted averages of real interest rates and real exchange rates contain similar leading information [Alexander, et al. (1993) and Meredith (1991)]. Both indicators have been used by staff to assess the future impact of current monetary policy settings in particular countries.

3. Financial sector reform issues

Fund research on financial sector reform focuses on two main areas. These include the relationship between financial development and economic growth, and the process of financial reform.

a. Relationship between financial development and economic growth

One important area of Fund research is the determination of whether there is a relationship between financial development and economic growth and, if so, what its strength is, and the channels through which it operates. According to one study that uses cross-country analysis for a large set of countries over the period 1960-85, there was a fairly strong statistical relationship between financial intermediation measured as bank credit to the private sector (scaled by GDP) and economic growth [De Gregorio and Guidotti (1992)]. Another study finds a positive statistical relationship between financial deepening (measured as the ratio of the stock of liquid liabilities of the banking system to GDP), and the economic efficiency of resource utilization (measured as the incremental output-capital ratio) for a large group of developing countries over the period 1961 to 1990 [Odedokun (1992)].

b. Process of financial reform--patterns and policy lessons

Several recent studies have examined the process of financial reform in particular countries. 1/ In general, financial reform programs in these countries have included measures to liberalize financial markets, increase competition in banking, and develop indirect instruments of monetary management to replace direct instruments. Also, financial reforms often need to shift or eliminate various costly fiscal functions that central banks frequently are required to perform [Fry (1992)].

As to the effects of reform, certain patterns were seen to recur [Bisat, et al. (1992)]. Typically, financial liberalization was followed by a period during which bank credit growth exceeded growth in bank deposits. Financial reform was associated with increases in real interest rates and in ratios of money, financial assets and credit to the private sector to GDP. Before reform, deposit growth was generally slow, in part because of negative real interest rates. After financial liberalization, both credit and deposit growth increased, but the response of credit growth was initially more rapid than deposit growth. Financial reform was also associated with an initial increase in bank lending margins, as the removal of interest rate controls allowed banks to price credits and risks more appropriately. In several countries undergoing financial reform, financial crises developed in which banks became insolvent on a large scale, financial disruption occurred and significant declines occurred in output.

The stresses that sometimes can accompany financial reform have been examined in research papers on high interest rates and on deposit insurance [Galbis (1993) and Isard, et al. (1992)]. Real interest rates were almost invariably negative before financial liberalization, but following financial liberalization, they generally increased and frequently were relatively high. With regard to deposit insurance, it appears that the effects of financial liberalization on the banking system may raise its cost, even when the reform seeks to provide enhanced banking regulation and supervision.

Other recent research has analyzed the experience of financial sector reforms undertaken by countries with the support of an Enhanced Structural Adjustment Facility (ESAF) arrangement (EBS/93/21). This research constructs a profile of a financial system for a typical country entering into an ESAF arrangement. In this profile, financial reforms produce some encouraging tendencies. In particular, real interest rates increased and became positive. Banks began to obtain a higher margin on their lending activities. However, there was no indication that financial reforms increased saving rates of individuals. Effective implementation of prudential regulations seemed to be a particular problem and tended to lag behind progress in other areas, while addressing the problems of troubled financial institutions was especially slow. One of the lessons from this

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1/ See Blejer, et al. (1992), Cardemil, et al. (1992), Coorey (1992), Pastor (1993), and Spitaller and Galy (1992).

experience is that if progress in liberalizing financial markets runs too far ahead of improvements in banking supervision, the result can be financial distress in the banking sector.

IX. Exchange Rate Behavior

The importance attached to the exchange rate as a policy tool and as an indicator of economic conditions explains why work on this topic makes up a substantial proportion of the research output of the Fund. This section describes the main issues covered by this research.

1. Empirical regularities in exchange rate behavior under alternative regimes

The analysis of exchange rates in both the short and long term, and the models that explain such behavior may yield information as to whether markets are operating efficiently, and what measures may improve the situation. Insight may also be gained on other issues such as the links between currency volatility and the exchange rate regime.

a. Short-term exchange rate movements

Three stylized facts about the behavior of (nominal) exchange rates that have emerged during the floating exchange rate period may be highlighted. They are that large positive and negative exchange rate changes occur more frequently than might be expected, that periods of high volatility tend to follow other periods of high volatility, and that both tendencies diminish as lower frequency data are examined. 1/ Concurrently, the short-term behavior of the exchange rate may be dominated by speculators, and the debate as to whether or not speculative forces stabilize market prices continues. The influence of noise traders, who extrapolate previous trends and drive the market price from the "true" fundamental price, is also of interest.

Tsibouris's (1991) model, based on the informational flows between general and specialist (one-currency) traders, suggests that more widespread credible information about government policy would promote more orderly market conditions, but that unexpected policy changes can lead to short-term volatility in exchange rates. An important aspect of this model is that it does not impose irrational expectations.

Tagaki's (1991) work on survey data demonstrates the inefficiency of exchange rate forecasts: short-run expectations tend to extrapolate lagged changes, consistent with the use of extrapolative or chartist techniques by market traders, while in the longer term they suggest moves back toward

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1/ Compared, for example, with a normal distribution. In technical terms, the distribution of exchange rate changes is leptokurtic.

long-run values consistent with economic fundamentals. The implication is that short-term currency movements may be largely driven by noise trading.

b. The exchange rate regime and its effect on the behavior of currencies

Target zones are an attempt to limit the deviation of the (nominal) exchange rate from a set level or trend. From a policy point of view, one of the most interesting tasks is to establish whether different regimes can have an impact on exchange rate behavior.

Artis and Taylor (1993) show that the volatility of intra-Exchange Rate Mechanism (ERM) exchange rates fell over the period of operation of the ERM, while the volatility of non-ERM exchange rates remained the same or increased. No evidence of volatility being transferred to interest rates is detected, contradicting the view that if volatility is removed from the exchange rate it will only reappear elsewhere. The distinction between the short-run, high-frequency concept of volatility and longer-run, lower-frequency misalignment is stressed throughout the paper and supports the conclusion that the ERM has exerted a short-run stabilizing influence even though the Mechanism has been subjected to severe realignment pressures.

Galy (1991) also distinguishes between long- and short-term behavior in analyzing the Spanish peseta, concluding that ERM membership (and an informal peg to the deutsche mark before official entry) served to reduce volatility in both real and nominal rates. Examination of long-run movements using recently developed econometric (cointegration) methods, however, suggests that real exchange rate trends over a longer horizon reflect structural shifts in the economy and are in fact independent of the exchange rate regime.

Fund research has also presented evidence on moves to coordinate macroeconomic policy by countries that are likely to suffer similar underlying shocks. Bayoumi's (1991) study reveals that the response of ERM countries to shocks has been both more prolonged and more similar than their previous responses or than the contemporaneous behavior of nonmembers. If both the initial shock and the responses made by members are similar, then there is little to induce exchange rate volatility within the ERM. However, since no increase in the tendency for initially asymmetric shocks to be transmitted to other member countries can be detected, fundamental misalignment can still occur and result in a need for realignment. Furthermore, as noted by Chadha and Bayoumi (1991), strains in the system may be magnified when the ERM is enlarged to include countries that are more likely to suffer from asymmetric shocks, and yet will face constraints on their policy responses.

c. Long-run exchange rate movements

Observed empirical regularities include the approximation of both real and nominal exchange rate movements to a random walk, and the contradictory evidence of negative long-run autocorrelations in such series. Random walk behavior in nominal rates indicates that shocks affecting the market are largely permanent, and the fact that changes in the real exchange rate are also largely random implies that real shocks should be more prevalent than nominal shocks. Negative autocorrelations, however, imply that exchange rate changes are to some extent reversed over time. Distinguishing between the likely source and longevity of an exchange rate perturbation has important implications for the appropriate policy response.

A decomposition of U.S. dollar real exchange rates into nominal rates and price effects reveals a close association between the large transitory (mean reverting) components in the real and nominal series. Using simulations of a simplified Dornbusch-style overshooting model, Adams and Chadha (1991b) show that <u>permanent-nominal</u> shocks can induce large <u>transitory</u> movements which accord with the observed pattern of correlations, while real shocks in fact produce markedly different results. The authors argue that the presumption that temporary real shocks dominate, based on negative correlations in both real and nominal series, could be completely wrong. In a second paper, Adams and Chadha (1991a) subject the same sticky-price model to <u>nominal</u> shocks and show that it is possible to generate nominal and real exchange rate series that are impossible to distinguish from a random walk. This, despite the fact that neither actually follows a random walk and that, by construction, the real rate is stationary.

These results imply that care must be taken in drawing inferences on the nature of shocks impinging on a country when the tests used have insufficient power to distinguish between the true phenomenon and an alternative which may have quite different policy implications. For example, Aizenman (1992) has shown that countries wishing to encourage direct investment would benefit from a fixed exchange rate. However, in the presence of real productivity shocks employment volatility is stabilized to a greater extent under flexible rates. Incorrect inferences about the nature of the shocks affecting an economy could in this case lead to the adoption of an inappropriate exchange rate policy.

2. <u>Parity relationships and exchange rate modeling</u>

Exchange rate models serve to make explicit the links between exchange rates and the rest of the economy. Empirical tests of the models can focus on whether they fit the data, or alternatively how successful they are at forecasting exchange rates.

Exchange rate models are typically based on some combination of three basic parity conditions: covered interest parity (CIP), uncovered interest parity (UIP) and purchasing power parity (PPP). Taylor (1991) reports that only the first of these receives strong support from both the profession and the data. The remaining relationships are the subjects of a number of papers [Dooley, Isard and Taylor (1992), Galy (1991), Isard (1991), Kleiman (1993), Lipschitz and McDonald (1991), MacDonald and Taylor (1992, 1993), Ohno (1990), Tagaki (1991), and Taylor (1993)].

UIP, the proposition that the interest differential should equal the expected rate of currency depreciation, finds little support from post-Bretton Woods data. However, Isard (1991) argues that since the alternative approach--the explicit modeling of the implied risk premium--has been equally unsuccessful, UIP still has its place in the tool box of an exchange rate modeler.

While PPP has been widely discounted as a short-run condition, MacDonald and Taylor (1992) show that the evidence on PPP as a long-run phenomenon is less clear-cut. Nevertheless, an equilibrium PPP rate is often viewed as a useful peg for policy purposes. Ohno (1990) outlines a method for estimating such a rate, which also produces associated standard errors and so allows policymakers to more accurately assess the significance of any apparent disequilibrium.

Research has also sought to explain why deviations from PPP can occur. Based on ICP Stage IV data, a variety of factors, which determine differences in price levels, are identified in Kleiman (1993). The study focuses on the role of differences in the taxation burden and finds that indirect taxes can drive a wedge between national price levels and the PPP exchange rate.

Parity conditions combined with the additional assumption of stable money demand functions form the basis of the monetary class of models [see MacDonald and Taylor (1992)]. Discredited in the early 1980s as explanations of the short-term behavior of exchange rates, these models have recently been reinterpreted as describing long-run equilibria. MacDonald and Taylor (1993) find support for the monetary approach in a long-run context through cointegration analysis. The same technique applied to the deutsche mark-U.S. dollar exchange rate over a period encompassing the 1980s also indicates a rejection of both the speculative bubble hypothesis and the set of restrictions implied by the monetary model in its rational expectations incarnation [MacDonald and Taylor (1993)].

When the restrictions suggested by the monetary approach are not accepted by the data, the same modelling techniques may reveal insights into the concept of exchange rate equilibrium. Taylor's (1993) estimated long-run relationship for the Canadian dollar exchange rate over the recent float strongly suggests that, in the spirit of the Mundell-Fleming model, the relevant concept of equilibrium relates to flows rather than stocks. Conversely, for the deutsche mark, a more conventional asset approach based on stock equilibrium appears to prevail [MacDonald and Taylor (1993)].

In addition to generating sensible long-run properties, proper attention to short-run dynamics can lead to an empirical equation which forecasts well in relation to both alternative formulations used by policy makers and, often more stringently, a naive random walk model. By broadening the class of models considered to include portfolio balance-type approaches, even more impressive forecasting performance is possible. Dooley, Isard and Taylor (1993) include gold as an "asset without a country" and show that it can isolate changes in preferences for holding claims on different countries. Changes in the domestic currency price of gold thereby reveal important risk premium effects which are not captured by the use of non-asset commodities such as wheat.

3. Target zones--theory and evidence

The theory of target zones has been the subject of an extensive literature, much of which has emerged from Fund research. In particular, Flood, Rose and Mathieson (1991)--which has proved extremely influential in this area--rejected many of the implications of the more basic formulations of the target zone model. Among the most fundamental of implications from the model is the theorized S-shaped relationship between the exchange rate and the underlying economic fundamentals. Using daily data from the ERM, virtually no evidence could be found of nonlinearities consistent with the original theory. Nevertheless, the relationship between exchange rates and fundamental determinants "looks different" in the target zone than it looks within a freely floating system.

The result of these findings has been the development of the theory so that some of the less realistic assumptions made under the original formulation could be relaxed. In particular, the initial working hypothesis of a perfectly credible target zone has been largely abandoned. Many empirical papers now use the theory to evaluate whether or not the zone is credible.

a. Credibility and the exchange rate policies of European countries

While many European countries managed their currencies through the 1980s by participating in the ERM, the system encompasses a wide range of market credibility with respect to the commitment of the country authorities. Analyses of currency market conditions have resulted in conclusions concerning the perceived importance of policy variables other than the exchange rate, highlighting the use of the exchange rate as an indicator of economic policy.

In Svensson (1991) exchange rates are shown to follow a mean-reverting process within the band, rather than a random walk, and a simple method for separating out this expected movement is outlined. Subtraction of this mean-reversion from the interest differential then gives the expected realignment of the target zone.

Staff estimates based on this technique have shown a fall in the probability of realignment for the French franc between the devaluation in January 1987 and early 1992, the solid belief in the Belgian franc fort policy in the same period, even over longer expectations horizons, and sharp swings in the realignment expectations associated with several Nordic currencies since the late 1980s [see Caramazza (1993), Geadah, Saavalainen, and Svensson (1992), and Halikias (1992)].

b. The determinants of realignment expectations

Research on the determinants of realignment expectations has been relatively ad hoc, reflecting country-specific circumstances. Caramazza (1993) finds the inflation rate, competitiveness index and unemployment rate to influence medium-term devaluation expectations for the French franc. For the Belgian franc, however, Halikias (1992) shows that over the period 1982-90, fiscal variables were the more important determinants, and their effect was felt quite independently from their impact on inflationary expectations. Thomas (1993) focuses on the determinants of devaluation expectations in France and Italy. Although finding that fundamental factors explain some of the realignment expectations, he notes that these are weak relationships which are subject to change over time. He also finds that the position of the currency within the band is in fact the dominant determinant.

Comparative studies of credibility among the Nordic nations have implications for the influence of policy regime on currency performance [Geadah, Saavalainen, and Svensson (1992) and Stephenson (1993)]. In particular, Denmark's participation in the ERM brought its currency credibility, but this was not an immediate shift and had to be earned by sound macroeconomic performance. Furthermore, since Norway achieved a comparable increase in credibility by pursuing a unilateral currency peg, attaching great emphasis to the multilateral nature of the ERM per se is doubtful. Sweden's low credibility throughout the recent period has resulted in moves designed to improve the situation, most notably a shift in the peg to a link with the ECU, which the krona was soon forced to abandon. A central implication of this work is that the regime itself cannot confer long-lasting exchange rate stability and the erosion of interest rate differentials if the underlying economic position is weak.

4. Developing-country exchange rate issues

Research on developing-country exchange rate issues has focused on a number of topics. These include the response of the equilibrium real exchange rate to a variety of shocks, the consequences of targeting the real exchange rate and possible policy responses, and the informational content of the parallel market premium in assessing real exchange rate misalignment. Also included are the credibility of fixed exchange rate regimes, the functioning and unification of dual exchange markets, the macroeconomic implications of informal currency and credit markets, and the real effects associated with balance of payments crises. Many of these issues are analyzed in the survey by Aghevli, Khan, and Montiel (1991).

As to the first issue, research has attempted to quantify the effects on the equilibrium real exchange rate of a variety of real disturbances typically experienced by developing countries, including terms of trade shocks, and commercial and fiscal policy changes [Khan and Ostry (1991)]. In addition, Kouwenaar (1991) focuses specifically on five African countries, and Ostry and Reinhart (1991) analyze the effects of temporary terms of trade shocks on the equilibrium real exchange rate.

The purpose of this research is to give policymakers in developing countries some guidance for altering exchange rate policy in the face of both policy-induced and exogenous shocks. This type of exercise could also be used by countries following real exchange rate rules in order to set targets for the real exchange rate that are consistent with economic fundamentals. Real exchange rate rules raise a number of issues, including how to adjust real exchange rate targets when a country experiences a real disturbance, and how macroeconomic equilibrium is affected when the real exchange rate target differs from the equilibrium real exchange rate.

Because the equilibrium real exchange rate is likely to depend on a number of structural features of an economy about which policymakers may have little information, developing countries following real exchange rate rules are quite likely to face situations in which real exchange rate targets differ from equilibrium real exchange rates, i.e., where the real exchange rate is misaligned. In this spirit, research has attempted to analyze the consequences for macroeconomic equilibrium of pursuing "nonequilibrium" targets for the real exchange rate.

The upshot of this work is that pursuing nonequilibrium real exchange rate targets is likely to have destabilizing effects on the price level. Specifically, for example, an overly depreciated target--which may have been adopted deliberately in order to secure external balance objectives or may have occurred by accident as a result of an unforeseen appreciation of the equilibrium real exchange rate following a favorable terms of trade shock--is likely to increase inflation. One reason is that an overall depreciated target improves the current account of the balance of payments which, other things equal, will contribute to an improvement in the overall balance of payments and hence to an increase in central bank holdings of foreign exchange reserves. Unless the latter is sterilized, the resulting increase in the money supply will raise inflation in the country. See Montiel and Ostry (1991a and 1993a) for full and nontechnical expositions of these issues.

The ability of the authorities to successfully sterilize reserve inflows in the context of real exchange rate targeting obviously depends upon the degree of capital mobility, as demonstrated by Montiel and Ostry (1991b) and Lizondo (1993).

Under perfect capital mobility, the ability of the authorities to sterilize reserve inflows is obviously severely circumscribed. If capital controls can be used so as to render sterilization possible, however, the authorities may be able to use monetary policy to control the money supply at least temporarily. However, in the long run, a continual contraction of domestic credit in the face of reserve inflows will lead to a perpetual appreciation of the financial market exchange rate implying, other things equal, an ever-widening gap between official and parallel market exchange rates. Such an ever-widening gap may ultimately call into question the sustainability of capital controls on which the effectiveness of monetary policy to control prices under real exchange rate targeting is based.

In addition to identifying the likely consequences of real exchange rate misalignment, research has also attempted to look at the question of what indicators may be used by policymakers in developing countries to gauge the extent of real exchange rate misalignment, which is not directly observable by policymakers. One popular such indicator is the parallel market premium, which is analyzed in Montiel and Ostry (1993b). Although the premium can in some circumstances provide useful information about the sign and magnitude of real exchange rate misalignment, the simple fact that both the premium on foreign exchange in the free market and the real exchange rate in the official market are endogenous real variables with complex macroeconomic roles is enough to suggest that any observed relationship between these variables is unlikely to be robust, and specifically is likely to depend on the sources of shocks impinging on an economy. This would suggest that the premium may not in all circumstances be a reliable indicator of real exchange rate misalignment in developing countries.

Policymakers in countries that have opted for a fixed exchange rate arrangement face a time-inconsistency problem [Agénor (1991, 1993b), Aghevli, Khan and Montiel (1991)]. By fixing the exchange rate--and therefore the domestic price of tradable goods--the policymakers' aim is to reduce inflationary expectations embodied in wage contracts and prices set in the nontradable sector of the economy. However, maintaining the exchange rate fixed to stabilize prices may lead to an overvalued real exchange rate and a worsening current account deficit, which may be unsustainable in the presence of borrowing constraints. Price and wage setters understand policymakers' incentive to deviate from the fixed exchange rate announcement and devalue the currency in order to depreciate the real exchange rate and stimulate output, and therefore will not believe the initial announcement. When policymakers have an ex post incentive to renege on their promises, agents will discount announcements of future policy actions. Accordingly, whether a fixed exchange rate can provide a strong nominal anchor against inflation depends on the perceived trade-off that the authorities face and agents' perceptions about the temptation to renege on initial commitments [Agénor and Taylor (1992), (1993), and Halikias (1992)].

A fixed exchange rate may also be subject to recurrent speculative attacks, which may take place even in the presence of a large stock of international reserves. In addition to providing a unified framework for the analysis of balance of payments crises, recent work has attempted to clarify the link between fiscal deficits and credit expansion [Savastano (1992)], and has also focused on the real effects associated with balance of payments crises, [Agénor and Flood (1992) and (1993)].

With respect to dual exchange markets, the first line of inquiry has been to examine the functional characteristics of parallel currency markets

[Agénor (1992), Montiel, Agénor and Haque (1993)], the various forms that such arrangements can take [Lizondo (1991a) and (1991b)], and their implications for macroeconomic policy [Agénor (1993a), Guidotti and Végh (1992), Lizondo (1991b)]. A key implication of the first set of studies is that the existence of such markets, despite some potential gains, has entailed a variety of costs--including high volatility of exchange rates and prices, incentives to engage in rent-seeking activities and to divert export remittances (or unrequited transfers) from the official to the parallel market. This conclusion has formed the basis for the second direction of research on dual exchange markets, which has focused on the process of exchange market unification [Agénor and Flood (1992)]. A particularly relevant case refers to a situation where unification takes the form of a preannounced floating of the official exchange rate. The analysis shows that the short-run dynamics of the parallel market premium in anticipation of reform replicates very well the behavior observed during the recent experience of some developing countries that attempted to unify their foreign exchange markets, particularly in Sub-Saharan Africa. More recent unification attempts can also be interpreted within the same analytical framework [Galbis (1993)].

The last line of inquiry has been to examine the policy implications of integrating simultaneously informal currency and credit markets in a macroeconomic setting [Agénor (1993c), Montiel, Agénor and Haque (1993)]--a situation that prevails in a large number of developing countries. An important implication of these studies is that an official devaluation or a liberalization of administered interest rates contributes to an adjustment in individual portfolios, which can mitigate the short-run contraction in output usually associated with such policies.

X. Issues Relating to the Fund's Financial Policies

Over the past several years, the analytical work relating to the development and implementation of the Fund's financial policies and practices has been in two broad areas: (1) the SDR--its valuation and interest rate basket, and operational policies in the SDR Department; and (2) Fund quotas--analysis of the working of the quota formulas, and the determination of individual quotas for new members.

1. SDR-related issues

In a recent analysis of the general functioning of the SDR as a reserve asset (EBS/93/89), the staff reviewed the method of valuing the SDR and the SDR interest rate basket. It evaluated recent suggestions to "harden" or "inflation proof" the SDR, and also addressed certain operational issues--such as the use of the SDR for official exchange market intervention or for private transactions--which could improve the usability and attractiveness of the SDR and thereby enhance its role in the working of the international monetary system. A second paper (EBS/93/104) analyzed the pattern of use and holdings of SDRs, including the increasing concentration of SDR holdings in relation to cumulative allocations among a relatively small group of countries (see Section II.5 above). The papers concluded that the SDR has a useful, if limited, role as a unit of account for a number of international and regional organizations, that the SDR has functioned well in relation to other reserve assets in terms of its method of valuation and its competitive investment return, and that an attempt to harden the SDR would present difficult operational issues and could also cause difficulties in distributing among Fund members the burden of financing the operations of the Fund. A paper currently being prepared provides further technical background and analysis comparing the hard SDR and the hard ECU [Thakur (1993)].

A paper relating to the portfolio performance of the SDR examined the commonly used assumption that returns on various fixed-income currency investments do not vary over time [Papaioannou and Temel (1993)]. The paper presented evidence rejecting this assumption and indicating that the variance of SDR returns was smaller than those of nine major currencies (including the ECU). The results support the view that SDR investments provide greater insulation from unexpected shocks.

A related paper reviewed the potential role of the SDR in the diversification of official holdings of foreign exchange reserves, taking into account the predominant reserve asset role of the U.S. dollar and the increased roles of the deutsche mark and the yen that have been observed over the past decade [Roncesvalles and Papaioannou (1993)]. The paper assessed the relative attractiveness of various types of official reserve holdings, including the SDR, in terms of their return and risk characteristics, and illustrated how diversification of foreign exchange reserves into SDRs could generally tend to reduce the currency risk exposure faced by central banks without essentially sacrificing the overall return on official holdings of reserves. The paper also found that the SDR has a role to play in the financing or settlement of intervention-related transactions and in meeting SDR-denominated obligations, though the former role has been limited, inter alia, by the small amount of SDRs available in relation to the size of amounts needed for intervention.

Recent analytical work in the SDR area has also been guided by the Executive Board's quinquennial review of the method of valuing the SDR and its interest rate basket. In these reviews, the currencies used to determine the value of the SDR, and their relative weights, are adjusted to take into account changes in their international use. The international roles of the deutsche mark and the yen have been reviewed by Tavlas (1991) and Tavlas and Ozeki (1992) respectively, and work on the role of the U.S. dollar is under way. These papers presented a unified theory of the factors underlying the international use of currencies, described the evolution of these factors as they relate to the deutsche mark and the Japanese yen, respectively, and provided data relating to the international and regional uses of these currencies. The paper on the deutsche mark found that its international role has increased significantly, owing to its use as a regional currency in Europe. The paper on the yen found that the yen's international use has increased less than that of the deutsche mark, and that the yen has not, as yet, emerged as a regional Asian currency. Whether a currency emerges as a regional currency depends importantly on the fulfillment of certain criteria--such as factor mobility, openness, and product diversification--for the major country in a particular region.

A final theme of analytical work falling within the general area of reserve assets and their use relates directly to Fund operations. Many Fund transactions result in the creation or absorption by the Fund of international reserves in the form of foreign exchange and Fund-generated reserve assets. Sales of members' currencies and SDRs by the Fund, allocation of SDRs, and borrowing by the Fund from members generally increase the level of international reserves held by monetary authorities. Repurchases by members of their outstanding obligations to the Fund in currencies and SDRs, and repayment of Fund borrowing in the creditor's own currency, tend generally to have a contractionary effect on the level of members' reserves. These features of the international monetary system were analyzed in Fawzi (1992), which illustrated the immediate, as well as the second-round effects of Fund transactions on gross reserves of the members involved, taking account in each case of the currency used and members' positions in the Fund. The paper also estimates the net annual reserves created or absorbed by the Fund in the 1980s, and concludes that the Fund can be seen as a natural "shock absorber" in the face of exogenous supply or demand shifts in members' external transactions, thus contributing to a more stable international monetary system. Another paper (EBS/91/218) assessed the relevance of current reserve holdings as an indicator of a member's relative strength or weakness for the purposes of determining the member's contribution to the financing of the Fund. Finally, another paper currently under preparation that analyzes the implications of the Fund's financial transactions with its members is, "The Fund's Operational Budget: Principles and Applications".

2. <u>Quota-related issues</u>

On June 28, 1990, the Board of Governors adopted a resolution--in connection with the Ninth General Review--providing for a 50 percent increase in the total of members' quotas. The decision came after nearly three years of discussions, by far the most protracted quota exercise. Roncesvalles and Tweedie (1991) discussed the major guiding principles of the augmentation process, including the need to maintain a balance between different groups of countries, and it assessed the implications of the quota increase for the Fund's liquidity position.

The admission to the Fund of the 15 states of the FSU required determination of their initial quotas in the Fund, which necessitated a measure of their economic size relative to that of other members. This process posed a number of difficult and unique problems. Countries joining the Fund earlier typically either had established national economic data consistent with general Fund standards or had historical records that permitted the construction of such data; for such cases there are established procedures for quota calculations. In the case of the FSU, however, 15 heterogeneous and interdependent components of a former national entity applied more or less simultaneously to the Fund for membership. Furthermore, because of the absence of relevant market economy data, it was not possible to compile complete economic profiles of these states as separate entities. Consequently, the paper, "Quota Calculations for the Republics of the Former Soviet Union--Methodological Issues" (EB/CW/QMethodology/92/1, 2/8/92) addressed both the conceptual and data problems associated with the membership of the FSU states. The paper presented several alternative methodologies that could be used to calculate quotas for these countries, and on the basis of these methods calculated quotas for the FSU republics that served as the basis for the Executive Board's discussions of their applications for membership.

Research on the gold market was initiated in the context of discussions on Switzerland's application for Fund membership and the determination of its quota, reflecting the country's role as a financial center. In particular, attention has been given to Zurich's role in receiving and shipping gold, and in the context of the applications from countries of the FSU, which were large gold producers. O'Callaghan (1993) describes the structure of the world gold market, its sources of supply and demand, and how it functions. The paper shows that the market has three principal functions in three major locations: the futures market in New York, the spot market in London, and Zurich itself, which handles the shipment of the physical commodity. The analysis also shows that some unique characteristics of the gold market ensure confidentiality, and as a result, there are gaps in existing knowledge and data. The paper identifies and attempts to fill these gaps.

XI. Statistical Issues

1. Methodological issues

Research activities in statistics have been dominated in recent years by work on development, revision, and maintenance of the Fund's major statistical methodologies and closely related efforts by the international statistical community to revise the 1968 United Nations manual, A System of National Accounts (SNA). This work has given rise to many specific studies but is most evident in the development of statistical manuals and guides. The Fund has primary responsibility in the international statistical community for methodological work on the balance of payments, monetary and financial statistics, and government finance statistics. In each of these areas, the Fund has conducted extensive research on conceptual and analytical aspects and on national practices. This work has led to the production of manuals, guides, and training courses to assist members in the implementation of these methodologies.

In addition to work in these three core areas of statistics, the Fund has played a major role in the research activities related to the revision of the SNA, which will be published in late 1993. Production of the 1993

SNA was a ten-year effort that was managed by five international agencies (the Fund, OECD, UN Statistical Division, the Statistical Office of the EC, and the World Bank), and national accounts experts from a broad range of countries contributed to the revision process.

The Fund's work in this unprecedented international cooperative effort has had two main goals: the overall improvement of national accounts standards, and the harmonization of its three specialized statistical systems with the SNA. A major research undertaking was carried out in 1987 and 1988 in preparation for three expert group meetings on the external, public, and financial sectors. The studies prepared for these meetings formed the basis for the development of the relevant portions of the 1993 SNA. Revised and edited versions of the most relevant studies were published in 1991 in a Fund book entitled The IMF's Statistical Systems in the Context of the Revision of the United Nations' A System of National Accounts [(Galbis (1991)]. In the period 1990-92, additional studies were undertaken on a number of SNA-related topics, including the treatment of monetary gold, pensions and insurance operations, and multiple exchange rates, In 1992 and 1993, staff prepared the chapters of the SNA on the financial accounts and the rest of the world accounts, as well as several technical appendices.

The Fund Report on the World Current Account Discrepancy, published in 1987, recommended the updating of the fourth edition of the Balance of Payments Manual (BPM), published in 1977, in view of the important changes that have occurred in the manner in which international transactions are conducted since that date. Culminating a long and carefully considered process that involved national balance of payments experts, national accounts experts, representatives of other international organizations, and Fund departments, the fifth edition of the BPM was published in September 1993. Studies prepared in conjunction with the revision of the BPM, including discussion papers prepared for the Fund-sponsored meeting of balance of payments experts held at Fund headquarters in March 1992, and the decisions taken at that meeting form the basis of the revised system. Harmonization of the BPM with the SNA and other Fund statistical systems has been achieved to the maximum extent possible, resulting in the elimination of virtually all conceptual differences between the SNA and the BPM. Also, in a major shift in orientation from the fourth edition, the BPM accords prominence to stocks of external financial assets and liabilities (the international investment position), in addition to balance of payments transactions. A Balance of Payments Guide and Balance of Payments Training Textbook have also been prepared, in coordination with the work on the BPM. These are expected to be published in early 1994.

Work has also begun on the development of a manual on monetary and financial statistics. This manual will develop the statistical framework for monetary and broader areas of financial analysis and will emphasize current developments in financial markets, instruments, and institutions. One of the key guiding principles of this work will be its harmonization with the 1993 SNA. The studies prepared for the SNA expert group of financial flows and balances and the work undertaken by STA in 1992 and 1993 on the financial accounts of the SNA comprise the core research on which this new manual will be based. Extensive work was undertaken in 1992 by a consultant and STA staff to produce an annotated outline of the manual; this outline has been circulated to Fund members for comment. Drafting of this manual has begun and a full draft for comment is expected to be ready in late 1994. Member countries and other agencies will be asked to provide their views at various stages of development and publication is expected in late 1995.

Work will begin shortly on the revision of A Manual on Government Finance Statistics (GFSM). As with the other manuals, this work will benefit from research related to the SNA revision, and one of the principal objectives of the revision will be to narrow the substantial difference that currently exist between the GFSM and the SNA.

2. Other research activities

In addition to the work on statistical methodologies, research efforts have been concentrated in special studies related to statistical development in the FSU and other transition economies, the work of the Committee on Balance of Payments Statistics, and the project on International Capital Flows. In 1992, a study on monetary statistics in the FSU countries was prepared [Di Calogero, et al. (1992)] and a related study on a Proposed Chart of Accounts for FSU Central Banks: Policy Uses of Accounting Records has been prepared. There is also ongoing work on the implementation of standard international statistical systems in FSU and other transition economies in balance of payments, government finance, and consumer price statistics.

In 1992, the Fund published the final report of the Working Party on the Measurement of International Capital Flows, and a companion volume containing some of the background papers prepared in connection with this two-year study. The Working Party's report made a number of recommendations addressed to national compilers and involved international organizations to improve the quality of statistics on international capital flows. The IMF Committee on Balance of Payments Statistics was established in 1992 as a follow-up to a recommendation made by the Working Party. The Committee, which is composed of representatives of 12 member countries and concerned international agencies, will oversee the implementation of the recommendations presented in the Report on the Measurement of International Capital Flows and in the Report on the World Current Account Discrepancy. It will advise the Fund on methodological and compilation issues in the context of balance of payments and international investment position statistics, and foster greater coordination of data collection among countries. In 1993, its first year of operation, the Committee has been working to make improvements in the international banking statistics compiled by the Fund and the BIS so that these statistics can be used in balance of payments compilation, and on the organization of a coordinated survey of countries' cross-border portfolio investment positions. The

Committee will present its first annual report to the Managing Director at the end of 1993. A new semiannual IMF newsletter was introduced in 1993 to report on the activities of the Committee, and on other developments in balance of payments statistics.

The International Working Group on External Debt Statistics (IWGEDS), in which the Fund participates, along with the Bank for International Settlements (BIS), the Organization for Economic Cooperation (OECD) and Development, the World Bank, and the Berne Union, promotes the convergence of external debt recording practices. Recent work of IWGEDS will be published later this year in their second publication, Debt Stocks, Debt Flows, and the Balance of Payments.

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