IMF WORKING PAPER

WP/93/95

INTERNATIONAL MONETARY FUND

Research Department

The Integration of World Capital Markets

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December 1993

Abstract

This paper discusses the extent to which national capital markets have become linked, and identifies several of the more important consequences of that increased degree of integration. Alternative approaches to the measurement of capital market integration are reviewed, including deviations from the law of one price, differences between actual and optimally diversified portfolios, correlations between domestic investment and domestic saving, and cross-country links in consumption behavior. Two recent episodes of large-scale international capital flows--namely, the turmoil in the European Monetary System in the fall of 1992, and the surge of capital inflows into Latin America during the last three years--are examined for insights into the workings of today's global capital market. Finally, the paper offers some concluding remarks on the future development of international capital markets, on exchange rate management, on alternative approaches to living with larger and more influential financial markets, and on the financing of investment in the formerly centrally planned economies.

JEL Classification Number:
F3

1/ An earlier version of this paper was presented at a conference on "Changing Capital Markets: Implications for Monetary Policy," sponsored by the Federal Reserve Bank of Kansas City and held in Jackson Hole, Wyoming on August 19-21, 1993. In addition to colleagues in the Research Department of the Fund, the authors are grateful to Barry Eichengreen, Marty Feldstein, Jeff Frankel, Leo Leiderman, Peter Montiel, Maury Obstfeld, and Geoff Woglom, for helpful comments on an earlier draft.

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Summary

This paper surveys the available empirical evidence on the integration across national capital markets. Various measures of the degree of integration--including deviations from the law of one price, differences between actual and optimally diversified portfolios, correlations between domestic investment and domestic saving, and cross-country links in consumption behavior--are considered. The authors find that capital market integration has been increasing over the past decade--especially for high-grade financial instruments traded actively in the wholesale markets of major financial centers. Capital markets in developing countries, too, are becoming more closely integrated with markets in the rest of the world, although they have progressed less far in that direction than the industrial countries. It is still much too early to speak of a single, global capital market where most of the world's savings and wealth are auctioned to the highest bidder and where a wide range of assets carries the same risk-adjusted expected return. Some important components of wealth (like human capital) are scarcely traded at all, and currency risk, the threat of government intervention, and the strong preference for consuming home goods and investing in more familiar home and regional markets still serve to restrict the range and size of asset substitutability. But the forces for greater arbitrage of expected returns are already powerful enough to have made a large dent in the autonomy that authorities have over macroeconomic and regulatory policies. When private markets, led by the increasing financial muscle of institutional investors, reach the concerted view (rightly or wrongly) that the risk-return outlook for a particular security or currency has changed, those forces are difficult to resist. Moreover, the authors see little in the factors underlying the evolution of international capital markets to suggest that the increased clout of private markets will reverse itself in the future. Quite the contrary.

The growth and agility of private capital markets have made the conditions more demanding for operating durably and successfully a fixed exchange rate arrangement. There is now less room for divergencies of view among participants about the appropriate stance and medium-term orientation of monetary policy, less time to adjust to country-specific shocks, and greater pressure to achieve closer convergence of economic performance.

With benefit of perfect hindsight, it is not hard to identify instances over the past decade when international capital flows (like domestic ones) did not pay enough attention to fundamentals. Nevertheless, the authors see no basis for concluding that private capital markets usually "get it wrong" in deciding which securities and currencies to support and which ones not to. On the whole, most of the policy changes that have been forced by international capital markets seem to have been in the right direction. The authors therefore see more merit in trying to improve the "discipline" of markets so that it is more consistent and effective rather than in trying to weaken or supplant the clout of markets.

I. Introduction

International capital markets, like their domestic counterparts, serve several key functions. They channel resources from units (households, firms, governments) that are savers to units that are dissavers, thereby loosening the constraints imposed by self-finance and enabling increases both in the overall productivity of investment and in the smoothing of consumption. They provide liquidity. They allocate and diversify risk. They may even help to "discipline" errant borrowers--either by subjecting them initially to a rising default premium and ultimately, to the threat of credit rationing, or by forcing adjustments in exchange rates. By permitting trade in financial assets to take place without regard to either national boundaries or the nationalities of market participants, there is a strong presumption that the efficiency, liquidity, risk-pooling, and disciplinary attributes of capital markets will be enhanced.

In some important respects, developments over the past two decades have been kind to the view that the benefits of open capital markets are being increasingly recognized and that integration of capital markets has already proceeded quite far. To begin with, there has been a progressive dismantling of capital and exchange controls among the major industrial countries, followed by a broader-based liberalization and reform of their domestic financial sectors. A snapshot of those liberalization measures is shown in Table 1. Note that liberalization has spanned money, bond, and equity markets. Prior to the second half of the 1980s, it was the offshore markets and the banks that led the way, but since then it has been the reformed domestic markets and the securities markets that have provided much of the momentum.

Beyond liberalization, international financial markets have responded to the same fundamental forces that have been shaping the entire financial services industry. Dramatic decreases in the costs of telecommunications and of information gathering and processing, the need to finance larger government deficits and external imbalances, the desire and opportunity to hedge against the high variability of asset prices and inflation rates, the ascent of both "securitization" and the "institutionalization" of saving and investment, and improvements in payments and settlement systems, have all played a role.

By now, liquid markets in central and local government securities, in equity, in corporate debt, in commercial paper, in bank certificates of deposit, in asset-backed securities, and in both exchange-traded and over-the-counter derivative instruments have become a prominent feature of the

Table 1. Highlights of Financial Liberalization in Major Industrial Countries

United States	Canada	France	Germany
1964 - Interest Equalization Tax introduced	1977 - Equity options introduced at TSE, MSE	1967 - Bank lending rates deregulated, interest on demand deposits forbidden	1981 - temporary capital controls lifted
1971 - NASDAQ system introduced	- Computer Assisted Trading Scheme (CATS) goes online at TSE	1984 - New Banking Law provides a unified regulatory structure	1984 - tax on foreign investors' income from German bonds eliminated
1972 - IMM opens, trading FX futures	1980 - Interest rate futures introduced at TSE	- Foreign exchange controls rescinded, money market opened up	1985 - Bundesbank allows issues of DM bonds with innovative features and allows foreign-owned banks in Germany to lead- manage foreign DM bond issues
1975 - dereg. of sec. firms' commissions	1983 - Negotiable commissions at ME, TSE	1985 - CP market opens, but only to non-banks	- DM FRNs, currency swaps, zero-coupon bonds introduced
- CBOT opens, trading int. rate futures	1984 - Toronto Futures Exchange (TFE) opens.	- capital market fees, taxes reduced, deregulated.	1986 - bond option trading introduced
1978 - International Banking Act	- Montreal and Boston exchanges establish automated trade routing system	1986 - Computerised securities quotation and order system (CAC) introduced	- DM CDs introduced
1979 - Reg. K: subsidiaries of comm. banks can deal in and underwrite equity securities outside of the U.S.	1986 - Blue Paper "New Directions for the Financial Sector" published: agenda includes integration of financial services industries by common ownership and extension of powers	- MATIF opens	1987 - private use of ECU placed on same footing as that of other currencies
1980 - DIDMCA phases Reg. Q out by 1986	1987 - From June, all banks are allowed to own securities companies.	- T-bills available to all investors	- Federal Bond Consortium opened to foreign banks
1981 - International Banking Facilities	- Ontario allows restricted cross-border activity by foreign dealers	- Deregulation of banking commissions.	1988 - foreign investors allowed to buy five-year Fed. Bonds in the primary market
1982 - Security Pacific is first bank to set up a securities firm subsidiary	- Ontario and B.C. allow foreign ownership of securities dealers incorporated in these provinces	- Interest rates on deposits longer than 3 months are liberalized	1989 - rules for foreign DM bonds eased
- currency options introduced	1989 - Bank Act eases restrictions on foreign share of Canadian banking activity	- Partial capital flows liberalization	1990 - DTB opens
1982 - shelf-registration procedure (Reg. 415)	1990 - Pension funds can increase foreign assets eventually to 20% in 1993.	1987 - Reform of the government securities market: introduction of market makers	- FX-denom. bond, note issues permitted
1984 - 30 percent withholding tax on interest income paid to foreigners repealed	1991 - Canadian and U.S. securities regulators recognize a multi-jurisdictional disclosure system	- Options introduced	- primary market for Federal bonds changed to include auctions
1986 - NYSE, AMX, NASD allow foreign issuers if they comply with home country laws	- Introduction of off-hours trading sessions	1988 - new Stock Exchange Law: banks and other financial institutions can own securities companies; strengthened prudential rules for stock exchange members; deregulation of commissions	1991 - securities transfer tax abolished
- Government Securities Act	1992 - Ontario allows foreign advisers to provide investment advice to sophisticated investors	- OATs listed on the NYSE	- non-residents allowed to buy one- to two-year Treasury Financing Paper
1987 - CBOT begins evening trading	- deposit-taking and similar institutions given expanded securities trading and advisory powers	1990 - Virtually all exchange controls eliminated	- DM CP market starts up
1988 - Primary Dealer Act requires reciprocity before foreign fin. inst. can become dealers in U.S. gov't sec. mkt.		1991 - Reform of the market for negotiable credit securities	- Federal Treasury Notes introduced
1989 - CFTC approves GLOBEX		- regional stock exchanges link to Paris	1992 - proposals for centralized supervision of securities trading; enforcement of insider trading, and reporting regs.;
1990 - Rule 144a exempts from registration privately-placed debt and equity offered to qualified instit. buyers		1992 - Completion of the electronic payment and delivery system for securities	- money market mutual funds authorized
1991 - multi-jurisdictional disclosure system with Canada		- Introduction of efficient payment and delivery system for ECU securities	- company and stamp taxes abolished
1992 - reforms to government securities market include re-design of auction rules			- German branches of foreign banks can lead-manage DM bond issues and MTN and CP programmes;
- after-hours trading on NASDAQ Int'l			- regional exchanges to be integrated

Table 1. (continued). Highlights of Financial Liberalization in Major Industrial Countries

Italy	Japan	United Kingdom	Other
1984 - open-end investment funds introduced	1970 - first Samurai bond	1979 - foreign exchange controls abolished	1973 - floating exchange rates
1985 - stock exchanges introduce continuous auction trading for listed shares	1972 - interbank FX trading begins in Tokyo	1981 - first issue of ECU T-bills	- ERM starts up
- proposed securities market reforms include computerization and integration of systems for quoting, information dissemination, order routing and execution, clearing and settlement; concentration of all securities transactions in one market system; regulating the market for unlisted securities; regulation of securities firms	1973 - six foreign stocks listed on TSE	1982 - LIFFE opens	- EC First Non-Life Insurance Directive allows insurers licensed in one member to open branches in other members
	1974 - ban on issuance of Japanese corporate bonds overseas is lifted	1986 - "Big Bang" negot. commissions; dual capacity sec. firms; other fin. instit. can own sec firms; computer trading system modelled on NASDAQ; SEAQ Intl.; improved trading and settlement systems for government securities	1975 - Basle Concordat implements home country supervision
- controls on capital inflows lifted, restrictions on residents' foreign assets relaxed.	1978 - first issue of Euro-yen bonds by a non-resident	- Financial Services Act set up the SIB and SROs, RFBs which report to it; new investor protection rules	1976 - first currency swap
1988 - creation of screen-based Government securities market based on a system of primary dealers	1979 - first issue in Japan of unsecured yen-bonds by a foreign private company	- Central Gilts Office set up--provides book-entry transfer, rolling one-day settlement, and assured payments; market makers for Gilts	1979 - First Life Insurance Directive
- most remaining foreign exchange controls abolished	- foreign exchange controls relaxed	- CP market introduced	1981 - first interest rate swap
1990 - Government securities market open to foreign investors	- banks can issue short-term FX loans	1987 - Banking Act formalizes BoE supervision	- first ECU bond
- remaining foreign exchange controls abolished	- Gensaki bonds offered to non-residents	1988 - introduction of a comprehensive trade reporting system covering all markets in the U.K.	1983 - Basle Concordat revised to implement consolidated supervision
1991 - approval of comprehensive regulatory framework for securities business and reforms to the organization and functioning of the markets, including futures and options.	- domestic CD market begins, open to non-residents		1985 - EC Directive on UCITS
- start of screen-based trading on the stock exchange.	1980 - sec. firms offer MT govt bond funds		- White Paper on completion of the single market
1992 - completion of centralized share depository	- new Foreign Exchange and Foreign Trade Control Law		1986 - Single European Act
- MIF opens	- FX banks can make MT, LT FX loans		- EC First Directive on Capital Liberalization
- tax exemption of interest payments from certain foreign currency bonds is removed.	1981 - Japanese bk. subs. can lend ST Euro-yen to finance trade with Japan		1988 - BIS capital standards agreed
	1982 - Japanese banks can lend LT Euro-yen to borrower of their choice		- EC Second Directive on Capital Liberalization
	- new Bank Law and Securities and Exchange Law		1989 - OECD Code on Liberalization of Capital Movements agreed
	1983 - banks can sell newly issued, MT and LT government bonds OTC		- EC Insider Trading Directive
	- JASDAQ introduced		- EC Second Banking Coordination Directive agreed
	- Samurai bond regulations relaxed		1992 - Investment Services Directive agreed
	- postal insurance can buy foreign bonds		
	1984 - securities firms can sell FX CDs, CP in the domestic market		
	- banks allowed to deal in gov't bonds		
	- non-Japanese banks can lend yen		
	- FX trading no longer tied to commercial trade and hedging--swaps allowed		
	- yen-FX conversion limits for foreign banks abolished		

Table 1 (concluded). Highlights of Financial Liberalization in Major Industrial Countries

Japan cont'd

1985 - introduction of government bond futures
- bankers' acceptances introduced
- nine foreign banks open trust subsdiaries
- interest rate deregulation begins
- Euro-yen FRNs, zero-coupon bonds, CDs, warrants introduced
- withholding tax on Euro-yen bonds issued by Japanese residents removed
- MT, LT Euro-yen loans liberalized
- first Shogun bond issue; first Euro-yen straight bond issued
- bond rating agencies set up

1986 - TSE admits 6 foreign members
- 12 Japanese firms make markets on SEAQI
- Japan Offshore Banking Market opened
- restrictions on Japanese purchases of foreign securities removed
- insurance company and pension fund trust accounts can increase FX assets

1987 - domestic and Euro-Yen CP markets introduced
- Japanese banks' overseas subsidiaries can deal in foreign CP
- membership in government bond syndicate opened to foreign banks
- Japanese financial institutions can trade in overseas futures markets
- stock index futures traded on Osaka exchange
- banks allowed to sell govt. bonds on the secondary market from date of issue
- auction used in primary market for 20-year government bonds

1988 - Financial Futures Trading Law
- 4 Japanese securities firms become primary dealers in U.S. govt. sec. mkt.
- restrictions on domestic and Euro-yen CP issues by non-residents relaxed
- postal savings system allowed to increase foreign assets
- participation of residents in overseas financial futures markets permitted
- taxes on bond transactions reduced

1989 - TIFFE opens
- foreign securities firms appointed lead managers in government bond syndicate
- relaxation of restrictions on the JOM
- medium- and long-term Euro-yen loans to residents permitted
- all financial institutions allowed to trade as brokers in overseas financial futures

1990 - licenses given to foreign companies to enter the bank trust market
- commissions for large transactions are lowered

1991 - Report of Securities and Exchange Council on capital market reforms proposes that banks and other financial institutions be allowed to own securities subsidiaries
- two Japanese branches of US securities companies allowed to trade in foreign exchange
- foreign securities companies' subsidiaries in Japan are given banking licenses

1992 - legislation on financial sector reforms passes the Diet
- Securities and Exchange Surveillance Commission established
- investment trust "Guidelines" revised to facilitate establishment of investment trust management companies by both domestic and foreign firms.
- securities houses allowed to offer money market funds

Sources: Goldstein et al. (1993), ISMA (1993), OECD (1991, 1993), Takeda and Turner (1992).

financial landscape in most major industrial countries. 1/ The restructured bank debt of many developing countries has now been securitized and is regularly priced and traded in the secondary market. "Global" bonds and equities too are gaining a strong foothold. 2/ Improved liquidity permits investors to move quickly in and out of domestic and international investment positions. Advances in the technology of financial transactions have reduced transactions costs to the point where they less and less serve as an impediment to rearranging portfolios when expectations change. It is increasingly common, for example, to see investors switch between bond and equity funds when expected yields diverge. When transaction costs in the spot market are too expensive, the investor has the opportunity to take equivalent positions in the derivative markets (where daily trading volume has tripled since 1986). The increasing concentration of saving in institutional funds (that is, in mutual funds, pension funds, insurance companies, unit trusts, and hedge funds) also means that individual investors are increasingly turning to professional fund managers when choosing among the extensive menu of liquid securities on offer; see Table 2. U.S. and European fund managers alone now control over $8 trillion in assets. 3/

All this has induced an impressive growth in international portfolio investment among the major industrial countries. Total cross-border equity holdings in the United States, Europe, and Japan increased from $800 billion in 1986 to $1.3 trillion in 1991, while total cross-border ownership of tradable securities is estimated to have risen to $2.5 trillion. A significant share of the government debt of all OECD countries is now held by non-residents. 4/ Close to 50 percent of all trading in the equity of firms located in the European Community (EC) takes place outside the home country. 5/ One out of every seven equity trades worldwide involves a foreigner as a counterparty. 6/ More generally, the last two decades have witnessed an enormous expansion in the volume and range of international financial transactions. No matter whether the relevant yardstick is taken to be the average daily net turnover in the foreign exchange market, or the scale of gross capital flows in the major industrial countries, or the stock of Eurocurrency bank loans and bonds, or the share of foreign direct investment in total gross investment, there is little doubt that the

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1/ By 1992, the outstanding stock of publicly-traded debt and equity securities in Europe and the United States had climbed to roughly $24 trillion, while the notional amounts of financial derivatives outstanding had reached $7 trillion; see Goldstein et al. [1993a].

2/ By "global" bonds and equities, we mean securities which are distributed internationally at issue, thereby allowing them to be tradable in more than one market from inception.

3/ Goldstein et al. [1993a].

4/ OECD [1993].

5/ The analogous figure for trading of U.S. equities is about 10 percent.

6/ Breeden [1991].

Table 2. The Growth of Institutional Investors: Financial Assets as a Percentage of Household Financial Assets

	Pension Funds and Life Insurance Companies			Collective Investment Institutions			Total		
Country	1980	1985	1990	1980	1985	1990	1980	1985	1990
United States	17.8	21.1	23.5	2.2	5.0	7.7	20.0	26.0	31.2
Japan	13.8	16.6	20.8	1.8	3.6	5.6	15.6	20.2	26.4
Germany	19.4	24.2	27.1	3.2	4.8	8.1	22.6	29.0	35.1
France	8.0	11.2	14.7	2.7	12.4	21.7	10.6	23.6	36.3
Italy 1/2/	1.6	0.9	3.2	n.a.	2.1	2.9	n.a.	2.9	6.1
United Kingdom 1/	39.9	49.9	53.7	1.6	3.1	4.9	41.5	53.1	58.6
Canada	19.4	23.3	26.7	1.0	1.6	3.0	20.4	24.9	29.7

Source: JOHNSON C., "New Players, New Rules - Financing the 1990s," Lafferty Publications

1/ Total assets.
2/ At book value.
3/ For Italy and United Kingdom, 1989 figures.

international component of financial market activity has grown faster than either the domestic component or the value of world trade. 1/

Yet in other respects, both the domain of international financial liberalization and the current degree of capital market integration emerge as more limited.

Nearly fifty years after Bretton Woods, it is noteworthy that less than one-fifth of the IMF's 178 member countries and territories voluntarily refrain from either restricting payments or using separate exchange rates for some or all capital account transactions. 2/ For some larger western European countries, capital controls were not fully removed until 1990, and some smaller western European countries took such action only during the past year. In short, the establishment of capital account convertibility is still by no means a universal phenomenon. 3/

Nor have we reached the stage--even in the most developed financial markets--where the foreign-currency denominated investments of banks and of institutional investors are free of regulatory guidance and constraints. A summary of those measures for the larger industrial countries is shown in Table 3. Most G-10 countries exercise some guidance on net open forex positions for their banks, and mutual funds, insurance companies, and pension funds are usually subject to some type of "prudence" rule on their foreign-currency denominated investments.

Once we move beyond the wholesale market in heavily traded, highly liquid, largely default free, financial assets to the broader categories of world saving and wealth, it is likewise apparent that the Walrasian auctioneer plays a more modest role. The largest component of wealth in almost all economies is human capital, an asset that is not traded either domestically or internationally. As originally highlighted by Feldstein and Horioka [1980], experience across a wide spectrum of countries reveals that the lion's share of domestic investment is still financed by domestic--and not by world--saving. Retained earnings still occupy an important role in

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1/ Folkerts-Landau and Mathieson [1988] and Crockett [1993].

2/ IMF [1993b]. Under the IMF's Articles of Agreement (Article VI, Section 3), countries retain the authority to "... exercise such controls as are necessary to regulate international capital movements."

3/ Since the countries that do maintain capital account convertibility account together for a large share of world financial transactions, the effective degree of global capital account convertibility is substantially higher than suggested by a tally of the number of countries alone. Our point is simply to register that attitudes on liberalization of the capital account are not uniform across countries, and that many parts of the developing world have yet to embrace capital account convertibility.

Table 3. Regulatory Constraints on Foreign-Currency-Denominated Investments by Major Financial Institutions in Selected Industrial Countries 1/

Country/ Region	Banks	Pension Funds	Insurance Companies	Mutual Funds
France	The net foreign exchange position is limited to 15 percent of own funds for each currency and 40 percent overall.	--	Investments are subject to the matching assets rule; the location rule; and the allocation of assets rule.	Subject to disclosure and asset diversification rules. A fund may not hold more than 10 percent of any one category of securities of one issuer.
Germany	Net open foreign exchange positions (spot and forward combined) at the close of each business day must not exceed 30 percent of the liable capital.	No more than 5 percent of assets can be invested in overseas bonds.	Investment must adhere to the principle of localization; the principle of congruence, which matches the asset side with the liability side of an insurance company's balance sheet to avoid currency risks.	
Italy	Currently no formal restrictions on foreign exchange position. New prudential provisions for foreign exchange exposure are to be introduced.		Investment is subject to the matching requirement, i.e., commitments in a currency must be covered by assets denominated in the same currency.	May not invest more than 5 percent of their resources in securities issued by the same company if quoted or more than 10 percent if unquoted on a stock exchange, and may borrow up to 10 percent of their assets including borrowing in foreign currency.
Japan	Authorized foreign exchange banks are subject to individual ceilings on their overall (spot and forward combined) net positions in foreign currencies at the end of each working day.	Required to keep at least 30 percent of assets in guaranteed fixed-return domestic yen vehicles.	Holding of securities issued by nonresidents is limited to 30 percent of total assets; the same ratio applies to purchases of foreign-currency-denominated assets.	
United Kingdom	Net open dealing position in any one currency may not exceed 10 percent, and that of all currencies taken together may not exceed 15 percent, of the adjusted capital base. In practice limits for most individual banks are set lower than these general maxima after taking into account each bank's experience and internal control system.	Not subject to any specific limitations in their holdings of foreign currency assets.	Subject to matching and localization rules, which require them roughly to balance liabilities expressed in a particular currency with assets in that currency.	Collective investment schemes (unit trusts) are required to invest at least 90 percent of their assets in transferable securities in "approved markets," which includes markets in virtually all member countries of Organization for Economic Cooperation and Development (OECD).

Table 3. (continued) Regulatory Constraints on Foreign Currency-Denominated by Major Financial Institutions in Selected Industrial Countries 1/

United States	Foreign currency exposure of banks is not subject to any regulatory limitations, but it is monitored through weekly and monthly reports on spot and forward positions.	Regulated by a special federal law--Employee Retirement Income Security Act (ERISA). Permissible investments subject to the "prudent expert" rule, which includes a requirement to give consideration to diversification and liquidity factors. Otherwise no explicit restrictions on holding foreign securities, including foreign equities and foreign-currency-denominated bonds.	U.S. state insurance regulations attempt "to prevent or correct undue concentration of investment by type and issue and unreasonable mismatching of maturities of assets and liabilities." These laws usually allow an unrestricted "basket" of investments for certain amount of assets, which can be allocated to foreign securities.	Primarily regulated by the SEC under federal laws. An open-ended fund may not hold more than 15 percent of its net assets in illiquid assets. Otherwise no explicit restrictions are imposed on investment in foreign securities.
European Community	Under the EC directive on capital adequacy if a firm's overall net foreign exchange position exceeds 2 percent of its total own funds, it will multiply the excess by 8 percent to calculate its own funds requirements against foreign exchange risk. 2/	The EC Pension Fund Directive requires member states to abolish arbitrary investment requirements such as lists of permissible assets or minimum investment requirements. Member states cannot require funds to hold more than 80 percent of their assets in matching currencies and must take account of the effect of any currency hedging instruments held by the institution.	The EC life and non-life insurance directives intend to remove all legal barriers for the creation of a common market in insurance. They also set out provisions to harmonize rules on admissible investment.	The Undertakings for Collective Investment in Transferable Securities (UCITS) Directive introduced the principle of the single authorization requirement and aimed at coordinating the laws of member states. No guidelines are set out for restricting UCITS fund's cross-border investment.

1/ For the securities houses of these countries there are no explicit regulatory restrictions on foreign exchange positions and other cross-border investments.

2/ The same regulatory constraints apply to security houses.

financing business investment. 1/ A non-trivial share of household financial assets in the major industrial countries continues to be held in non-intermediated form (for example, equity in self-owned business). As recently as 1984, three-fourths of families in the United States did not own any stock at all (Mankiw and Zeldes [1991]).

Net international capital flows (that is, current account imbalances) also tell a somewhat different story than gross flows. Although net capital flows for industrial countries grew markedly between the mid-1970s and the second half of the 1980s, they were still considerably smaller (relative to GDP) than during the pre-1914 gold standard era. 2/ The United Kingdom ran an average current account surplus equivalent to roughly 4 1/2 percent of GNP from 1880 to 1913, and Australia, Canada, and the Scandinavian countries were able to maintain large average deficits over an extended period. Today, it is still unusual to see a major industrial country incur a current account imbalance equal to say, 3 percent of GNP for three or more years in a row. In fact, for G-7 countries over the 1970-93 period, this has happened on only five occasions (the United States, 1985-87; Japan, 1985-87; Germany, 1986-89; the United Kingdom, 1988-90; and Canada, 1989-93); 3/ see Table 4. The average current account imbalance (relative to GDP and without regard to sign) for G-7 countries over the 1980s was 1.7 percent.

Moreover, while there is clearly a much greater diversity of internationally-traded assets on offer today than during earlier periods, there has in general been less convergence of nominal and real interest rates across the larger industrial countries than during earlier regimes. Bordo [1993] finds that for nominal and real long-term interest rates, as well as for nominal short-term rates, convergence across the G-7 countries was lower during the 1974-89 period than during either the classical gold standard (1881-1913) or Bretton Woods (1946-70); only for short-term real interest rates did the outcome go the other way. It could be that this difference in convergence of interest rates across monetary regimes reflects factors other than the degree of international capital mobility (such as a higher incidence of country-specific shocks and/or a higher divergence of inflation rates during the floating rate period), but that remains to be sorted out.

1/ Corbett [1987] estimates that (in the mid-1980s) between one-half and two-thirds of the (gross) financing of non-financial corporations in the United States, the United Kingdom, and Japan came from retained earnings. Mayer [1989] obtains broadly similar findings for the G-7 countries over the longer 1970-85 period.

2/ Turner [1991].

3/ If we move beyond the G-7 to the smaller industrial countries, the incidence of large current account imbalances in the 1970-93 period increases.

Table 4. Current Account Balance/Gross Domestic Product, Major Industrial Countries, 1970-93

(In percent)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993 1/
United States	0.23	-0.13	-0.48	0.53	0.13	1.14	0.24	-0.74	-0.68	-0.01	0.09	0.17	-0.36	-1.28	-2.62	-3.01	-3.46	-3.60	-2.58	-1.93	-1.64	-0.06	-1.05	-1.60
Japan	0.97	2.51	2.17	-0.03	-1.02	-0.14	0.66	1.58	1.70	-0.87	-1.01	0.41	0.63	1.75	2.77	3.66	4.32	3.61	2.75	1.99	1.22	2.18	3.20	3.38
Germany	0.71	0.45	0.47	1.46	2.77	1.04	0.83	0.78	1.39	-0.71	-1.71	-0.52	0.78	0.81	1.60	2.64	4.46	4.14	4.23	4.85	2.88	-1.18	-1.30	-1.42
France	-0.27	0.08	-0.18	0.40	-1.71	0.57	-1.23	-0.30	1.47	0.86	-0.65	-0.91	-2.14	-0.79	-0.15	-0.20	0.12	-0.90	-0.50	-0.48	-0.81	-0.50	0.21	0.16
Italy	0.83	1.72	1.49	-1.55	-4.36	-0.27	-1.34	1.01	2.06	1.46	-2.19	-2.26	-1.54	0.37	-0.59	-0.87	0.40	-0.19	-0.68	-1.24	-1.34	-1.84	-2.06	-1.58
United Kingdom	1.54	1.89	0.30	-1.37	-3.95	-1.49	-0.73	-0.09	0.57	-0.33	1.23	2.65	1.67	1.24	0.55	0.78	0.02	-1.06	-3.43	-4.22	-3.09	-1.12	-2.00	-2.84
Canada	1.16	0.38	-0.26	0.24	-0.85	-2.70	-2.07	-1.98	-2.03	-1.76	-0.36	-1.72	0.75	0.76	0.61	-0.65	-2.25	-2.10	-2.56	-3.52	-3.85	-4.34	-4.16	-3.34

Source: International Monetary Fund, World Economic Outlook.

1/ Estimated.

True, international diversification of assets has been increasing over the past decade. Nevertheless, empirical studies indicate that portfolios in major industrial countries continue to be subject to a strong "home bias," such that actual international diversification is significantly lower than that suggested by optimal portfolio considerations. 1/ U.S. investors hold about 94 percent of their equity holdings in the form of U.S. securities; for Japan, the United Kingdom, and Germany, the corresponding percentages each exceed 85 percent. 2/ The 300 largest pension funds in the world have only about 7 percent of their assets denominated in foreign-currency instruments. 3/

This paper discusses the extent to which national capital markets have become linked and identifies several of the more important consequences of that increased degree of integration. The organizational scheme is as follows. Section II examines various measures of the integration of world capital markets, including deviations from the law of one price, differences between actual and optimally diversified portfolios, correlations between domestic investment and domestic saving, and cross-country links in consumption behavior. We also review some of the methods that have been employed to gauge the degree of capital mobility in developing countries. In Section III, we analyze two recent episodes of large-scale international capital flows--namely, the turmoil in the European Monetary System (EMS) in the fall of 1992, and the surge of capital inflows into Latin America during the last three years--for insights into the workings of today's global capital market. Finally, Section IV offers some concluding remarks on the future evolution of international capital markets, on exchange rate management, on alternative approaches to living with larger and more influential financial markets, and on the financing of investment in the formerly centrally planned economies.

Anticipating our conclusions, we find 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. The massive capital flows that took place in the fall of 1992, and then again this past summer, to prompt adjustments in exchange rate parities and a widening of the bands in the Exchange Rate Mechanism (ERM) of the EMS, are indicative of the strength and agility of that major segment of today's capital market. 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

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1/ Tesar [1991], French and Poterba [1991].
2/ Baxter and Jermann [1993].
3/ Goldstein et al. [1993a].

financial assets falls, and as securitization and the role of institutional investors grow. We expect this increase in integration to continue. At the same time, it is 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. While the discipline exercised by capital markets over government policies is neither infallible nor always applied smoothly and consistently, we find that markets have on the whole encouraged adjustments in policies that go in the right direction. There are legitimate concerns about the impact of increased international capital mobility on the effectiveness of macroeconomic policies and on the management of systemic risk, but we doubt that either 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. Finally, experience teaches us that the hundreds of billions of dollars of new investment needed to help transform the formerly centrally planned economies of Europe and Asia into efficiently functioning market economies will come mainly from increases in domestic saving. World capital markets will play an important, but not predominant, role.

II. Measuring the Integration of Capital Markets

Consider the paradigm of a perfect and comprehensive capital market in which wealth holders can trade claims on literally every economically valuable asset (including human capital and state contingent securities) with free and complete information and with little or no transactions cost. No such perfect and comprehensive capital market exists at the international level or at the national level, even in the most financially advanced countries. Nevertheless, by considering various ways in which observable economic behavior might diverge from the implications of a perfect capital market, it is possible to derive various measures of the degree of international capital market integration. Since these various measures tend to focus on different functions that capital markets are expected to perform, they do not, unfortunately, always yield similar, or even directly comparable, conclusions concerning the degree of international capital market integration.

One approach is to note that under perfect international capital mobility, there would be no official barriers to international capital flows and, presumably, transactions costs for asset trades would not be much greater for trades across countries than for those within them. In the real world, of course, there are a host of barriers to cross-border capital flows, extending from differences in language and information, to official restrictions and policies that favor domestic asset trade relative to

foreign trade. A catalogue of these restrictions can provide useful information about barriers to international capital flows, but does not provide an easily interpreted measure of the economic importance of these barriers.

Another approach focuses on the idea of "the law of one price"--that is, that identical assets should trade at the same prices in different locations. This approach has spawned a large literature which is reviewed below. Closely related to this approach are a number of studies that focus either on the degree of substitutability across assets that might naturally be thought of as close or nearly perfect substitutes, or that examine the extent to which real interest rates tend to be equalized or tend to move together internationally. Along a different tack, several studies have explored whether portfolios of assets held by residents of different countries are internationally diversified to the (large) extent that would be consistent with perfectly integrated capital markets. Even more distinct in concept are two broad classes of studies that either investigate the extent to which correlations of national savings and national investment are consistent with perfect international integration of capital markets, or that explore whether correlations of consumption movements across countries are consistent with the risk sharing that would be expected with perfect integration.

Even though there is by now a burgeoning literature that addresses directly the measurement of international capital market integration, it has proven difficult to reach firm and clear conclusions about the degree--if not the trend--of integration. This ambiguity reflects the fact that no single method of measuring the degree of integration is completely free of conceptual and technical difficulties that cloud its interpretation. 1/

Capital markets can respond to a shock either through capital flows, or through a change in asset prices, or through some combination of the two. This means that integration cannot be gauged by looking at the scale of capital flows alone. Trading of some benchmark U.S. government securities, for example, takes place both inside and outside the United States. An unanticipated event (such as a change in the Federal Reserve's discount rate) can trigger an immediate adjustment of these securities prices without any capital flows or even any transactions occurring. Divergencies from the law of one price (that is, yield differentials on supposedly identical assets) have to contend with the problems that observed yield differences could reflect characteristics of the assets (default risk, liquidity, existence of tied services, etc) that have little to do with unexploited opportunities for international arbitrage, and that there are different ways of modelling expected returns (so that tests for the law of one price are always joint tests of the degree of integration and of the model used to define expected returns). Also, law-of-one comparisons are typically restricted to a subset of assets that is much narrower than anything like

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1/ Useful surveys are Obstfeld [1993a], Frankel [1991,1992], and Tesar [1991].

national "capital." Departures of actual from optimal portfolios run into the thorny problem that there is no "world" economic agent who consumes the world consumption basket, so that investors from different countries bring different consumption perspectives to bear on their optimal portfolios. Correlations between domestic investment and domestic saving, while covering a wider range of assets than in law-of-one-price comparisons, can be spurious indicators of the degree of international capital mobility because (as detailed below) the observed correlations can be influenced by a gamut of "other" factors. Correlations of consumption behavior across countries are joint tests of the risk-pooling attributes of international capital markets and of some restrictive assumptions about both the available menu of assets on offer and the nature of shocks (common versus country-specific and transitory versus permanent) impinging on economies. And on and on.

In the remainder of this section, we attempt to give the flavor of these alternative approaches to the measurement of integration--along with a summary of the findings.

Law of one price exercises

As suggested earlier, a basic characteristic of a perfectly integrated asset market is that the asset's price is the same everywhere in that market, that is, asset prices must obey the "law of one price." In comparisons of offshore and onshore yields, the typical practice is to look in the two financial centers at the cost of interbank funds denominated in the same currency (e.g., the nominal interest rate on a large, yen-denominated certificate of deposit in Tokyo versus that on a London, Euroyen deposit of the same maturity). Obviously, no currency risk is involved here but yields could diverge because of differences in transactions and information costs, the existence or threat of capital controls, differences in tax treatment, and perceived default risk.

Two main conclusions have emerged from such offshore/onshore comparisons. The first one is that these differentials have declined markedly during the 1980s. This suggests a move toward closer integration of capital markets, especially for those countries (like France and Japan) which have relaxed their capital controls during this period; see Chart 1. 1/ The second conclusion is that during periods of turbulence, these differentials widen appreciably--as uncertainty increases and liquidity decreases. 2/ When fixed exchange rates are under pressure, the widening of offshore/onshore differentials is frequently regarded as a signal that market participants are concerned that the (onshore) authorities may impose or tighten capital controls to defend the rate. These concerns go beyond garden-variety paranoia. Giavazzi and Giovaninni [1989], for

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1/ The offshore/onshore differentials for Japan shown in Chart 1 are for 3 month deposits; one month deposits seems to show smaller differentials (see Obstfeld [1993a])--but there is still a trend toward increased integration.

2/ Giavazzi and Pagano [1985], Frenkel and Levich [1977], Fieleke [1975].

example, have shown that in the early years of the EMS, capital controls employed by weak currency countries became more binding during speculative attacks. More recently, during last fall's turbulence, capital controls were tightened by three EMS countries (Portugal, Spain, and Ireland) in unsuccessful attempts to avoid forced realignments.

A close relative of the offshore/onshore tests are those of covered interest rate parity (CIP). 1/ CIP is a basic arbitrage relationship that says that the difference in interest rates on instruments issued by comparable borrowers but denominated in different currencies should be just equal to cost of cover in the forward exchange market. CIP is usually tested by examining interest rates on Eurocurrency deposits. As with the offshore/onshore differentials, the presumption is that since exchange risk has been eliminated, any departure from CIP must owe to transactions costs and to "country" or "political" risk factors (capital controls and the like).

Even without doing any formal tests, there is a strong presumption from the practices of market participants that CIP should hold. Interviews with large banks have repeatedly confirmed that the CIP condition is used to set the (forward) exchange rate spreads or the interest rate spreads (between domestic and foreign currency deposits) at which trading is actually conducted. Not surprisingly, empirical tests have found: (i) that CIP holds to a close approximation in most short-term markets in industrial countries; (ii) that deviations from CIP are on average much smaller than they used to be--again suggesting a trend toward closer integration; and (iii) that departures from CIP beyond what can be explained by normal levels of transactions costs are often related to actual or prospective capital controls. 2/

Some notion of the size of departures from CIP--and how they differ across groups of countries--can be obtained from Table 5, taken from Frankel [1991]. A negative mean differential (in column 2) implies that to the extent that barriers to capital flows existed during the 1982-88 period, they operated to discourage capital from flowing out of the country; a positive differential carries a symmetric interpretation. Two things in Table 3 merit comment. First, drawing both on comparisons with earlier studies and estimation of time trends, departures from CIP were on average smaller during the 1980s than during the 1970s; this trend toward increasing integration was particularly marked for Portugal, Spain, France, New Zealand, Denmark, Australia, and Italy. Second, distinguishing between the trend and the level of integration, departures from CIP were generally smaller for industrial countries than for developing ones, albeit with some notable exceptions; put in other words, capital markets in industrial countries are farther along in the integration process than those in the developing world. These comparisons of offshore/onshore differentials and

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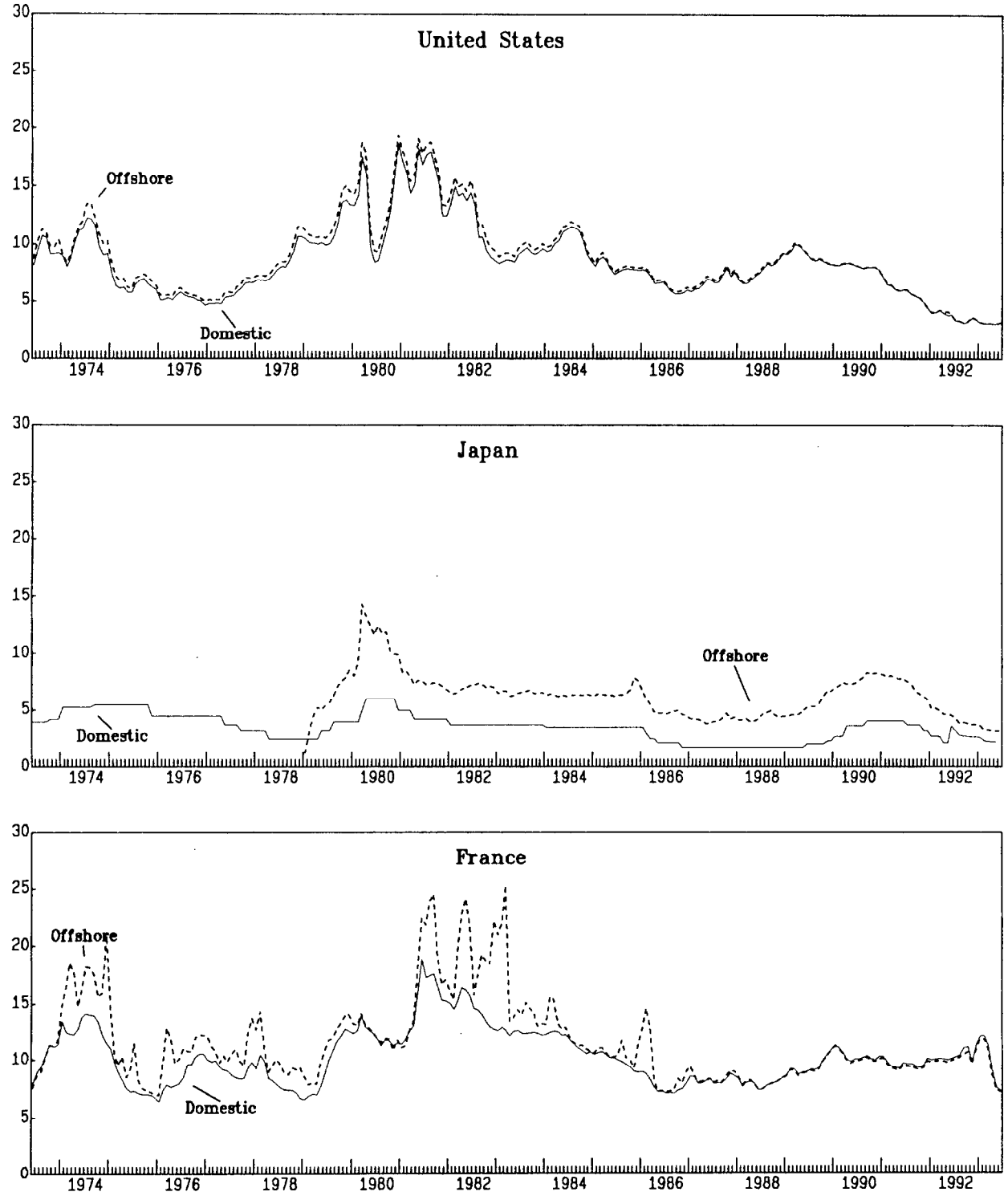
1/ Tests of CIP can involve onshore comparisons or offshore/onshore comparisons.

2/ Dooley and Isard [1980].

Chart 1. Domestic and Offshore Interest Rates: United States, Japan, and France, June 1973 - June 1993
(In percent)



Sources: Data Resources Incorporated; International Monetary Fund, *International Financial Statistics;* Organization for Economic Cooperation and Development; and Reuters.

Table 5. "Country Premia" or Covered Interest Differentials (local minus Eurodollar; three-months rates); Interest Differential Less Forward Discount, September 1982 to April 1988

	Number of Observations (1)	Mean (2)	Standard Error of Mean (3)	Series Standard Deviation (4)	Root Mean Squared Error (5)
Group I					
Canada	68	-.10	.03	.21	.24
Germany	68	.35	.03	.24	.42
Netherlands	68	.21	.02	.13	.25
Switzerland	68	.42	.03	.23	.48
United Kingdom	68	-.14	.02	.20	.25
Group	340	.14	.01	.21	.34
Group II					
Hong Kong	68	.13	.03	.28	.31
Malaysia	63	-1.46	.16	1.28	1.95
Singapore	64	-.30	.04	.31	.43
Group	195	-.52	.05	.76	1.14
Group III					
Bahrain	64	-2.15	.13	1.06	2.41
Greece	58	-9.39	.80	6.08	11.26
Mexico	43	-16.47	1.83	12.01	20.54
Portugal	61	-7.93	1.23	9.59	12.49
South Africa	67	-1.07	1.17	9.55	9.61
Group	293	-6.64	.48	8.23	11.82
Group IV					
Austria	65	.13	.05	.39	.41
Belgium	68	.12	.03	.26	.29
Denmark	68	-3.53	.19	1.57	3.89
France	68	-1.74	.32	2.68	3.20
Ireland	66	-.79	.51	4.17	4.24
Italy	68	-.40	.23	1.92	1.96
Norway	50	-1.03	.11	.76	1.29
Spain	67	-2.40	.45	3.66	4.39
Sweden	68	-.23	.06	.45	.51
Group	588	-1.10	.09	2.25	2.77
Group V					
Australia	68	-.75	.23	1.94	2.08
Japan	68	.09	.03	.21	.23
New Zealand	68	-1.63	.29	2.42	2.92
Group	204	-.76	.12	1.78	2.06
All countries	1,620	-1.73	.09	3.81	5.36

Adapted (with minor revision) from Frankel (1991).

of departures from CIP, deal only with the short end of the financial market, usually employing data on 3 month instruments. They are therefore mute on whether integration has progressed equally far for longer-term markets. Here, empirical studies are few and far between. This largely reflects the situation prior to the 1980s when the market for foreign exchange cover for maturities beyond say, two years, was rather limited. The tremendous expansion during the 1980s of the market for currency and interest swaps has made it much easier to arrange cover for longer maturities, up to even seven, ten, or twenty years; in addition, the growth of the over-the-counter markets has meant that such cover can now be "custom-tailored" to participants' needs to a larger extent than was the case when cover had to be purchased using the standard contracts available on the organized exchanges. This suggests that deviations from CIP at longer maturities are probably smaller today than they were say, ten years ago. Popper [1990], using swap-covered return differentials on 5 and 7 year government bonds, even finds that CIP departures are smaller for longer-term instruments than for comparable shorter-term ones. It is not clear, however, how robust that finding will turn out to be with respect to other instruments and other markets. On the one side, governments may be more likely to impose controls on shorter-term rather than on long-term capital because assets with short-maturities may be perceived as more speculative in nature (Hamio and Jorion [1992]). On the other side, the still more limited availability of long-term hedging instruments (relative to short-term ones) could make transactions costs higher at that end of the market (Hilley et al. [1981]).

From time to time, efforts have also been made to extend the scope of integration inquiries to include equity price movements. One interesting new line of inquiry is to examine the premia observed in closed-end country mutual funds. Under perfect capital market integration, the share price of the country fund should equal its net asset value, computed from the price of foreign shares listed in the foreign market. Differences between the two can be ascribed to what a foreign investor would be willing to pay to circumvent legal restrictions on buying the shares directly. 1/ Bonser-Neal et al. [1990] found that a number of country funds showed a significant decrease in premia (over the 1981-89 period) either in anticipation or following announcements of investment liberalization measures--a finding which supports the aforementioned trend toward decreasing segmentation.

A second, more traditional approach is to look at correlations in stock price indices across countries. Here, four findings are relevant:

1/ Since domestic closed-end mutual funds also sometimes display these differences, one needs to evaluate the premia in the country funds relative to those for domestic funds.

(i) correlations of stock market movements across industrial countries are usually low to moderate in size; 1/ (ii) there is no significant increase in the size of these correlations over the past twenty years or so; 2/ (iii) cross-country linkages are much tighter during periods of extreme turbulence, such as in October 1987, than during more tranquil times; and (iv) cross-country spillovers are asymmetric, with spillover from the U.S. market to others much stronger than in any other direction. 3/ Note also that high correlation of ex post stock market returns between two countries does not necessarily imply close integration of these markets since expected returns could still differ. 4/

Next, suppose that market participants choose not to cover against currency risk. Then, to the extent that asset holders regard securities denominated in different currencies as less than perfect substitutes, a new source of market "segmentation" enters the picture. In theory, imperfect substitutability among assets denominated in different currencies does not necessarily imply any imperfection in the functioning of international capital markets--any more than different expected returns for assets with different risk characteristics in domestic capital markets implies an imperfection in these markets. In practice, however, evidence of a high degree of substitutability among assets denominated in different currencies would naturally be thought to be evidence of a higher degree of international capital market integration. By analogy with the theory of international trade, international price divergences resulting from transportation costs and other real barriers to trade do not imply any economic inefficiency. Nevertheless, goods markets are clearly more integrated internationally when transport costs are low, as well as when tariffs and other artificial barriers to trade are low. Moreover, in the case of international financial markets, there is the suspicion (at least in some quarters) that currency risk associated with widely fluctuating exchange rates is a largely artificial barrier to international capital market integration.

One way of assessing the degree of segmentation resulting from currency risk is by testing for its absence; that is, by testing whether the condition of uncovered interest parity (UIP) holds. If UIP holds, then markets are equilibrating the (known) nominal return on a domestic currency asset with the expected nominal yield, translated into domestic currency, on

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1/ Solnik [1991], Jorion [1992]. Because of the existence of country-specific shocks, it is not likely that even a perfectly integrated capital market would exhibit perfect correlations of stock prices across countries. Still, one would expect higher integration to be associated with higher correlations of returns across countries.

2/ Jorion [1992], examining correlations among national stock markets for 16 industrial countries (plus Hong Kong and Singapore), reports that the correlations increased slightly as between 1959-70 and 1971-78, but then decreased, on average, in the 1979-86 period.

3/ Hamao et al. [1990] and Eun and Shim [1989].

4/ Jorion [1992].

an uncovered position in a comparable foreign currency asset. UIP is equivalent to the combination of CIP with the assumption that exchange markets are driven at the margin by risk-neutral investors who equate the forward exchange rate with the expected future spot exchange rate. 1/

Tests of UIP have often involved assessments of whether the forward is a biased predictor of the expected future spot rate. To estimate the expected future spot rate, researchers have relied either on survey data of the expectations of exchange market participants or on the assumption that exchange rate expectations are formed rationally (which permits substitution of the actual exchange rate for the expected rate). By now, the evidence points pretty clearly to the following conclusions: (i) forward rates are biased (and even perverse) predictors of expected future spot rates; 2/ (ii) probably the main reason why forward rates are such lousy predictors of expected future spot rates is that "news" about the variables that matter for the determination of exchange rates (e.g., future monetary policies) consistently reaches the market between the time the forward contract is entered into and the time that the contract expires; 3/ and (iii) the resulting "risk premium" varies over time but has proved difficult to relate to variables (like relative supplies of domestic and foreign assets) that theory suggests should influence it. 4/ Other tests of UIP have concentrated on the mean value of deviations from UIP and on the degree of autocorrelation in those deviations. 5/ The bottom line here too has been that UIP does not hold and that assets denominated in different currencies are viewed by the market as imperfect substitutes. 6/ Given the relatively high degree of exchange rate variability that has characterized the floating rate period, 7/ it is not surprising that Frankel [1991,1993] finds that most of the variation in (real) interest rate differentials across countries in the 1980s owes much more to "currency risk premia" than to "country risk premia."

Thus far, we have talked about tests of the law of one price exclusively in nominal returns, and we have restricted our attention to wholesale markets. Integration of capital markets is considerably looser once we move to real returns, and when we consider cross-country linkages among retail markets.

1/ Isard [1992] provides a useful discussion of both CIP and UIP, as well as a review of the empirical evidence on each.

2/ Cumby and Obstfeld [1984], Frankel and Froot [1987].

3/ Mussa [1990].

4/ Hansen and Hodrick [1980], Tryon [1979].

5/ Cumby and Obstfeld [1984].

6/ A complementary explanation is that market participants are risk adverse--not risk neutral--and that they attach a high subjective variance to long-term investment in foreign assets; see Feldstein and Bacchetta [1991]. We take up this issue when we discuss departures from optimally diversified portfolios.

7/ Frenkel and Goldstein [1988], Mussa and Isard [1993].

The main reason why integration of real returns for assets denominated in different currencies is a more stringent condition than integration of nominal returns is that the former also implies close integration of goods markets. That is, equality of real returns requires not only that UIP hold but also that ex ante relative purchasing-power-parity (PPP) hold as well. This latter condition means that the expected change in the nominal exchange rate needs to be equal to the expected difference in inflation rates between the two countries involved (that is, the real exchange rate remains constant). It turns out that nominal exchange rate changes during the 1970s and 1980s departed widely from the predictions of relative PPP (Frenkel [1981], Frankel [1991]), as real exchange rates showed pronounced swings, sometimes reaching as much as 50 percent. It is only either over very long time periods (spanning decades) or under conditions of hyperinflation, that PPP seems to provide a reliable explanation of exchange rate behavior.

Studies by Mishkin [1984], Cumby and Mishkin [1986], and others suggest that real interest rates in the industrial countries do show a tendency to move together but clearly not enough as to establish anything like equality of real returns. Real interest rate spreads across the major industrial countries have been significant over the past thirty years (see Chart 2)--as a combination of monetary and real shocks, of differences in macroeconomic policy stances and mixes, of changes in the credibility of exchange rate commitments (and differences in exchange rate polices), and of marked differences in cyclical positions, have each exerted an influence. These inter-country differences are also not uniform--either across pairs of industrial countries, or over time.

Although comparable data across countries on borrowing and lending rates for retail customers is much harder to come by than for wholesale transactions, there are strong hints that both the level and trend of integration is lower in retail financial markets than in wholesale ones. Part of the story is that barriers to entry in banking for foreign institutions--ranging from national brand name loyalty, to large start-up costs for branch networks, to restrictions on ownership structures--are probably greater on the retail side. Part of it is that retail customers are more captive of local financial institutions and less knowledgeable about international options than are large triple A corporations who can either fund themselves directly or borrow from foreign institutions. And part of it is that liberalization of interest rates on small savings accounts and of commissions on small equity trades has often been one of the last cars on the train of financial reform; see Table 1. In any case, evidence that Deutsche Bank and Bankers Trust can get the same rate of return on large certificates of deposit in Frankfurt and in New York does not necessarily mean that individuals with small saving accounts in east Germany earn the same real rate of return as individuals in Peoria, Illinois.

Departures from optimally diversified international portfolios

Yet another approach to gauging how "international" capital markets have become is to examine the extent to which actual national investment

portfolios differ from those implied by optimal portfolio theory. Because returns on financial assets do not always move in tandem across countries, standard portfolio theory suggests that such international diversification can reduce overall portfolio risk; indeed, because many shocks are country specific, there is a presumption that benefits should be larger from international than from domestic diversification.

As suggested in the introduction, international diversification has been on the rise in major industrial countries, especially over the past decade. One rough measure of this diversification is provided by the ratio of cumulative international capital flows relative to new issues of all domestic assets. Such data are available on a standardized basis for twelve OECD countries; see Table 6. Averaging inflows and outflows, this ratio increased from about 12 percent in 1975-82 to almost 17 percent in 1983-90. 1/

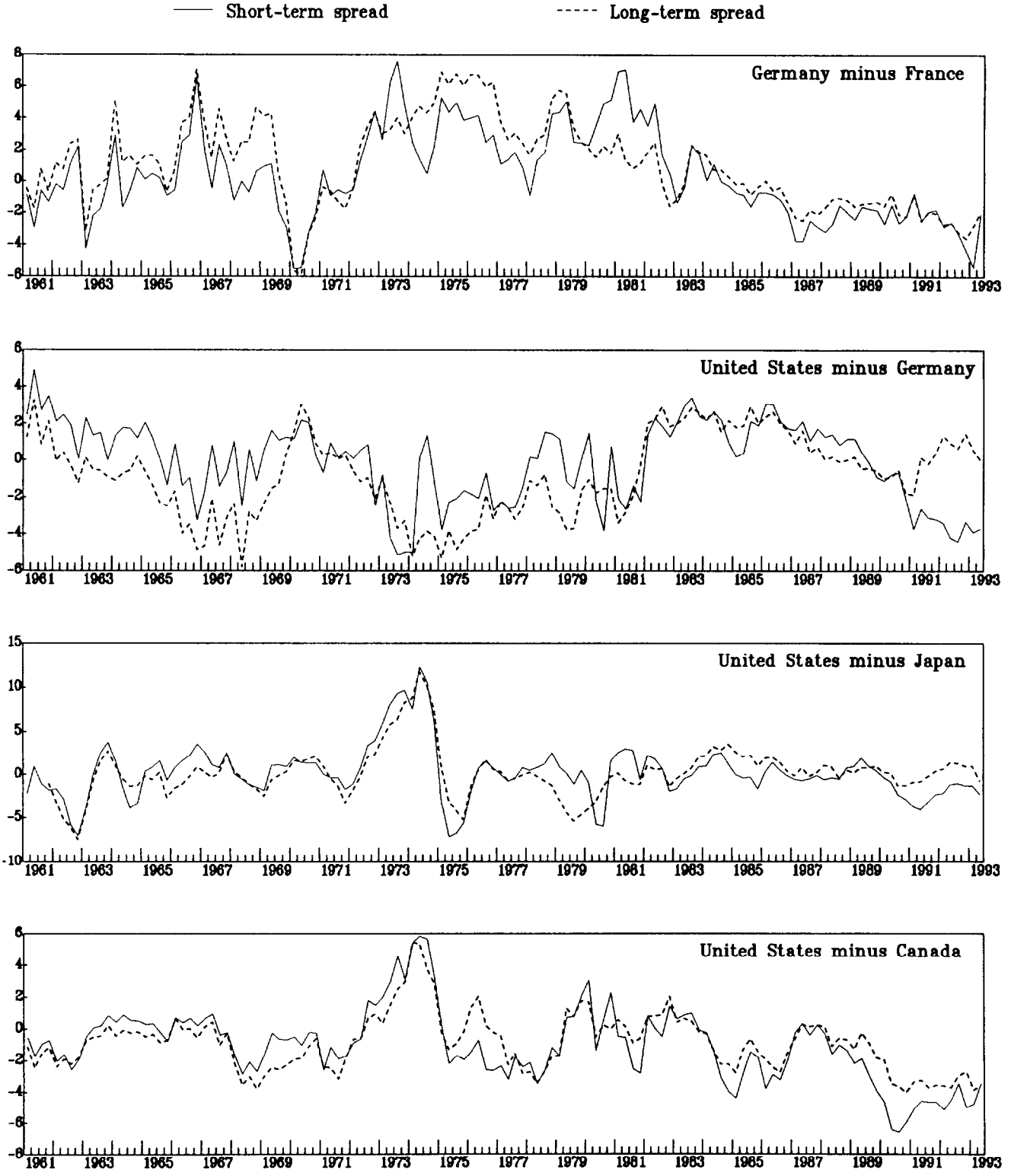
But all this refers to the trend of international diversification. When we turn to judging the level of diversification, the message from existing studies (Tesar and Werner [1992] and French and Poterba [1990]) is that the existing degree of diversification is far short of what would be implied by optimal portfolio considerations; 2/ moreover, this conclusion is quite robust to alternative methods of specifying the preferred portfolio strategy. 3/ Another way of saying much the same thing is to ask what the pattern of expected returns across countries would need to be to make existing portfolio allocations "optimal." The answer is that investors would need to expect that returns on the domestic market are much higher than the world market portfolio suggests they truly would be. In the case of U.S. investors, Tesar and Werner [1992] calculate that the "home bias"

1/ Tesar and Werner's [1992] figures on international portfolio investment (relative to GNP), covering five industrial countries over the 1980-90 period, tell a similar story, with the U.S. ratio climbing from 2 to 4 percent, and the ratios for Germany, Japan, and the United Kingdom registering much larger increases. Their estimates aso suggest large differences across the five countries in the degree of international diversification, with the United Kingdom at the top (26 percent), Japan and Germany in the middle (18 and 11 percent, respectively), and the United States and Canada at the bottom (around 4 percent).

2/ Golub [1990] reaches a similar conclusion about excessive "domestic asset preference" by employing a different methodology. He reasons that if capital were perfectly mobile internationally, the share of country i's assets purchased by residents of country i should equal that country's share in world lending. Actual home shares, however, are far higher than that for 12 OECD countries during the 1970s and 1980s.

3/ Some studies even suggest that once one adds the expected return from human capital into the calculation, the home bias becomes even larger. This is because the expected return from human capital is best hedged by taking a short position in domestic financial assets (that is, by having domestic assets take a negative weight in the optimal portfolio); see Baxter and Jermann [1993].

Chart 2. Major Industrial Countries: Real Interest Rate Spreads, 1961 - Second Quarter 1993[1]



Source: World Economic Outlook Data Base.

[1]The following definition applies for the short-term interest rates: Three-month certificate of deposit (CD) rate for the United States (before 1976, eurodollar deposit rate) and Japan (before July 1984, Gensaki rate), three-month interbank deposit rates for Germany and France (before 1970, money market rate), and three-month prime corporate paper for Canada; and yields on government bonds with residual maturities of 10 years or nearest are taken as the long-term interest rates. Real rates are nominal rates minus the 4-quarter percentage change in the GDP (GNP) deflator.

Table 6. Ratio of Inward and Outward Foreign Investment to New Issues of Domestic Assets, 1975-90

(Cumulative flows, in percent)

	Share of OECD Financial Wealth 1/	1975-82		1983-90	
		Inward Foreign Investment/Domestic Assets	Outward Foreign Investment/Domestic Assets	Inward Foreign Investment/Domestic Assets	Outward Foreign Investment/Domestic Assets
		Total Assets			
United States	36.2	3.4	5.7	8.4	2.4
Japan	25.3	3.7	4.3	9.2	13.6
Germany	3.9	11.0	11.2	17.7	32.6
France	6.4	10.3	9.5	14.5	13.9
Italy	4.6	10.9	6.4	8.1	6.6
United Kingdom	6.8	29.7	33.5	26.6	24.0
Canada	3.0	13.7	8.0	14.4	6.4
Spain	2.2	8.2	3.5	10.5	8.5
Netherlands	1.2	...	...	22.7	32.8
Sweden	1.6	13.5	6.6	15.6	11.6
Belgium	1.2	31.2	25.9	33.5	34.7
Finland	0.8	13.6	9.1	18.7	12.2
Average 2/		13.6	11.2	16.7	16.6
		Bonds and Equities			
United States	45.1	11.5	3.2	12.8	2.3
Japan	17.3	8.1	...	11.0	...
Germany	3.4	4.4	14.6	32.5	46.8
France	7.3	16.9	13.6	18.1	14.4
Italy	6.0	2.1	3.7	3.5	7.0
United Kingdom	3.9	6.4	8.2	43.7	37.0
Canada	4.2	23.2	12.3	30.4	15.3
Spain	1.2	12.6	6.6	41.9	10.5
Netherlands	1.0	...	...	39.7	47.4
Sweden	1.5	12.9	4.1	22.4	23.8
Belgium	1.4	12.6	8.9	10.3	37.9
Finland	0.7	20.3	6.0	28.0	12.9
Average 2/		11.9	8.1	24.5	23.2

Source: Organization for Economic Cooperation and Development, OECD Financial Statistics - Part 2: Financial Accounts of OECD Countries, various issues.

1/ Does not sum to 100 percent because of missing data for some small OECD countries. The latter share of asset issues was assumed to be proportional to their share of 1985 OECD GNP which was 7 percent.

2/ Unweighted.

is about 200 basis points; for German investors, the bias goes all the way up to 928 basis points.

Just what accounts for this home bias remains a puzzle. The list of possibles extends from transactions costs, to externally-imposed prudential limits on foreign assets, to uncertainties about expected returns, to higher (than warranted) risk perceptions about foreign assets due to relative unfamiliarity with those markets and institutions. 1/ Our own preference leans heavily toward the last factor. 2/ Indeed, we would suggest that there is not only a home bias but also a neighborhood or regional bias. Based on discussions with portfolio managers during the Fund's capital market missions, we conclude that there is a strong tendency even today for investors to be most knowledgeable and comfortable with investments in their own back yards, and to invest in regions where they have previously had other business relationships. Distance outpredicts anything else in explaining trade patterns; we suspect that it still has a role (as a proxy for familiarity) in investment flows as well. Over time, we would expect this home or neighborhood bias to decline, but we would be surprised if it goes away entirely during our lifetimes.

Saving and investment correlations

A third route to inferring the degree of integration or capital mobility among group of countries is to examine the relationship between domestic saving and domestic investment. This approach was pioneered in the early 1980s by Feldstein and Horioka [1980] and Feldstein [1983]. The basic idea is that in a world of perfect mobility, there should be practically no relationship between a country's domestic investment and its domestic saving: investment would be financed out of the pool of world saving, while savers would look to investment opportunities worldwide--not just in the domestic economy. Operationally, the test is to regress the ratio of investment to GDP, (I/Y), on the ratio of domestic saving to GDP, (S/Y): an estimated coefficient of one on the domestic saving rate means that all of the domestic saving is retained at home and is translated into higher domestic investment (zero capital mobility), while a coefficient of zero would imply complete international leakage of domestic saving (perfect capital mobility). When Feldstein and Horioka (1980) estimated this regression on a sample of 21 OECD countries over the 1960-74 period, they found that the estimated coefficient on domestic saving was very close to one (0.8 -0.9)--implying very low international capital mobility.

1/ Incomplete diversification hardly relates exclusively to international transactions. Here, French and Poterba [1991] cite the popular practice of owning a home close to where you work, downplaying the high correlation between the returns on human and physical capital.

2/ It could also be that there are differences across countries in the degree of risk aversion. For example, it is sometimes argued that European investors have a more negative attitude toward low-rated paper than do investors in North America, and that the former has something to do with the lack of a global market in paper rated A or below; see OECD [1993].

Since then, saving/investment correlations of the Feldstein/Horoika variety have been estimated again and again, employing a host of different time periods and country samples (including both cross-section and time-series tests, and covering both industrial and developing countries)--but the main finding that domestic investment is financed primarily by domestic saving has proved extremely robust. 1/ Only two qualifications merit mention. One is that inclusion of data for the decade of the 1980s suggests this correlation is probably declining over time (that is, that capital mobility is increasing). 2/ The second qualification is the (counter-intuitive) finding that saving/investment correlations are much lower for groups of developing countries than for groups of industrial ones. 3/

With less and less questioning of the facts, the real issue has turned on whether saving/investment correlations can tell us much about the degree of international capital mobility, and if not, why not. The answer to that question has spawned a sub-literature of its own, as much of the international economics profession has sought to find an explanation that would be consistent both with the high observed correlations and with their gut feeling that international capital mobility is actually high (not low). Proposed solutions to the puzzle fall into five categories: (i) imperfect goods market integration; (ii) current account targeting; (iii) missing variables common to domestic saving and investment; (iv) country size; and (vi) imperfect substitutability between financial and real capital.

The first two explanations have already been hinted at. For domestic saving rates to have no effect on domestic investment rates, it would be necessary, inter alia, for real interest rate parity--not just nominal interest rate parity--to hold. But capital mobility can only equalize nominal rates of return and there is not enough substitutability in goods markets across countries to make PPP hold. Thus, the story here (Frenkel [1991]) is that high saving/investment correlations primarily reflect imperfect goods market integration--and not low international mobility of capital.

The second explanation is that countries have implicit or explicit current account targets that they pursue with their macroeconomic policy tools so as to prevent large, sustained net international capital flows; as

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1/ See Feldstein and Bacchetta [1991], Obstfeld [1993], Frankel [1991,1992], and Tesar [1991] for surveys of this saving/investment literature.

2/ Both Frankel [1991] in tests for the United States alone, and Feldstein and Bacchetta [1991] in tests for 23 OECD countries, find that the correlations for the 1980s are lower than those for the 1960s and 1970s. Obstfeld [1993], however, suggests that saving/investment correlations for 1986-90 appear higher than those for 1980-85. Earlier studies (Dooley et al. [1987])--comparing the last dozen years of Bretton Woods with the first decade of floating--were unable to detect a decline in these correlations.

3/ See Dooley et al. [1987] and Montiel [1993].

noted earlier, sustained, large current account imbalances have been a relatively, infrequent event for large, industrial countries over the past two decades. If, for example, governments systematically adjusted the public-sector's net saving/investment position to offset shifts in the private sector's imbalance, this would contribute to high observed saving/investment correlations--even if capital were free to exploit international arbitrage opportunities. 1/

A clue that there may well be something to these goods market and current-account- targeting explanations comes from some recent efforts to estimate Feldstein-Horioka regressions on regional data. An advantage of using regional data is that one can make the assumptions that goods market integration is likely to be higher within than across countries, and that regional authorities have no current account targets. As such, this could make it easier to isolate the degree of capital mobility. 2/ In fact, regional saving/investment correlations for Canada (Bayoumi and Sterne [1993]), for the United Kindgom (Bayoumi and Rose [1991]), and for the United States (Sinn [1992]), all obtain results that are closer to the perfect capital mobility pole. Some authors have similarly investigated the behavior of saving/investment ratios for the gold standard era when tolerance for current account imbalances was apparently higher; in this case, however, the results have been inconsistent, with Bayoumi [1990] reporting low saving/investment correlations for that period and Obstfeld [1993a], using different data sources, reporting high ones.

Several questions remain. How can goods market integration explain the tendencies for saving/investment correlations to decline in the 1980s and for these correlations to be lower in developing countries (where protectionist trade barriers are presumably higher) than in industrial ones? In the absence of well-specified policy reaction functions for government fiscal positions, how can we disentangle the external constraint from a host of other influences (including political and historical factors)? Was the primary cause of the larger U.S. fiscal deficit in the mid-1980s and early 1990s a more benign attitude toward current account imbalances or was it political considerations that militated against both raising taxes and controlling government expenditure? The latter explanation seems closer to the mark.

A third class of explanations has involved a search for missing variables that could lie behind movements in both saving and investment. Since both saving and investment are known to behave pro-cyclically, there

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1/ Summers [1988] provides some numerical examples--as well as a regression relating public-sector saving/investment imbalances to private-sector ones, to illustrate this point of view.

2/ A disadvantage of regional data however is that smaller size probably means a less diversified economic structure and hence, a higher incentive to use international capital markets. In this sense, comparing country results with regional results is not entirely free of violations of the ceteris paribus condition.

is a danger when using high-frequency time-series data that saving/investment correlations could be capturing such cyclical influences. It turns out, however, that when cyclically-adjusted variables are used, or when the observations cover averages of longer-term periods, or when estimation methods to guard against simultaneous equations bias are employed, the high correlations remain. 1/ Population growth could be important because countries with high rates of population growth would be expected to have high investment rates (because of the investment needs of a rapidly growing labor pool) and high saving rates (because of the higher share of young people who are high savers relative to older dissavers). Summers [1988] illustrates how initial wealth can matter by citing the example of a country ravaged by war, where the desire to rebuild both the capital stock and household wealth holdings would generate an increase in both investment and saving. Because the life cycle theory of saving gives the growth rate of GDP (and labor's share of national income) a prominent role, and because the investment rate too is likely to be affected by income growth, one (Obstfeld [1986]) might likewise make the case that this is the missing variable. Again, however, what could be is not the same as what is. By and large, adding these variables to the basic investment/saving equation still produces results similar to the original findings (Feldstein and Bacchetta [1991], Summers [1988]). Finally, Tesar [1991] and Leiderman and Razin [1993] survey a group of real business cycle models where exogenous disturbances to either labor productivity (cum immobile labor) or the terms of trade leads both investment and saving to respond in the same direction. Simulation methods are then employed to show that, with reasonable parameter values and with shocks drawn from the historical record, these models can produce correlations of saving and investment that look similar to the correlations found by Feldstein and Horioka. The rub, here, however is that these results seem to be quite sensitive to small differences in the parameters of the model and in the stochastic properties of the shocks (transitory versus permanent, the degree of correlation across countries, etc); 2/ this lack of robustness makes the simulation results less than convincing.

We do not have any strong nominees of our own to put forward for the "missing variable" Oscar, at least for the industrial countries. But we do find something strange in the aforementioned finding for developing countries that saving/investment correlations are very low--indeed, much lower than for industrial countries. It seems doubtful that capital mobility should be higher for developing countries than for industrial ones--even if capital controls are rather ineffective in developing countries (see below), and even though there have clearly been some periods of substantial capital flight. One would also expect that a considerable amount of investment in developing countries would be financed by the same

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1/ Caprio and Howard [1984], Frankel [1986], Dooley et al. [1987].
2/ See Mendoza [1993].

individuals, families, and firms that do the saving. 1/ The more of this Robinson Crusoe self-intermediation that goes on, the higher should be the correlation between saving and investment in developing countries.

Three other factors are also probably important. One is the nature of the macroeconomic policy regime. More specifically, the same policy environment (a relatively low and stable rate of inflation, a reasonable fiscal deficit, a competitive real exchange rate, etc) that makes it attractive to save in country x is also likely to make it attractive to invest in country x, for residents and non-residents alike. Empirical studies of capital flight from developing countries, for example, have found that these same macroeconomic and exchange rate policy variables are influential in explaining the time-series and cross-section behavior of capital flight (Dooley [1988], Rojas-Suarez [1991]). This too should work in the direction of high correlations between domestic saving and investment.

A second potentially important factor is that some developing countries with less diversified production and export structures--oil exporters are the classic example--will find it useful to invest much of their saving abroad, both because of the limited set of investment opportunities at home and because of traditional diversification motives. This would suggest that saving/investment correlations for say, fuel exporting developing countries should be lower than those for other developing countries with more diversified economic structures. As shown in Table 7, such correlations do seem to be consistently lower for fuel exporters than for non-fuel exporters. As expected, the correlations are particularly low in those subperiods (1974-76 and 1980-82) following large increases in oil prices and in export earnings.

Third, one presumably also wants to take account of shocks that have different effects on certain sub-groups of developing countries. For example, saving rates declined appreciably after 1981 in those developing countries with debt-servicing difficulties as a result of sharply higher interest payments on external debt and of a widening of fiscal imbalances; the debt overhang also acted to discourage investment in those economies. The reduction in the debt overhang and the implementation of effective stabilization measures have, since the mid-1980s, helped to reverse this decline; see IMF [1993a]. In contrast, those developing countries without debt-service difficulties were able to maintain high saving rates throughout the 1980s and have recently increased them further. In any case, we think further empirical work to determine if, how, and why saving/investment

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1/ Lack of reliable flow of funds data makes it difficult to test this conjecture on a wide sample of developing countries. Singh and Hamid [1992] show, rather surprisingly, that for a sample of about ten developing countries, internal funds account for a smaller share of net investment expenditure than is the case in industrial countries. This finding, however, relates only to the largest firms (the top 50 manufacturing companies quoted on the stock market of each country).

Table 7. Saving and Investment: Fuel and Nonfuel Exporters

Regression: $(I/Y)_i = \alpha + \beta\ (S/Y)_i + \epsilon$

Estimates of β

Time Period	Fuel Exporting Countries	Nonfuel Exporting Countries
1971-92	0.18 (0.13)	0.61 (0.07)
1971-81	0.12 (0.13)	0.63 (0.08)
1982-92	0.26 (0.12)	0.59 (0.06)
1971-73	0.21 (0.19)	0.72 (0.10)
1974-76	0.07 (0.09)	0.60 (0.08)
1977-79	0.22 (0.14)	0.59 (0.07)
1980-82	0.06 (0.14)	0.43 (0.07)
1983-85	0.34 (0.13)	0.66 (0.08)
1986-88	0.27 (0.13)	0.52 (0.06)
1989-92	0.37 (0.13)	0.62 (0.06)

Notes: Countries where average ratio of fuel exports to total exports in 1984-86 exceeded 50 percent are classified as 'fuel-exporting' (17 countries); all others are classified as 'nonfuel-exporting' (73 countries). $(I/Y)_i$ and $(S/Y)_i$ denote respectively the average investment and saving ratio over the sample period.

correlations differ across groups of developing countries is warranted before one can give meaningful interpretation to the observed aggregate correlations.

This brings us to country size. It could matter for two reasons. First, small countries would be expected to have a less diversified economic structure than large countries and hence will depend more on capital inflows and outflows to offset domestic shocks. Second, a country that is large in world financial markets will be able to affect the world interest rate. For example, a dip in the large country's saving rate could raise the world interest rate and lead to a fall in both domestic and world investment. Both hypothesized effects of country size go in the same direction, namely, that small countries should have lower saving/investment correlations than large countries. This is an eminently testable proposition. Again, the results have not been convincing. While some studies find that country size matters (Murphy [1984]), most find that it doesn't matter enough to alter the basic empirical regularities. 1/

The last suspect is weak substitutability within national economies between heavily (internationally) traded, highly liquid, largely default-free financial assets denominated in different currencies (e.g., Treasury bills) and less (internationally) traded, less liquid, more risky, real assets (e.g., equities). As hinted at earlier, we believe there is something to this general point although we would readily admit that relatively little is understood about the mechanisms that would separate decisions about broad capital accumulation from those that involve access to world capital markets. 2/ What we do know is that some assets (government securities) are much more highly traded and arbitraged than others (equity claims on small business) and that individuals don't take anywhere near full advantage of diversification (either national or international) in their daily lives. Clearly, more research is needed to sort out what assets get traded and when, and how arbitrage between non-traded and traded assets is frustrated.

Cross-country links in consumption

This is the newest branch in the empirical literature on international capital market integration. Its theme is that free trade in financial assets will allow countries to offset idiosyncratic risks and hence, to more easily smooth consumption. In fact, as Obstfeld [1993a] emphasizes, if the

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1/ Feldstein and Horioka [1980] and Tesar [1991].

2/ Dooley et al. [1987] argue that it is less costly for the host government to impose taxes or penalties on some assets (say, foreign equity claims) than on others (say, government securities), and that this distinction reduces substitutability between the two. They then go on to argue that market participants will not be willing to build up large, net international claims in those classes of assets for which default penalties are relatively low. It is not clear, however, what the testable implications of such a "hostage theory" of international capital flows are.

menu of traded, state-contingent assets were complete (so that all consumption risks were insurable), marginal utilities of consumption would be perfectly correlated across countries. Since those conditions are not satisfied in practice, one gets the weaker presumption that increases in capital mobility should be accompanied by increases in the strength of cross-country consumption links. A related proposition (Razin and Rose [1993]) is that countries with relatively open capital markets should display less volatility in consumption but greater volatility in investment than countries with less open capital markets (since greater access to the world capital market improves the diversification of country-specific shocks but also widens the set of investment opportunities).

Thus far, empirical support for the consumption-smoothing hypothesis has been mixed. Obstfeld [1993a, 1993b] finds: (i) that correlations of national consumption with world consumption, for both industrial and developing countries, are uniformly significantly below one (that is, below the value that should theoretically prevail if capital were perfectly mobile and if the menu of state-contingent assets were complete); (ii) that the correlations are higher for industrial countries than for developing ones; and (iii) that the correlations are on average higher for 1973-88 than for 1951-72--albeit with a fairly large number of individual-country exceptions. On the whole, these results are consistent with the view that the degree of capital market integration is increasing, although the increased coherence in the recent period would also be consistent with a constant degree of capital mobility cum a higher incidence of common shocks in the more recent period (Leiderman and Razin [1993]). 1/ The related proposition that countries with more open capital markets should display smoother consumption and more volatile investment than those with less financial openness does not fare so well. Razin and Rose [1993] test this on a sample of 138 industrial and developing countries for the 1950-88 period. This is really a test of one implication of increased capital mobility--not a test of capital mobility itself, since the authors construct a measure of capital mobility for each country based on a factor analysis of capital account restrictions. In brief, they find that there is at best a weak relationship between capital mobility and consumption smoothing and no relationship at all between capital mobility and the volatility of investment. Rather than reject the theory, Razin and Rose [1993] argue that the explanation lies in the nature of shocks: since there are pervasive signs in their data both of persistence and commonality of shocks across countries, the lack of a link between capital market openness and volatility is not surprising.

Measuring capital market integration and mobility in developing countries

In addition to the difficulties already mentioned, estimating the degree of capital market integration faces some special obstacles when applied to developing countries. As noted earlier, the vast majority of developing countries maintain formal legal restrictions on international

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1/ Obstfeld [1993b] takes some account of this possibility by explicitly allowing for oil price shocks.

capital movements. Moreover, some of these countries have also subjected (domestic) interest rates in the formal financial system to binding legal constraints; this makes application of standard "law of one price" tests problematic. To be sure, there are informal or "curb" markets in many of these "financial repressed" countries that might substitute for market rates, but data availability on those rates is severely limited. The fact that official capital flows to these countries, typically driven by other than relative yield considerations, loom large in total capital flows likewise raises further questions about the interpretation of Feldstein-Horioka saving/investment correlations.

All that being said, there is a growing body of empirical evidence--nicely summarized in Montiel [1993] -- that suggests that useful tests of financial integration can be undertaken for these countries, and that the results lean in the direction of higher capital mobility than is often assumed.

One way around the absence of market-determined domestic interest rates is to conceive of the actual domestic interest rate as a weighted average of the external interest rate that would prevail under UIP, and of the domestic interest rate that would prevail in a financially closed economy (where the latter is a function of the observable excess demand for money). By so doing, one can estimate the weight of "external" relative to "domestic" factors in determining domestic interest rates (Edwards and Khan [1985] and Haque and Montiel [1990]). The higher the weight of external factors, the larger is the country's degree of capital market integration with the rest of the world. In a similar spirit, one can also adjust the data used in tests of saving/investment correlations for nonmarket aid flows. These two methodologies can be supplemented by other indicators of integration, ranging from cross-country correlations of consumption behavior, to tests of UIP for those countries where domestic interest are less affected by legal constraints, to simple ratios of gross capital flows to GDP. Using a combination of all these techniques, Montiel [1993] is able to classify developing countries into three broad groups, corresponding to high, intermediate, and low degrees of capital market integration.

Only a few studies have explicitly tested for <u>changes over time in the degree of capital market integration</u> for developing countries. Those that do however (Faruqee [1991] and Frankel [1986]) find strong indications that capital mobility and integration have been increasing during the 1980s. Not all of that is attributable to the progressive dismantling of capital controls. Some of it also reflects the diminished effectiveness of those capital controls that are still in place. In this connection, Mathieson and Rojas-Suarez [1993] conclude that capital controls in developing countries were less effective in the 1980s than in earlier periods, as the incentives for moving funds across borders increased, while the costs of doing so fell.

Unfortunately, estimates of capital market integration--no matter what the methodology--can not by themselves convey a full picture of the policy implications of those markets. For example, it is not necessary for expected returns to be fully equalized before <u>large</u> capital markets

(relative to the stock of official international liquidity) can put major constraints, of both the helpful and unhelpful variety, over the short-term on the conduct of macroeconomic policies. Similarly, portfolios that have a relatively low degree of international diversification can--if they are large enough--generate large potential capital flows when expectations about relative yields change. For example, the roughly 5 percent foreign-asset share of U.S. pension funds is equivalent to about $125 billion. For this reason, we next turn to two recent episodes of large, international capital flows for additional insight into their implications for economic policy.

III. Two Recent Episodes of Large International Capital Flows

In reviewing developments in international capital markets over the last few years, two episodes merit pride of place. One was the turmoil in European foreign exchange markets that reached its peak in the fall of 1992, and then reappeared in the summer of 1993. During the September 1992 turmoil, eight European currencies were devalued or allowed to float, two large members of the EMS suspended their participation in the mechanism, and central banks engaged in huge amounts of exchange market intervention (on the order of $150-200 billion) in an effort to hold existing parities against the tide of private capital flows. In the late summer of this year, that turmoil resurfaced and this time resulted in a widening of the ERM bands to plus or minus 15 percent around the bilateral central rates for all ERM currencies except the Dutch guilder (against the deutsche mark). The second episode is the revival of large-scale capital inflows to Latin America. After averaging about $8 billion a year in the second half of the 1980s, these inflows surged to $24 billion in 1990, to $40 billion in 1991, and to $53 billion last year. Mexico was easily the largest recipient of those flows but Argentina, Brazil, Chile, Colombia, and Venezuela also figured prominently. Accompanying these capital inflows in most of the host countries were real exchange rate appreciation, faster economic growth, an accumulation of international reserves, a boom in stock and real estate markets, and a strong upturn in secondary market prices for foreign loans.

The EMS crisis 1/

To appreciate why there was so much selling pressure against certain European currencies in the summer and fall of 1992, one has to go back about five years. During the 1987-91 period, there were large, cumulative inflows of capital into higher-yielding ERM currencies. An important motivating factor was the growing belief by international investors that the EMS countries were on an irreversible convergence path toward Economic and Monetary Union (EMU). This, in turn, implied that interest rate differentials in favor of high-yielding ERM currencies would more and more overestimate the actual risk of exchange rate depreciation. Why, therefore, settle for the yield on a deutsche mark bond when you could get the higher

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1/ Our analysis here draws heavily on Goldstein et al. [1993a], Mussa and Isard [1993], and G-10 Deputies [1993].

yield on a lira or peseta bond, absent the compensating currency risk. As seen in Chart 3, one-year lira yields were offering over the 1987-92 period an average spread of about 5 percent over the corresponding deutsche mark instrument (the yield differential over U.S. dollar instruments was also wide). 1/ As the period since the last major realignment in the EMS lengthened (by the end of 1991, it had been almost five years), and as the political commitment to EMU strengthened--culminating with the signing of the Maastricht Treaty in December 1991--the "convergence play" seemed secure. Without pretending to any precision, total capital flows involved in such convergence plays could well have been in the neighborhood of $200-300 billion.

The difficulty of course was that actual convergence among ERM countries--though significant--was not deep enough to justify the assumption of rigidly fixed exchange rates. Elements of vulnerability included: losses in competitiveness, large fiscal deficits, weaknesses in financial sectors, sharp cyclical differences, and divergent mixes of monetary and fiscal policy (in the wake of German unification). While predominantly a home-grown problem, the sluggish economic recovery in North America and, to a less extent, slow growth in Japan, also made the external environment inhospitable for those European countries attempting to recover from recessions. With the benefit of hindsight, it could be said either that the markets (like authorities) didn't pay enough attention during this period to the evolution of fundamentals, or that market participants believed that they could get out of long positions in overvalued currencies before the market correction took place. The negative outcome of the Danish referendum in June 1992 and the uncertainties associated with the outcome of the French referendum in September put into question both the certainty of the Maastricht Treaty ratification and the ability of some countries to achieve enough convergence to sustain existing parities. Seemingly, almost at once, the markets rediscovered currency risk and acted accordingly.

In addition to the potential for sharp shifts in sentiment, a second salient feature of the crisis (from the perspective of international capital markets) was the broad range of private market participants involved--encompassing banks, security houses, institutional investors, hedge funds, and corporations. Indeed, that wide participation explains in part why the flows that flooded into central banks were so large. The roles played by different classes of participants varied: for the most part, it was plain defensive maneuvering to undo earlier exposures in certain currencies; for some, it was primarily an intermediary role as both a market maker and as a supplier of credit; for others, it was more a research and advisory role; and for yet others, it was heavy position-taking, leveraging to the hilt. The distinction between hedging and speculation becomes blurred when most market participants become convinced--rightly or wrongly--that a non-trivial

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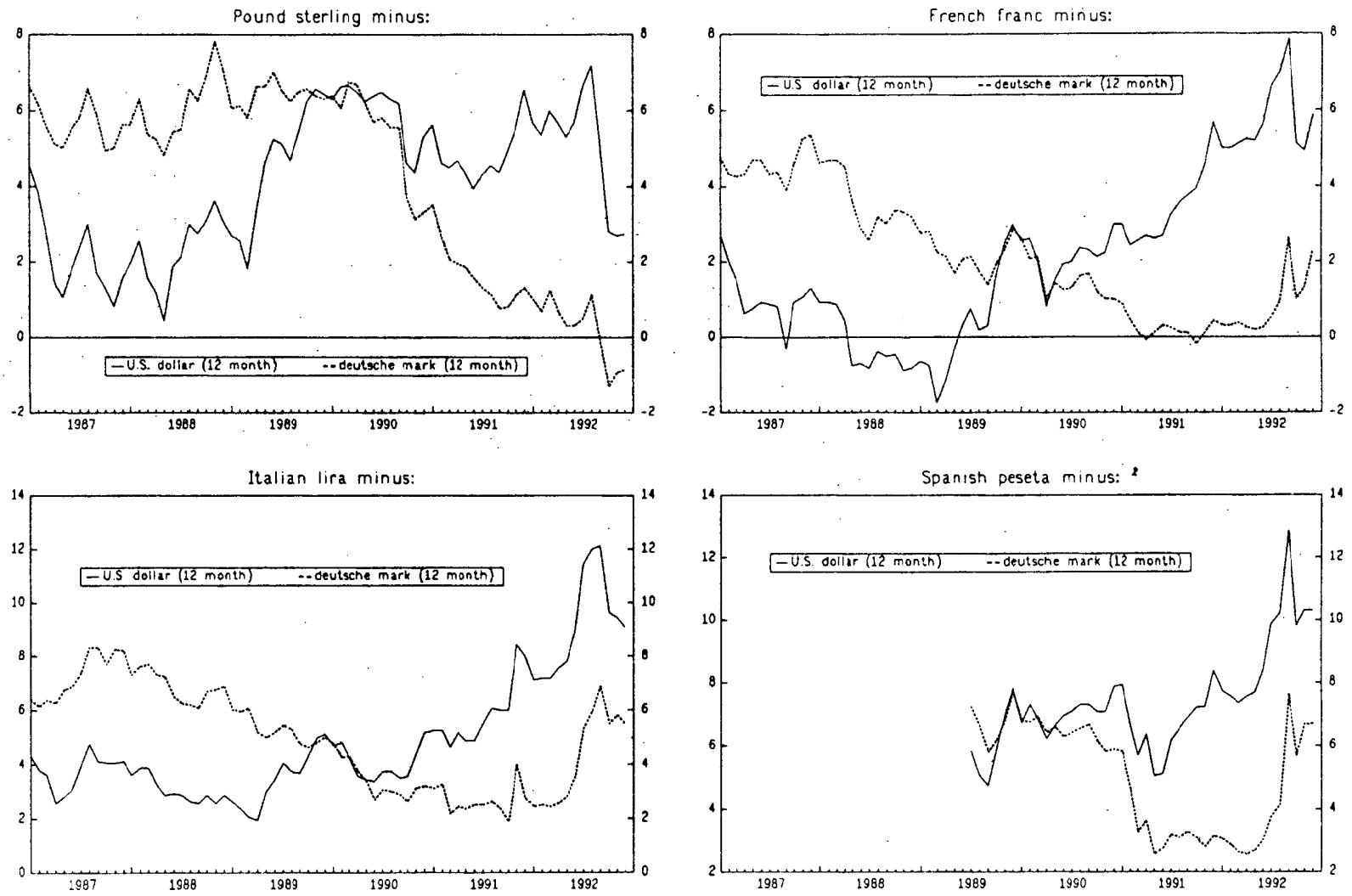
1/ The same convergence scenario also provided justification for the financial sector and large corporate issuers in the high-yield currencies to increasingly fund themselves in the lower-interest rate ERM currencies (mainly the deutsche mark and to a lesser extent, the Dutch guilder).

Chart 3. Interest Rate Differentials on Eurocurrency Deposits, 1987-92 [1]

(In percent)



Source: Data Resources, Inc.

[1] Legend indicates maturity of both components of the differential.
[2] Daily data for the Spanish peseta are not available before July 1989.

change in exchange rates is coming, and that the change is likely to be in one direction. In that circumstance, everybody gets into the act.

Turning to the behavior of liquidity during the crisis, markets worked quite well. There were no major failures of financial firms, nor did we observe a persistent seizing up in any of the larger asset markets. This is not to say that there weren't strains. While forex markets operated continuously, spreads at times widened to five to ten times the norm in most of the ERM cross-rates. There were also periods when the size of trades declined. There were instances in some markets of a hesitation to quote forward rates because of the great volatility in short-term interest rates; similarly, OTC option markets suffered, because extremely high interest rate volatility increased the risk of quoting prices. Some firms with lower credit ratings temporarily lost access to their interbank markets and had to go to the derivative exchanges to hedge positions. The largest strains surfaced in the European currency unit (ECU) market, where the same political events that raised uncertainty about the future of EMU simultaneously created uncertainty about the value of the private ECU in terms of the official basket. Fortunately, the crisis remained localized in European currency markets and did not spread either to national debt and equity markets, or to the dollar or yen exchange markets. It also needs to be recognized that the liquidity situation might well have been different if central banks were not standing on the other side of the market and supplying it with such massive amounts of liquidity.

Last but by no means least, what did last fall's crisis--as well as its resumption this summer--tell us about the implications of international capital markets for the policy options of the authorities? Here, we would draw five main observations.

First, the crisis demonstrated that existing international capital markets can mobilize very large amounts of financial resources, and that the pressures against an exchange rate parity can quickly become enormous. In the 1970s, the possibility that a central bank could be faced with a run on its currency that could amount to say, $100-200 billion within the space of a few weeks was remote. It no longer is. This implies, in turn, that even massive exchange market intervention will almost certainly not be effective when it tries to stabilize exchange rates that are out of line with fundamentals and when it is not flanked by other policy measures. Sterilized intervention can still be helpful when its mandate is framed more modestly and closer to its capabilities; that is, it may be helpful in countering disorderly market conditions in the short term, in sending a signal about future monetary policy intentions, and in providing a short--and we emphasize short--breathing space while fundamental policy changes are being made. Because the resources of the private sector are considerably larger than those of even G-10 central banks, the quality of intervention--particularly as a signal of joint monetary policy cooperation and of joint commitment to an agreed parity--is likely to be at least as important as the quantity.

Second, the stability of a pegged exchange rate system today--given the size, profit orientation, and technical capacity of international capital markets--depends importantly on whether a high degree of convergence in the economic performance and domestic policy needs of participating countries can be rapidly achieved and maintained. In particular, there can only be one monetary policy for a group of countries that seek to keep their bilateral exchange rates fully fixed. This could be the monetary policy of the dominant country to which other members of the group passively adjust, or it could be the monetary policy that is agreed by some common mechanism. But it cannot be separate policies for different members of the group. Moreover, since forex markets react not only to today's monetary polices but also to how monetary policy is expected to evolve in the future, the mechanisms and incentives that assure the subordination of national monetary policy independence to the requirements of a fixed exchange rate regime must be perceived as credible.

Third, in looking at the consistency of exchange rates with fundamentals, it is necessary to look beyond measures of long-term competitiveness; one also needs to include in the list of fundamentals the gap between the internal and external requirements of monetary policy. In addition, the internal requirements for monetary policy cannot be defined solely with respect to inflation. Cyclical conditions, the prospective path of unemployment, and the health of the banking system, matter as well, and will inevitably form part of the market's assessment of whether a given monetary policy stance is compatible with given exchange rate commitments. Whatever the desirability and prowess of aggressive interest rate action to defend fixed rates in countries with healthy fundamentals and in situations where the gap between the internal and external requirements for monetary policy is not particularly wide, such tactics are more limited when those conditions are not satisfied. During the 1992 crisis, Germany was not willing to reduce interest rates significantly before it had more assurance that inflationary pressures were under better control, and Italy, the United Kingdom, and Sweden each decided in the end that the costs of keeping interest rates well above what would otherwise be required on domestic grounds were too high to tolerate. In this past summer's recurrence of the crisis, there was again a decision that it would be too costly on domestic grounds (for both Germany and other members of the ERM) to implement a pattern of interest rates that would have been necessary to sustain existing parities; instead, a widening of exchange rate bands was viewed as the lesser of two evils. In both crises, it is hard to argue that in countries already in deep recession and with inflation in abeyance, higher interest rates would have been either credible or desirable. The capital flows that took place during these crises clearly paid attention to this situation. When you are in the midst of a deep recession and can't lower interest rates much to assist the recovery, this is a fundamental--as much as a loss in competitiveness, or a deterioration in the fiscal position.

Fourth, what was damaging about the EMS crisis was not that exchange rate adjustments occurred but rather the disorderly way in which they occurred (and the consequent damage done to authorities' credibility). The challenge for authorities is either to convince the markets that existing

rates are consistent with fundamentals and sustainable, or to make timely adjustments in an orderly way. In situations when a number of rates do get out of line, the crisis would seem to suggest that an early, generalized realignment--if it can be mutually agreed--is preferable to a sequential, disorderly, series of forced adjustments. This in turn raises two challenges. One is to find a way to "depoliticize" exchange rate decisions, so that adjustments can be made before they offer speculators the prospects of large, profitable, one-way bets. The second one is how to maintain the momentum toward convergence of inflation rates and interest rates when less reliance than before can be placed on the fixity of the nominal exchange rate as an anchor. Countries with flexible exchange arrangements have greater room to maneuver because exchange rate pressures can be absorbed more by changes in the nominal exchange rate, but once movements go beyond what is regarded by the authorities as appropriate, they too face the same type of dilemma.

Fifth, the countries that imposed capital controls or tightened existing restrictions during the crisis removed them by the end of the year. In addition, in none of the cases was the recourse to such controls successful in avoiding a realignment of the exchange rate. The burden of proof that such measures can be effective in dealing with capital market pressures on exchange rates must therefore rest with the proponents of such policies.

Surges of capital inflows into Latin America

The stylized facts about recent capital inflows into Latin America have been summarized by Calvo et al. [1993a,1993b]: (i) about half of that inflow reflected an increase in the current account deficit; the other half shows up as an increase in official reserves; (ii) part of the increased capital inflow represents repatriation of earlier capital flight, but part of it also reflects the presence of new investors; (iii) while portfolio investment and foreign direct investment also increased, most of the inflows was accounted for by increased borrowing by the private sector from foreign private banks: (iv) for some countries in the region (for example, Chile and Mexico), an important part of the inflow has financed increases in private investment, yet in some other countries in the region (for example, Argentina and Brazil), there has been a marked rise in private consumption (for the region as a whole, increased consumption dominates); and (v) the vast majority of countries in the region (Brazil is a notable exception) have experienced a sizeable appreciation in their real exchange rates. 1/

1/ It is noteworthy that several of the stylized facts of the Latin American experience differ from those of Asian developing countries who experienced a large, capital inflow during this period. In the latter's case, real exchange rate appreciation was not the norm, more of the capital inflow financed an increase in investment, and a higher share of the inflow came in the form of foreign direct investment; see Calvo et al [1993b]. All this may explain why concerns about "hot money" flows are more prominent in Latin American than in Asia.

There are three interesting questions about these inflows into Latin America. What motivated them? Are they a good thing? And what do they tell us about the functioning of today's international capital markets?

The usual explanation for the surge of capital inflows is the economic and political reforms (including privatization) carried out by the recipient countries, cum the significant restructuring of their external debts. This has clearly operated to improve investment prospects in these countries, as reflected, inter alia, in increasing secondary-market prices for bank claims on these countries. Yet, as Calvo et al. [1993a] point out, the "internal" explanation cannot be the whole story. After all, capital also flowed into some countries in Latin America that did not undertake significant reforms, and it only flowed into reforming countries well after (post 1990) those reforms were put in place. For this reason, Calvo et al. [1993a] come to the conclusion that "external" factors too played a significant role. Specifically, they conclude that economic developments in the United States --namely, falling interest rates and the recession--encouraged investors to shift resources to Latin America. 1/ This was the "push" factor that complemented the "pull" of renewed investment opportunities and increased solvency within the host countries. In support of their case, they employ principal component analysis and vector autoregressions to test the influence of U.S. (financial yield and real activity) variables on both the change in reserves and the degree of real exchange rate appreciation in Latin American over the 1988-91 period. In short,"foreign" factors turn out to be important--particularly in those Latin American countries where there were no major changes in domestic policies during this period.

In principle, the surge of capital inflows to Latin America offers significant potential advantages to the recipients: it can help countries with low domestic saving rates to invest more, and thereby assist the transition to a higher growth path; it can help countries reduce the cost of adjusting to internal and external shocks; and it can help sustain the policy reform process (including the reorientation of trade policies from import substitution to export promotion).

In practice, however, the outcome depends very much on how the foreign capital inflows are utilized. In this connection, it is worthwhile to keep in mind three observations: (i) over the past two decades, the developing countries that relied most on foreign saving--defined as the top one third of countries ranked by the ratio of all capital flows to GNP--tended to have higher inflation, higher fiscal deficits, lower investment, and lower growth than those that relied less on foreign saving; 2/ (ii) the relationship between changes in debt/GDP ratios and changes in investment rates in

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1/ Note that low interest rates in some industrial countries made investments in Latin America more attractive not only because of relative yield considerations but also because low international interest rates reduce developing countries' debt-service obligations and hence, improve their creditworthiness.

2/ IMF [1993a].

developing countries has varied sharply over time--with a significant positive relationship emerging in the 1968-78 period, no relationship characterizing the 1979-83 period, and a weak positive relationship reasserting itself during the 1983-89 period; and (iii) for every group of success stories with commercial borrowing (for example, Korea, Indonesia, and Malaysia), there are also individual-country cases (for example, several Latin American countries in the 1976-81 period and the Philippines throughout much of the 1980s) where commercial borrowing had less salutary effects. Where countries can consistently follow policies (macroeconomic stability, a firm reliance on market forces, competitive exchange rates, and an outward-looking trade strategy) that allow them to earn a higher rate of return on investments than the cost of borrowing, foreign saving can be a valuable supplement to domestic saving. But when foreign saving is used on an extended basis to finance consumption, or to delay needed policy reforms, the result is likely to be disappointing.

In addition to the longer-term challenge of using foreign resources productively, surges of capital inflows also raise some more immediate concerns in at least three areas (Calvo et al. [1993a]). First, there is the worry that the real exchange appreciation linked with these capital inflows could adversely affect the export sector, thereby endangering a cornerstone of growth, creditworthiness, and technological advancement. Second, the sustainability of these flows at recent levels is open to question. Specifically, if some are them are of the "hot money" variety, then a rapid reversal could lead to the discontinuation of efficient investment projects and perhaps, even to domestic financial strains. And third, there is some uneasiness about the proper intermediation of these imported funds--particularly in an environment where the inflows are used to make highly speculative investments under the expectation that the authorities will bail out speculators when the bubble bursts.

These concerns have in turn confronted policy authorities in Latin America with some difficult policy choices. Sterilized intervention can insulate the domestic money stock from the capital inflows. But sterilized intervention can induce a rise in the fiscal (or quasi-fiscal) deficit by increasing the differential between the interest rate on government domestic debt and that on international reserves; also, since sterilized intervention, if effective, prevents domestic interest rates from falling, it tends to perpetuate the capital inflow. Not sterilizing, on the other hand, risks allowing the capital inflow to fuel inflationary pressures. Taxes on short-term borrowing abroad are likely to be less effective the longer they are in place, as efforts to evade these taxes (by under or over-invoicing trade flows and the like) increase. Export subsidies can mute or offset the effect of a higher real exchange rate but they distort resource allocation and can involve substantial fiscal costs. An increase in banks' marginal reserve requirements, by limiting the capacity of banks to lend and by decreasing their exposure to a reversal of capital inflows, has some attractions, particularly where most of the inflows are in the form of short-term bank deposits. Like taxes on capital inflows, however, their effectiveness is likely to diminish over time, as new institutions develop to bypass these regulations; in addition, reserve requirements have been

falling in recent years as part of the financial liberalization process, and authorities may worry that raising them would send a signal of a return to less market-oriented policies. Tighter fiscal policy is yet another option. While it doesn't halt the inflows, it can lower aggregate demand and limit the inflationary impact of these flows. But fiscal policy usually has its own medium-term orientation; nevertheless, if that medium-term orientation calls for a fiscal tightening, capital inflows may legitimately argue for somewhat earlier action. In the end, the appropriate mix of policy responses to surges of capital inflows will have to be determined on a country-by-country basis according to individual circumstances. But our point here, as in the European exchange rate episodes discussed earlier, is that capital markets--even if far from perfect--are now mobile enough and large enough, to put immediate constraints on domestic macroeconomic policies.

From a broader perspective, the recent resurgence of capital inflows to Latin America and to some other developing countries also invites two fundamental questions about the nature of today's international capital markets. One is whether that resurgence is an indication that, after a long hiatus, capital will once again be flowing from capital rich countries to capital poor ones. The other is whether the new pattern of private capital flows to developing countries, which relies more on bond and equity financing and less on commercial bank loans, is a welcome development.

A notable feature of international capital flows in the 1980s was that capital inflows to developing countries--and particularly, private capital inflows--remained almost stagnant, while gross inflows to industrial countries (mostly private sector flows) increased markedly. 1/ This is not what one would expect from the textbooks. After all, industrial countries are relatively well endowed with capital relative to developing countries. This suggests that the marginal productivity of capital should be higher, other things equal, in developing countries than in industrial countries, and that accordingly, capital should normally be expected to flow from the latter to the former. This same reasoning also is consistent with the observed pattern of capital flows from industrial to developing countries during the gold standard, from the United States to Europe during the 1950s, and from the industrial countries to the developing countries during the 1960s and 1970s.

In the real world, of course, other things are not equal. In particular, the paucity of private capital flows to developing countries during the 1980s surely owes something to the then low quality of macroeconomic and structural policies in many of these countries, cum the disincentives to new investment associated with the external debt overhang. By the same token, we would regard the resurgence of those flows to developing countries during the 1990s as suggestive that better policies, more manageable debt burdens, and more hospitable attitudes toward both privatization and remission of dividends and profits, do matter for the

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1/ Turner [1991], Goldstein et al. [1991].

direction of capital flows. The markets may well overreact (in both directions) to the actual progress made on policy reform, but they at least seem to get the trend right. This is not to say that policy reform is the whole story. As suggested earlier, cyclical and interest rate movements in some of the larger industrial countries (the United States and Japan) also count. Where gross capital flows are concerned, the openness, liquidity, and depth of financial markets likewise is an element in the direction of capital flows that favors the larger industrial countries. In any case, three years is too short a period to proclaim a "shift" in private capital flows toward the developing countries. Policy reform in those countries will have to be sustained to translate higher potential returns into higher expected returns. But the initial signs of the last few years are hopeful.

Turning to the changing composition of private capital flows to developing countries, the recent rise of bond and equity portfolio flows and of foreign direct investment relative to commercial bank lending, is illustrated in Chart 4. 1/ The significance of this change is not in terms of the direct cost of borrowing (since the return demanded by foreign investors is likely to be as high as the interest rate on commercial bank debt), but rather in other attributes of the new flows. For one thing, the rising share of direct foreign investment gives the host countries greater availability of state-of-the-art technology, as well as increased scope for human resource development, for stronger domestic competition, and for easier access to foreign markets. For another, bond and equity financing is probably better able than bank credit flows to adjust to shifts in perceptions about the creditworthiness of developing-country borrowers. With increased securitization, there is a greater role for price adjustments, which may signal emerging difficulties before the situation deteriorates to the point where market access is cut off. Since investors hold only a small proportion of their assets in the form of developing country securities, they are also likely to be able to withstand a decline in the price of developing-country securities better than would a bank with a concentrated loan book. Some of these features of the new pattern of financing were evident in the second half of 1992 when there was a market correction in the demand for Latin American equities and bonds. The scale and terms of borrowing for Latin American issuers deteriorated during that period but there was no hint of any "systemic" concerns, and subsequently, market prices rebounded. Perhaps this is an inkling of the economic benefits of a more sophisticated and more diversified intermediation mechanism for international capital mobility.

1/ Chart 4 also documents that it is only recently (since 1990) that the share of official loans and grants in the total of long-term capital flows to developing countries has declined--after roughly a decade during which the share of the official sector climbed appreciably.

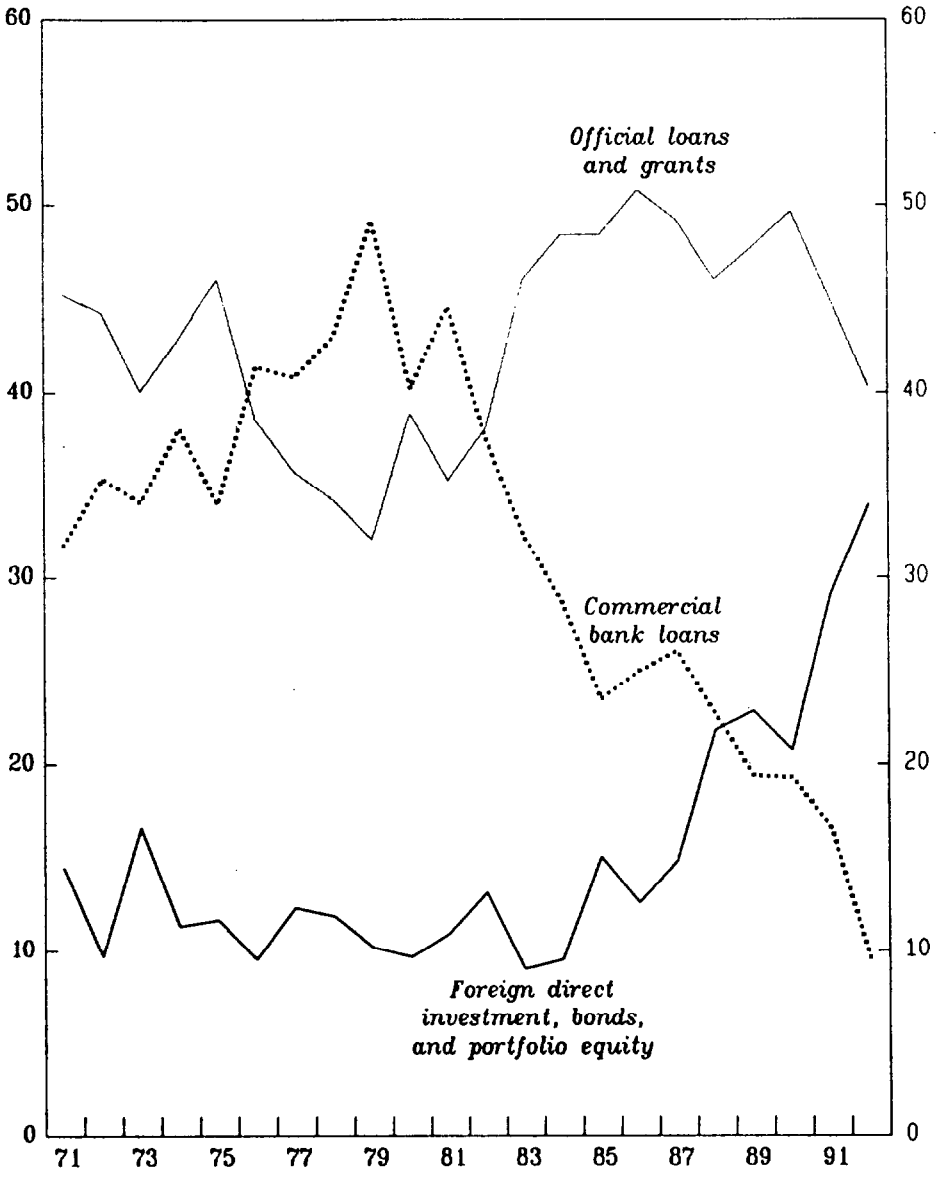
IV. Concluding Remarks

We have surveyed the available empirical evidence on the integration across national capital markets. We have found that these international links have been increasing over the past decade--especially for high-grade, financial instruments traded actively in the wholesale markets of major financial centers. Capital markets in developing countries too are becoming more closely integrated with markets in the rest of the world, although they have progressed less far in that direction than the industrial countries. It is still way too early to speak of a single, global capital market where most of world saving and wealth are auctioned to the highest bidder and where a wide range of assets carry the same risk-adjusted expected return. Some important components of wealth (like human capital) are scarcely traded at all, and currency risk, the threat of government intermediation (especially during periods of turbulence), and the strong preference for consuming home goods and investing in more familiar home and regional markets, still serve to restrict the range and size of asset substitutability. But the forces making for stronger arbitrage of expected returns are already powerful enough to have made a large dent in the autonomy that authorities have in the conduct of macroeconomic and regulatory policies. When private markets, led by the increasing financial muscle of institutional investors, reach the concerted view (rightly or wrongly) that the risk/return outlook for a particular security or currency has changed, those forces will be difficult to resist.

In some sense, authorities have suffered the fate of getting what they asked for. They wanted greater participation by foreign investors in their government debt markets, in part to make it easier to finance larger fiscal and external imbalances. They wanted a more efficient financial system that would erode the power of local monopolies and offer savers a higher rate of return and firms a lower cost of capital. They welcomed innovations that provided a wider range of hedging possibilities against volatile asset prices, and that made it more convenient to unbundle risks. They wanted to regain business that had migrated to the offshore centers in search of a less restrictive regulatory environment, and to level the playing field against foreign competitors. Much of that has taken place. But along with it has also come the creation of an enormous pool of mobile, liquid capital whose support, or lack of it, can often be the measure of difference in the success of stabilization, reform, exchange rate, and tax policies.

We see little in the factors underlying the evolution of international capital markets to suggest that this increased clout of private markets will reverse itself in the future. Quite the contrary: international diversification is still in its adolescence; the costs of gathering, processing, and transmitting information and of executing financial transactions will probably decline further with advances in technology; the pace of financial liberalization (including cross-border ownership) and innovation continues unabated in most industrial countries; the pool of saving managed by professionals is growing (as private pension schemes supplement public ones, and as saving shifts from the banking sector into mutual funds); and the same reforms that reduce system risk (such as

Chart 4. Developing Countries: Capital Flows
(In percent of total)



improvements in the payments and settlement system) often also enhance the private sector's capacity to redominate the currency composition of its assets and liabilities at short notice.

We would not go so far as to suggest that the growth and agility of private capital markets now makes it unrealistic to operate a fixed exchange rate arrangement durably and successfully. But we do believe that these factors have made the conditions for doing so more demanding. Specifically, there is now less room for divergencies of view among participants about the appropriate stance and medium-term orientation of monetary policy, less time to adjust to large, country-specific shocks, and greater pressure to achieve closer convergence of economic performance. Some countries will find that they both want to, and can, credibly commit to those requirements. Others may be more skeptical--or may reason that these requirements can only be satisfied in a "hard core" arrangement where separate exchange rates are replaced by a common currency and where disputes about monetary policy only get aired within the board room of the single monetary authority. In the western European context, much depends on how long it takes for Germany (still trying to cope with the effects of unification) and its EMS partners to forge a new genuine consensus on the appropriate path for monetary policy. The widening of bands should act in the interim to provide more room for maneuver to recover from the existing recession without giving away hard won gains on inflation.

With the benefit of perfect hindsight, it is not hard to identify instances over the past decade or so when international capital flows (like domestic ones) did not pay enough attention to fundamentals. The build-up to the external debt crisis in the 1970s, the final run-up in the U.S. dollar in 1984-85, and the convergence play in the EMS in the late 1980s, are cases in point. Nevertheless, we see no basis for concluding that private capital markets usually "get in wrong" in deciding which securities and currencies to support and which ones not to. On the whole, most of the policy changes that have been forced by international capital markets seem to us to have been in the right direction. We therefore see merit in trying to improve the "discipline" of markets so that it is more consistent and effective rather than in trying to weaken or supplant the clout of markets.

Toward this end, two conditions (in addition to open capital markets themselves) are worth emphasizing. First, markets must be aware of the full magnitude of the debtor's obligations if they are to make an accurate assessment of his debt-servicing obligations and capacity. The lower is the range and quality of that information, the more likely is it that "contagion effects" will be present, since lenders will find it difficult to separate better credit risks from weaker ones. More comprehensive reporting of off-balance sheet borrowing (by private firms and sovereigns alike), greater transparency in the obligations of related entities (in conglomerates and the like), greater international harmonization of accounting standards more generally, and more prompt disclosure of losses, would all be helpful. Second, market discipline cannot be effective if market participants believe that the borrower will be bailed out (one way or another) in the case of an

actual or impending default. When there is such a perception of a bailout, the interest rate paid will reflect the creditworthiness of the guarantor--not that of the borrower--and there will be little incentive either for the borrower to rein in his errant behavior or for lenders to monitor and appraise the borrower's behavior in making loans. Just as important, it is the actual incurrence of losses by lenders and borrowers alike that helps to constrain excessive risk-taking in the future. The problem of course is that it is often very difficult to make such a no bailout pledge completely credible--either because there has been a track record of previous bailouts or because market participants suspect that, after the fact, there will be strong pressures for doing so (to prevent systemic repercussions or to compensate parties for losses beyond their control).

Some others see things differently. If governments can pick only two among the three objectives of fixed exchange rates, independent monetary policy, and open capital markets, they would allow the latter to be the orphan by throwing "sand in the wheels" of the international capital market. Eichengreen and Wyplosz [1993], for example, writing after the ERM crisis of 1992, have argued for a variant of this proposal so as to deter speculative attacks and thereby safeguard the route to Stage 3 of European Economic and Monetary Union (EMU). 1/ In short, we find little appeal in such proposals, for at least three reasons. First, while it is true that market activity in the foreign exchange market is dominated by interdealer transactions and is subject to considerable short-term "in and out" trading, this turnover needs to be compared with that in other liquid markets. For example, it has been estimated that the entire stock of U.S. Treasury marketable debt turns over on average approximately once every eight days. 2/ An average daily turnover of about $900 billion in the global forex market, relative to a stock of publicly traded debt and equity of around $24 trillion, yields a comparable turnover figure of about once every twenty five days. It is therefore not apparent that turnover in the forex market is "excessive" unless turnover in the U.S. government securities market is excessive also. Second, with the displacement of buy-and-hold finance by transaction-driven finance, it is becoming less clear what a "long-term investment" means. Improved liquidity allows even traditionally risk-averse players, like pension funds, insurance companies, and some mutual funds, to move quickly in and out of domestic and international investment positions. Are we willing to conclude that this activity--even when it is carried out by prudent investors acting according to their

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1/ Eichengreen and Wyplosz [1993] suggest deposit requirements on open positions in foreign exchange as a temporary arrangement for those European countries seeking to complete the transition to EMU. They are mainly concerned with potential protectionist pressures associated with exchange rate volatility.

2/ This calculation is derived by taking the average daily volume of U.S. Government securities settled through the book entry system (about $400 billion in 1989) and comparing to an end-of-year stock of U.S. Treasury marketable debt of $3.4 trillion ($2.6 trillion in the hands of the public); see Goldstein et al. [1993a].

charters, should be discouraged? Third, whatever one's views on the social productivity of short-term trading, we doubt whether such "sand in the wheels" taxes would be effective in attaining their goals, since the currency denomination of assets can now be easily altered in many financial centers and since there is always an incentive for some center to capture more of the world's business by not imposing the tax.

None of this implies that authorities should be indifferent to the potential prudential and systemic risks that may be associated with the trend toward global capital market liberalization and innovation. Exchange rates are volatile asset prices and position-taking in foreign exchange is little different from other sources of market risk; it too could endanger the safety and soundness of financial institutions. Similarly, the rapid expansion of derivative markets has raised its own serious questions about credit risk, market risk, liquidity risk, and legal risk. A series of financial crises--the latest of which has been centered around heavy losses in real estate lending by banks in a number of industrial countries--has again driven home the point that it is precisely when financial institutions find both that their competitive position has been eroded and that they suddenly have expanded investment opportunities, that they are most suspectable to taking excessive risks--particularly in cases when much of that risk is effectively being underwritten by implicit and explicit government guarantees. The message however should not be to try and halt financial liberalization and the international integration of capital markets but rather to accompany that liberalization and integration with a strengthening of the supervisory framework that permits the attendant risks to be properly priced and that encourages risk management programs to be upgraded.

As the debt crisis of the 1980s so powerfully illustrated, these issues of the proper pricing and management of risk in international capital markets are of deep concern to developing countries, as well as to industrial countries. More recently, surges of capital inflows into a number of developing countries are a hopeful sign that the many of the problems that led to the debt crisis are being effectively resolved, most importantly by the rising credibility of the determined stabilization and reform efforts undertaken in a number of developing countries. Also, the changing character of much of the capital flow to developing countries--away from bank loans and toward bonds, equities, and direct foreign investment--suggests enhanced flexibility and resiliency of the international financial system in dealing with any future problems. These developments should assist the international financial system in performing one of its important functions: facilitating the flow of investable resources from countries where prospective returns are relatively low to countries where prospective returns are relatively high.

In this regard, probably the most important challenge now facing the world economic and financial system is the transformation of the formerly centrally planned economies of Europe and Asia into efficiently functioning market economies. During next two decades, such a successful transformation will require literally hundreds of billions of dollars of new investment.

From where will the savings necessary to finance all this new investment come? Will it come primarily from net new demands on existing world capital markets?

No, not if experience is a good teacher. External capital may play an important, but surely not a predominant role. Although we do not completely understand why, there is--as discussed earlier--a high correlation between national investment and national saving. In particular, the rapidly growing, relatively high investment countries have also tended to be relatively high saving countries. Investment during the postwar recoveries in Europe and Japan was largely financed by internally generated savings. More recently, in the rapidly advancing countries of east Asia, high levels of investment have typically been associated with high levels of saving. This is the same pattern that we should expect to see in the successful transformation of the formerly centrally planned economies--and for good reason. *The same economic reform policies that will make these economies* attractive environments for high levels of productive investment will also, almost inevitably, make them hospitable to savers who wish to put aside part of their current income in the prospect of enjoying higher living standards in the future. Indeed, as in many other successful economies, much of the finance for new private business investment will probably not flow through wholesale national financial markets, but rather will come from re-invested profits and from the more informal channels through which much entrepreneurial investment is often financed. Nevertheless, the development of well-functioning capital markets and financial institutions will clearly be important, both for transferring resources from savers to investors and for disciplining the activist of entities that make use of national savings. In this regard, reform of the financial sector and of the financial operations of enterprises is often an urgent priority in the more general process of economic transformation. Economies do not usually function well when the financial system operates primarily to channel national saving to finance large scale government deficits or to cover the burgeoning losses of non-viable state enterprises.

It is early on in the transformation process that the role of external, official capital flows will be most vital. During this stage of high risks and great uncertainties, private flows of international capital typically tend to be quite limited and are often focused on particular investments with a high security of expected return. Hence, flows of credit from official sources and from the international financial institutions often tend to dominate the supply of external resources available to smooth the initial painful adjustments. Resources provided on the condition that countries design and implement serious programs of economic stabilization and reform are particularly important and appropriate at this stage. The key "market imperfection" that impairs the private supply of capital (both external and internal) in the initial stages of transformation is the doubt that inevitably exists about the durability and success of the reform effort. Conditional assistance linked to the implementation of sensible reform programs is needed to correct this market imperfection. Necessarily, such conditional assistance must come largely from public rather than private sources; and, appropriately, the risks associated with the provision

of such assistance are balanced by the large potential public return to the world community from successful transformation of the formerly centrally planned economies. Success, of course, depends primarily on the reform efforts of the transforming countries themselves. But, an adequate flow of external support and, even more importantly, an opening of markets to exports of transforming economies, are also critical. Subsequently, as success becomes apparent and the reform process gains self-sustaining momentum, flows of private capital should take over the overwhelming bulk of the task of financing the huge investments that transforming economies will surely require in the decades ahead.

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