

# *International Capital Movements: How Shocking Are They?*

**T**he power of international capital movements over national economies has been forcefully demonstrated in recent years by speculative attacks on the exchange rates of a number of currencies, including several European currencies during 1992 and 1993 and the Mexican peso late in 1994. The aftermath of the flight of funds from Mexico was particularly severe—a precipitous depreciation of the peso, a surge of inflation, and a drop in national output of more than 10 percent, as well as flights of capital from several other countries whose economic prospects aroused anxiety in response to the Mexican crisis.

Incidents such as these have inspired a number of questions, and reservations, about international capital movements. Have they become more volatile? Has their impact on national economies strengthened? How should governments deal with powerful and volatile flows? These are among the issues addressed in this article. First, however, we consider the extent to which national capital markets are in fact linked together.

## *I. The Integration of National Capital Markets*

International capital movements can affect a national economy only to the extent that its capital market is connected to others. Such linkages have strengthened in recent years as many nations have relaxed restrictions over their financial markets and as technical advances have speeded communications.

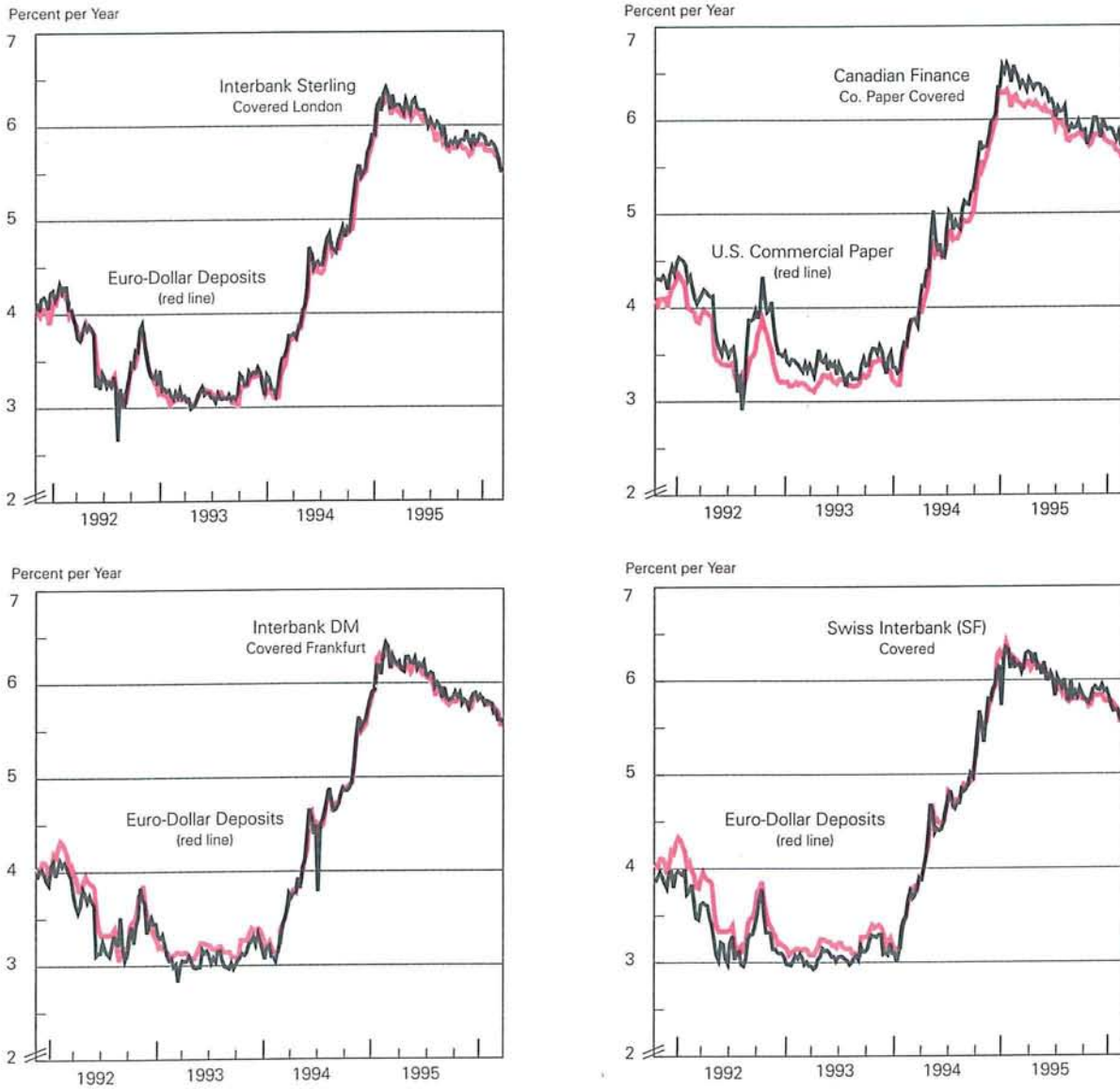
One familiar measure of this linkage is the similarity of interest rates between nations. If the financial markets in various countries are closely integrated, interest rates in those markets will be approximately equal on securities with the same maturity and risk of default, after adjusting for the cost of “covering,” or of insuring against the risk that the currency in which a security is denominated might depreciate.<sup>1</sup> Any tendency for interest rates to rise above this equalized level will be quickly squashed

*Norman S. Fieleke*

*Vice President and Economist, Federal Reserve Bank of Boston. Lynn Browne offered valuable comments, and Wei Sun provided essential research assistance.*

Figure 1

*Interest Arbitrage: 3-Month Funds  
Averages for Week Ending Wednesday*



Source: FAME data base, Board of Governors of the Federal Reserve System.

by funds flowing in from abroad to gain the higher interest return.

By this standard, the markets for short-term financial assets in a number of advanced economies have been closely integrated for years. Four typical cases are represented in Figure 1. As can be seen, the differences between interest rates on three-month dollar deposits, on the one hand, and on similar foreign-currency assets in these four countries, on the other hand, are extremely small (once each foreign interest rate is adjusted for the cost of covering against the risk of change in the foreign currency's value against the dollar).

Of greater interest are the differences between real interest rates, or rates adjusted for inflation. Real interest rates can be defined *ex ante* or *ex post*. The approximate *ex ante* rate is the expected nominal interest rate minus the expected inflation rate, while the approximate *ex post* rate is the actual interest payment rate minus the actual inflation rate. Since saving and investment decisions, and therefore capital movements, are based on expectations about the future, this analysis focuses on country-to-country differences in *ex ante* real rates.

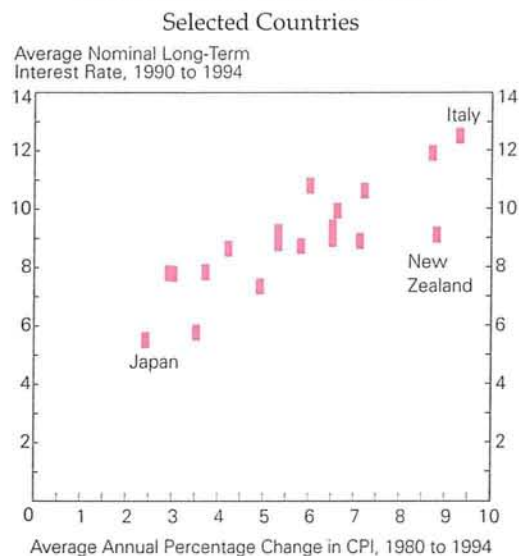
Because expectations cannot be observed, *ex ante* rates must be estimated. The task can be simplified by using the stated, or promised, nominal rates on bonds issued by industrial country governments as the measure of expected nominal rates. This seems justifiable on the grounds that the risk of default on such bonds is generally extremely low.

The estimation of expected inflation is not so simple. A common approach is to assume that expectations of future inflation are based chiefly on the record of past inflation. Evidence exists that long-term inflation expectations—those to be subtracted from nominal bond yields—are influenced by the record of inflation over a long period, rather than only the most recent years (Group of Ten 1995).

Some idea of how close real interest rates may have been in a number of industrial countries can be gleaned from Figure 2. In this chart the average nominal interest rates on government bonds over the five years 1990 to 1994 in 19 industrial countries have been plotted against the average rates of consumer price inflation in the same countries for the 15 years 1980 to 1994. The resulting pattern is consistent with the view that differences in nominal interest rates

Figure 2

*Relationship between Nominal Long-Term Interest Rates (1990 to 1994) and Percentage Changes in Consumer Price Indexes (1980 to 1994)*



Source: OECD diskettes and *OECD Economic Outlook*, vol. 58, December 1995, p. A19.

among these countries may largely reflect differences in inflation expectations or inflation risk premia.<sup>2</sup> Thus, real interest rates may be fairly similar, another indication of the integration of national capital markets.

While the foregoing discussion has dealt with industrial countries, integration is not limited to their capital markets. Although developing country markets in general are less closely integrated than those of industrial countries, various studies conclude that many developing country markets have become highly susceptible to the influence of international capital movements.<sup>3</sup>

How close comparable interest rates are may be the best index of capital market integration, but insight can also be gained from data on actual capital movements between countries. Net capital movements (the overall excess of inflows to or outflows

<sup>1</sup> This "cost" is measured by the discount (or premium) from the spot foreign exchange rate that is realized in selling forward a currency in which a security is denominated.

<sup>2</sup> The simple coefficient of correlation is 0.83, significant at the 0.01 level.

<sup>3</sup> For example, see Frankel and Okongwu (1995); de Brouwer (1995).

Table 1

*Current-Account Balance as a Percent of GNP/GDP, Selected Countries, 1956 to 1994*

Positive sign implies capital outflow, negative sign an inflow.

Year	Belgium-											
	Australia	Austria	Luxembourg	Canada	Denmark	Finland	France	Germany	Greece	Iceland	Ireland	Italy
1956		-.85	2.66	-5.07	-.29	-1.19		2.20	-7.80	-3.16	-11.82	-.36
1957		-.06	1.88	-3.85	.97	-.23		2.69	-7.76	-3.05	-7.68	.12
1958		-.81	3.49	-3.27	2.62	1.93		2.60	-6.96	-1.45	-9.81	1.87
1959		.20	.65	-4.00	.29	.64		1.65	-5.79	-2.90	-11.29	2.34
1960	-5.43	-1.42	.93	-3.34	-1.00	-.85		1.54	-1.54	-3.88	-.61	.75
1961	-1.33	-.36	.40	-2.36	-1.65	-1.36		.90	-1.51	2.93	-.67	1.15
1962	-2.08	1.10	.63	-1.90	-3.24	-1.51		-.60	-2.08	4.19	-3.27	4.54
1963	-1.06	-.14	-.72	-1.11	.31	-.33		.22	-1.06	-1.33	-4.24	-1.35
1964	-2.18	.16	-.01	-.80	-2.26	-2.34		.05	-3.79	-1.95	-4.31	1.08
1965	-4.79	-.48	.87	-1.93	-1.82	-2.26		-1.46	-4.51	.99	-4.75	3.53
1966	-2.78	-1.88	-.51	-1.75	-1.88	-2.21		.08	-3.90	-1.45	-2.59	3.14
1967	-3.40	-1.04	.97	-.72	-2.36	-1.80	.16	2.03	-3.21	-9.85	.45	2.14
1968	-4.51	-.82	.13	-.12	-1.72	.56	-.86	2.21	-3.32	-11.57	-2.55	3.24
1969	-2.69	.69	1.01	-1.17	-2.87	.22	-1.19	1.25	-3.99	-.23	-5.79	2.69
1970	-2.14	-.55	2.68	1.20	-3.45	-2.20	-.12	.45	-4.16	.43	-5.01	.76
1971	-1.97	-.42	2.15	.38	-2.41	-2.84	.11	.44	-3.05	-7.80	-4.37	1.37
1972	.97	-.32	3.53	-.26	-.29	-.83	-.05	.46	-3.10	-3.30	-2.65	1.42
1973	.61	-.85	2.93	.24	-1.65	-2.07	.57	1.48	-7.08	-1.52	-3.78	-1.74
1974	-3.33	-.68	1.48	-.86	-3.11	-5.07	-1.42	2.79	-5.89	-11.46	-9.78	-4.45
1975	-1.10	-1.97	.28	-2.75	-1.31	-7.64	.80	1.06	-4.07	-7.96	-1.48	-.35
1976	-1.93	-3.54	.61	-2.11	-4.64	-3.70	-.95	.84	-3.99	-1.49	-5.16	-1.34
1977	-3.07	-5.86	-.67	-2.04	-3.74	-.33	-.10	.79	-4.00	-2.37	-5.35	.97
1978	-3.88	-2.60	-.82	-2.07	-2.70	1.95	1.46	1.42	-2.94	.81	-6.78	2.02
1979	-2.00	-2.87	-2.67	-1.80	-4.59	-.40	.88	-.72	-4.75	-.80	-13.44	1.56
1980	-2.79	-5.10	-4.02	-.59	-3.81	-2.75	-.63	-1.73	-5.33	-2.50	-11.52	-2.29
1981	-4.88	-4.64	-4.16	-2.00	-3.38	-.96	-.82	-.50	-6.33	-4.51	-14.89	-2.53
1982	-4.86	1.04	-2.93	.54	-4.21	-1.84	-2.19	.76	-4.80	-8.48	-10.95	-1.77
1983	-3.69	.42	-.59	-.45	-2.56	-2.32	-.99	.83	-5.32	-2.16	-7.14	.21
1984	-4.80	-.29	-.07	-.21	-3.29	-.05	-.18	1.54	-6.31	-4.89	-6.42	-.71
1985	-5.54	-.27	.80	-1.34	-4.98	-1.52	-.01	2.73	-9.87	-4.12	-4.08	-.91
1986	-5.68	.22	2.62	-2.87	-5.69	-.99	.33	4.50	-4.31	.45	-3.45	.40
1987	-3.84	-.23	1.92	-2.92	-3.05	-1.96	-.50	4.15	-2.67	-3.62	-.34	-.32
1988	-4.23	-.20	2.27	-3.59	-1.28	-2.60	-.50	4.23	-1.81	-3.81	.24	-.79
1989	-6.41	.19	1.99	-4.28	-1.11	-5.11	-.59	4.82	-4.77	-1.61	-1.62	-1.37
1990	-5.29	.75	2.46	-3.89	1.11	-5.16	-1.29	3.05	-5.34	-2.23	.11	-1.54
1991	-3.47	.07	2.29	-4.21	1.60	-5.69	-.59	-1.18	-2.23	-4.75	3.53	-2.09
1992	-3.79	-.38	2.80	-4.00	3.14	-4.65	.33	-1.17	-2.76	-3.10	5.40	-2.28
1993	-3.81	-.48		-4.47	3.62	-1.16	.82	-.86	-1.02	-.08	8.77	1.12
1994		-1.09		-3.43		1.10	.31	-1.27				1.53
Average without Regard to Sign	3.36	1.15	1.66	2.15	2.47	2.11	.67	1.62	4.29	3.50	5.42	1.65

from a country) are more relevant for this study than the gross flows, since it is the net flow that affects a country's net creditor or debtor position and overall rate of interest. This net flow is in principle equal to

the country's international balance on current account, that is, on trade in goods and services (with services defined to include income flows) and unilateral transfers. The reason for this equality can be stated suc-

Table 1 (Cont'd)

*Current-Account Balance as a Percent of GNP/GDP, Selected Countries, 1956 to 1994*

Positive sign implies capital outflow, negative sign an inflow.

Year	Japan	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom	United States	Average for all Countries without Regard to Sign (excluding Australia, France, and Portugal) <sup>a</sup>
1956	-.11	-2.32	.11		-1.14	-1.25	-.42	.99	.37	2.34
1957	-2.02	-1.74	.35		-1.56	-.24	-.62	.97	.75	2.03
1958	.87	4.43	-3.94		-1.08	-.48	2.97	-1.42	-.03	2.78
1959	.96	4.66	-2.07		-.24	.02	2.20	-.54	-.46	2.27
1960	.32	3.12	-2.76		3.77	-.61	1.07	-.99	.55	1.61
1961	-1.83	1.47	-3.82		1.87	.28	-2.16	-.01	.71	1.41
1962	-.07	1.06	-3.60		-.09	.04	-3.10	.38	.59	1.78
1963	-1.11	.82	-2.82		-1.14	-.15	-3.01	.36	.72	1.16
1964	-.59	-.91	-1.06		.16	.08	-3.10	-1.13	1.04	1.38
1965	1.01	.26	-2.17		-2.09	-.86	-.49	-.21	.76	1.69
1966	1.18	-1.04	-2.76		-2.09	-.68	.79	.21	.39	1.59
1967	-.15	-.31	-3.30		-1.55	-.18	.59	-.95	.32	1.77
1968	.70	.35	.08		-.68	-.43	-.51	-1.17	.07	1.68
1969	1.23	.19	1.17		-1.18	-.67	-.18	1.01	.04	1.42
1970	.98	-1.44	-1.93		.21	-.80	.75	1.57	.23	1.60
1971	2.52	-.35	-4.19		2.00	.97	1.16	1.92	-.13	2.14
1972	2.18	2.82	-.40	4.06	1.07	1.33	1.63	.33	-.48	1.47
1973	-.03	3.85	-1.90	2.94	.81	2.75	-2.11	-1.30	.52	2.03
1974	-1.03	4.02	-4.84	-6.15	-3.63	-.96	-5.60	-3.73	.13	3.86
1975	-.14	2.71	-8.82	-5.12	-3.34	-.47	1.39	-1.47	1.13	2.69
1976	.66	3.61	-12.19	-8.35	-3.95	-2.10	3.97	-.61	.23	3.04
1977	1.58	1.10	-14.35	-5.93	-1.76	-2.64	3.04	.06	-.73	2.85
1978	1.70	-.91	-5.35	-2.64	1.11	-.27	2.36	.67	-.68	2.07
1979	-.86	.06	-2.31	-.27	.57	-2.24	-.25	-.19	.01	2.23
1980	-1.02	-.64	1.97	-4.35	-2.45	-3.53	-.19	1.27	.08	2.82
1981	.41	2.52		-20.03	-2.70	-2.49	3.47	2.74	.16	3.46
1982	.63	3.41	1.22	-14.82	-2.36	-3.34	2.51	1.63	-.36	2.93
1983	1.75	3.67	3.72	-8.28	-1.75	-.87	1.19	1.14	-1.30	2.08
1984	2.76	5.08	5.42	-3.46	1.27	.59	6.38	.42	-2.62	2.68
1985	3.65	3.27	5.35	1.95	1.72	-1.22	6.15	.72	-3.09	3.10
1986	4.31	2.27	-6.66	4.09	1.72	-.11	3.28	-.23	-3.53	2.64
1987	3.59	1.82	-5.01	1.22	-.08	-.10	3.52	-1.19	-3.68	2.23
1988	2.73	3.01	-4.45	-2.61	-1.10	-.42	4.57	-3.49	-2.61	2.40
1989	1.97	4.28	.24	.34	-2.87	-1.78	4.31	-4.34	-1.96	2.70
1990	1.21	3.16	3.91	-.30	-3.42	-2.91	2.94	-3.37	-1.66	2.68
1991	2.16	2.60	4.89	-1.04	-3.16	-1.96	4.29	-1.44	-.12	2.68
1992	3.19	2.00	2.70	-.22	-3.21	-3.55	5.67	-1.69	-1.13	2.93
1993	3.11	3.10	2.45		-.97	-2.19	6.88	-1.87	-1.64	
1994	2.79	3.12			-1.07	.43		-.00	-2.31	
Average without Regard to Sign	1.52	2.24	3.64	4.67	1.72	1.18	2.60	1.22	.96	

<sup>a</sup>Australia, France, and Portugal are excluded from the calculations because data for them are lacking for some years.

Source: International Monetary Fund data base on DRI/McGraw-Hill.

cinctly: A country that imports more in goods and services than it exports, and receives no unilateral transfers to make up the difference, must borrow that difference from abroad, and the corresponding net

inflow of capital will equal its current-account deficit. Accordingly, the current-account balance is used in this study as a measure of the net capital inflow or outflow experienced by a country.

In Table 1 current-account balances are reported as a percentage of gross national or gross domestic product for all industrial countries and years for which data could readily be obtained. The focus is on industrial countries because fairly lengthy time series are available for them. As indicated in the last column, the average current-account balance, or net capital flow, has varied over the years from a low of 1.16 percent of GNP/GDP in 1963 to a high of 3.86 percent in 1974, a year strongly impacted by an upward oil price shock. As reported in the last row, Ireland

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*The degree of integration among capital markets has been impressive for years, well before it became fashionable to speak of "globalization."*

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experienced the largest average net capital flow relative to GNP (5.42 percent) and France the smallest (0.67 percent), over the years included. Portugal incurred the largest single relative capital movement, a net inflow in 1981 amounting to a stunning 20.03 percent of GNP.

As already noted, interest rate comparisons provide a more direct measure of capital market integration than such data on capital movements. Nonetheless, the relatively large net inflows experienced by Portugal in 1981 and 1982, and by Ireland and other countries on occasion, clearly demonstrate the capacity of the markets for remarkable capital transfers. Moreover, this capacity has been in evidence for years; as indicated in the last column of the table, the average net capital flow relative to GNP/GDP was not much different in the early 1990s from that in the late 1950s.

Statistical tests help to confirm this impression that net capital movements have shown little if any tendency to increase over time in relation to national outputs. While some upward trend seems to be present, it is very modest, amounting to only 0.03 percent (of GNP) per year.<sup>4</sup>

This is not to say that capital markets have become fully integrated. Even among the industrial countries, some controls over capital movements remain, many investors still display a bias in favor of domestic securities, and significant divergences can sometimes be found among real interest rates. But the

degree of integration is impressive—and has been for years, well before it became fashionable to speak of "globalization."

## *II. The Volatility of Capital Movements*

The benefits of capital market integration have long been recognized. Close links between national capital markets allow capital to flow to where it can be most productive. Nations that experience temporary shortfalls in income can borrow to smooth out their consumption over time. Investors can acquire foreign securities in order to diversify their portfolios so as to reduce overall risk without sacrificing overall return. Financial firms, confronted with competition from abroad, become more efficient. Economic policymakers may be deterred from irresponsible courses by the prospect of capital flight.

But the prospect of capital flight has also provoked skepticism about the desirability of untrammelled integration. As the recent Mexican episode demonstrates, the discipline exercised by the international capital markets can be extremely severe, perhaps excessive. This section examines the variability of net capital movements in order to shed some light on the dimensions of the perceived problem. Again, the current-account balance is taken as the measure of net capital flows, and the focus remains on the industrial countries.

For those concerned about the overall economic impact, variability in capital flows relative to GNP will be of much greater interest than variability in the abstract. Thus, the approach adopted here is to ascertain whether any trend has been present in the data presented in the last column of Table 2. As can be seen in Figure 3, no trend is readily discernible in those year-to-year changes. Statistical tests also fail to reveal any trend.<sup>5</sup> Thus, other things equal, the variability of net capital movements relative to national output seems to pose no greater problem for the industrial countries currently than in the late 1950s.

Another relevant question is whether countries heavily involved in international commerce generally experience greater variability in net capital movements than countries less heavily involved. Other things equal, an affirmative answer seems inescapable, since countries with little or no international commerce cannot experience much variability therein,

<sup>4</sup> See the regression results in Section I of the appendix.

<sup>5</sup> See the regression results in Section II of the appendix.

especially in relation to GNP. Still of interest, however, is the strength of the relationship between this variability and national involvement in trade.

As indicated in Figure 4, the relationship is present, but weak. For the 18 industrial countries listed in Table 2, variability in net capital flows relative to GNP does tend to rise with the volume of trade in goods and services relative to GNP (our measure of international involvement). The relationship is far from perfect, however.<sup>6</sup>

Figure 3

*Absolute Annual Change in Current-Account  
Balance as a Percentage of GNP/GDP, 1957 to 1992*  
Average Percentage for 18 Industrial Countries



Source: Table 2, last column.

### III. Do Capital Movements Promote Booms and Recessions?

Of greater interest than the mere variability of capital movements is the question whether they tend to provoke booms or recessions. In other words, do international capital movements often administer cyclical shocks to domestic economies?

#### An Analytic Framework

To address this question, it is useful to devise criteria for distinguishing between shocks to an economy from capital movements and other economic shocks. To begin with, consider the various domestic and external economic shocks that might generate reductions both in the current-account balance (that is, increased net capital inflows or reduced outflows) and in real GNP. Shocks opposite from those in the following outline would, of course, generate increases in real GNP and the current-account balance.

1. *Domestic shocks in goods markets—shifts in domestic demand or supply:*

a. A reduction in the supply of domestic goods for export (as during a general labor strike or a natural disaster, such as an earthquake) that is not offset by a higher price paid by foreign purchasers (because

their demand is highly elastic with respect to price changes);

b. An increase in the supply of domestic goods for export (as during a bumper crop) that is more than offset by a lower price paid by foreign buyers (because foreign demand is inelastic with respect to price change—an unlikely phenomenon);

c. A shift in domestic demand away from domestic goods toward imports (as during a shift in tastes away from domestic goods—an event that seems unlikely on a substantial scale).

2. *External shocks in goods markets—shifts in foreign demand or supply:*

a. An increase in the price (reduction in supply) of an imported good (as during an adverse oil supply shock) that is not offset by a reduction in the quantity purchased (because domestic demand is inelastic with respect to price);

b. A reduction in foreign demand for domestic exports.

Before considering other possible shocks, note that in cases 2a and 2b the terms on which the country trades with the rest of the world (the price of its

<sup>6</sup> The simple coefficient of correlation is 0.48.

Table 2

*Year-to-Year Change in Current-Account Balance as a Percent of Preceding Year GNP/  
GDP, Selected Countries, 1957 to 1994*

Year	Belgium-											
	Australia	Austria	Luxembourg	Canada	Denmark	Finland	France	Germany	Greece	Iceland	Ireland	Italy
1957		.79	-.66	.95	1.32	.96		.73	-.60	-.06	3.83	.49
1958		-.79	1.64	.50	1.77	1.87		.10	.52	1.36	-2.46	1.89
1959		1.02	-2.82	-1.03	-2.30	-1.24		-.81	.94	-1.86	-2.20	.63
1960		-1.78	.34	.56	-1.36	-1.61		.18	4.12	.76	10.68	-1.48
1961	4.09	1.02	-.51	1.00	-.85	-.69		-.51	-.17	6.75	-.11	.52
1962	-.91	1.52	.27	.41	-2.00	-.26		-1.56	-.69	1.78	-2.87	3.95
1963	.93	-1.24	-1.40	.72	3.56	1.16		.83	.89	-5.77	-1.28	-6.08
1964	-1.35	.31	.71	.23	-2.89	-2.31		-.17	-3.19	-1.14	-.66	2.53
1965	-2.99	-.68	.95	-1.33	.22	-.16		-1.64	-1.34	3.15	-.78	2.72
1966	1.75	-1.58	-1.41	-.03	-.27	-.11		1.54	.18	-2.73	2.03	-.13
1967	-.86	.78	1.55	.97	-.69	.38		1.97	.43	-8.21	3.07	-.78
1968	-1.53	.16	-.83	.60	.58	2.32	-1.08	.36	-.39	1.05	-2.95	1.37
1969	1.52	1.58	.99	-1.17	-1.54	-.32	-.43	-.79	-1.20	11.37	-4.11	-.27
1970	.33	-1.31	1.98	2.50	-.94	-2.67	1.06	-.69	-.67	.77	.17	-1.77
1971	-.11	.06	-.28	-.77	.76	-.93	.24	-.05	.77	-10.39	-.05	.73
1972	3.12	.04	2.25	-.68	2.05	1.86	-.18	.12	-.50	3.69	1.09	.29
1973	-.12	-.82	.23	.54	-1.88	-1.90	.79	1.50	-6.11	1.23	-1.84	-3.53
1974	-4.65	.04	-1.18	-1.30	-1.80	-4.41	-2.09	1.61	.27	-13.54	-6.46	-3.30
1975	2.13	-1.56	-1.16	-2.12	1.56	-3.91	2.43	-1.63	1.37	4.12	8.02	4.05
1976	-1.01	-1.83	.39	.25	-3.81	3.66	-1.78	-.16	-.24	6.20	-3.62	-.97
1977	-1.13	-3.43	-1.40	.03	.47	3.35	.83	.07	-.64	-1.66	-1.13	2.46
1978	-1.37	2.73	-.33	-.09	.48	2.44	1.91	.99	.46	3.30	-3.35	1.52
1979	1.64	-.80	-2.24	.07	-2.64	-2.44	-.40	-2.28	-2.87	-1.72	-9.99	-.07
1980	-1.23	-2.84	-1.60	1.13	.78	-2.92	-1.60	-1.12	-.81	-2.18	-.20	-4.34
1981	-2.80	1.10	.62	-1.63	.91	1.81	-.09	1.31	-.48	-2.17	-2.54	.01
1982	.15	5.68	1.57	2.54	-.69	-.89	-1.24	1.23	1.36	-3.51	3.81	.78
1983	1.29	-.62	2.37	-1.03	1.64	-.40	1.25	.07	.04	6.65	4.05	2.00
1984	-1.64	-.69	.52	.23	-.62	2.27	.82	.62	-.72	-2.82	1.06	-.92
1985	-.06	.01	.90	-1.15	-2.01	-1.55	.17	1.21	-3.39	.60	2.15	-.22
1986	-.38	.58	2.86	-1.64	-3.10	.22	.47	3.70	4.82	4.73	-.77	1.47
1987	1.14	-.51	-.22	-.48	1.88	-1.48	-.94	.69	1.16	-5.49	3.05	-.80
1988	-1.47	.02	.55	-1.31	1.69	-1.10	-.04	.40	.58	-.58	.59	-.55
1989	-2.97	.38	-.25	-1.18	.21	-2.99	-.09	.57	-3.03	2.37	-1.90	-.63
1990	.91	.75	1.09	.22	2.47	-1.03	-1.00	-.96	-1.82	-.97	1.76	-.57
1991	1.80	-.67	-.11	-.45	.49	.14	.69	-4.30	2.96	-2.90	3.52	-.66
1992	-.26	-.50	.84	.35	1.84	1.53	.95	-.14	-.80	1.56	2.47	-.33
1993	.06	-.09		-.33	.33	3.73	.45	.36	1.80	3.02	2.63	3.19
1994		-.70		1.07		2.43	-.50	-.48				.46
Average without Regard to Sign	1.45	1.08	1.08	.86	1.47	1.72	.87	.99	1.41	3.57	2.79	1.54

exports relative to the price of its imports) could be expected to decline, or worsen. Such a decline, while possible, would be unlikely in cases 1b and 1c, which, therefore, are unlikely to generate reductions in both

GNP and the current-account balance. And in 1a, the terms of trade would improve, or at least not worsen. Consequently, one may conclude that if a country's terms of trade deteriorate along with its real GNP and



Table 2 (Cont'd)

*Year-to-Year Change in Current-Account Balance as a Percent of Preceding Year GNP/  
GDP, Selected Countries, 1957 to 1994*

Year	Japan	Netherlands	Norway	Portugal	Spain	Sweden	Switzerland	United Kingdom	United States	Average Percentage Change for All Countries without Regard to Sign (excluding Australia, France, and Portugal) <sup>a</sup>
1957	-2.21	.44	.26		-.59	1.00	-.23	.03	.43	.87
1958	2.95	6.24	-4.27		.34	-.27	3.67	-2.46	-.78	1.88
1959	.22	.56	1.74		.87	.50	-.63	.85	-.47	1.15
1960	-.57	-1.20	-.87		3.53	-.68	-1.02	-.51	1.03	1.79
1961	-2.52	-1.49	-1.88		-1.64	.92	-3.49	.97	.19	1.40
1962	1.75	-.33	-.05		-1.97	-.24	-1.28	.42	-.08	1.19
1963	-1.20	-.17	.56		-1.26	-.19	-.20	-.00	.18	1.48
1964	.42	-1.89	1.64		1.34	.24	-.43	-1.59	.40	1.23
1965	1.71	1.19	-1.35		-2.59	-1.02	2.57	.89	-.22	1.36
1966	.36	-1.39	-.83		-.33	.11	1.34	.44	-.34	.84
1967	-1.35	.70	-.85		.40	.48	-.15	-1.19	-.06	1.33
1968	.98	.69	3.38		.88	-.27	-1.15	-.15	-.24	1.02
1969	.74	-.14	1.19		-.67	-.30	.32	2.26	-.02	1.61
1970	-.08	-1.90	-3.40		1.42	-.23	1.02	.71	.20	1.25
1971	1.87	1.03	-2.25		2.07	1.85	.64	.59	-.37	1.41
1972	.37	3.85	3.72		-.64	.59	.83	-1.54	-.39	1.36
1973	-2.22	2.24	-2.06	-.15	.01	2.01	-4.47	-1.81	1.06	1.97
1974	-1.11	.90	-3.93	-10.10	-5.30	-3.82	-4.37	-2.72	-.38	3.14
1975	.88	-.88	-5.89	.56	-.32	.36	7.18	2.00	1.09	2.67
1976	.88	1.24	-4.52	-3.57	-.74	-1.80	2.79	.88	-.87	1.94
1977	1.28	-2.32	-4.19	2.12	1.99	-.68	-.71	.67	-1.05	1.53
1978	.81	-2.21	8.35	3.06	3.10	2.34	.24	.79	-.05	1.87
1979	-2.60	.98	2.70	2.33	-.34	-2.37	-2.63	-.91	.69	2.13
1980	-.20	-.75	4.73	-5.08	-3.20	-1.85	.04	1.81	.08	1.70
1981	1.47	2.74	1.93	-14.80	.09	1.25	3.43	1.35	.10	1.39
1982	.18	.82	-2.74	6.10	.40	-.45	-.90	-1.19	-.54	1.63
1983	1.28	.15	2.44	7.40	.83	2.54	-1.31	-.55	-1.04	1.61
1984	1.20	1.06	1.75	5.12	3.03	1.48	4.84	-.74	-1.61	1.45
1985	1.12	-1.72	.25	5.57	.52	-1.87	-.11	.34	-.68	1.10
1986	2.72	-.11	-13.31	4.02	.67	1.07	-1.41	-1.01	-.63	2.49
1987	.06	-.05	.64	-2.56	-1.82	-.01	1.15	-1.22	-.37	1.17
1988	-.31	1.36	.26	-4.19	-1.21	-.38	1.43	-3.05	.85	.90
1989	-.78	1.25	4.69	2.99	-2.07	-1.45	-.41	-.86	.52	1.42
1990	-.73	-.37	4.36	-.74	-1.55	-1.72	-.59	.45	.21	1.20
1991	1.25	-.49	1.00	-.89	.02	.87	1.43	1.88	1.54	1.37
1992	1.33	-.40	-2.02	.77	-.33	-1.71	1.60	-.32	-1.06	1.06
1993	.38	.99	-.46		2.40	1.91	1.00	.01	-.60	
1994	-.05	.29			-.11	2.65		1.87	-.82	
Average without Regard to Sign	1.11	1.22	2.72	4.11	1.33	1.14	1.65	1.08	.56	

<sup>a</sup>Australia, France, and Portugal are excluded from the calculations because data for them are lacking for some years.

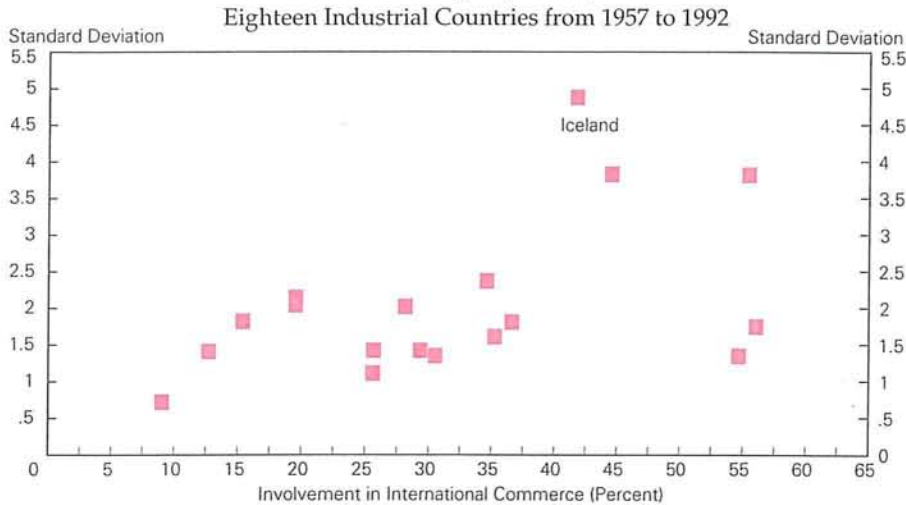
Source: IMF data base on DRI/McGraw-Hill.

its current-account balance, or if all three of these variables concurrently improve, a likely primary cause is an external, rather than a domestic, shock to real demand or supply.

A decline in real GNP may also be caused by a home-grown recession (obviously a domestic shock, whatever the cause) or by an abrupt decline in net capital inflows from abroad (an external shock, as in

Figure 4

*Relationship between Involvement in International Commerce<sup>a</sup> and Standard Deviation of the Year-to-Year Change in Current Balance as a Percentage of GNP/GDP*



<sup>a</sup> Defined as the average percentage that trade in goods and services (average of exports plus imports) is of GNP/GDP for the years 1960, 1970, 1980, and 1990.

Source: Table 2; IMF data base on DRI; *Balance of Payments Yearbook*, vols. 17 and 29; and *International Financial Statistics Yearbook* 1995.

the recent Mexican episode).<sup>7</sup> In both cases, however, the current-account balance would likely improve, rather than decline, as the country's demand weakened for foreign as well as domestic goods. In judging whether a decline in GNP and a concurrent improvement in the current account were initiated by a domestic recession or at least in part by an abrupt decline in capital inflows (or increase in capital outflows), one might again look to the terms of trade, which are likely to deteriorate if capital inflows plummet and reduce demand for the domestic currency and its foreign-exchange value.<sup>8</sup>

From this brief analysis some criteria can be distilled for identifying, albeit tentatively, those epi-

(in the opposite direction, of course, from the change in the current-account balance) has probably contributed to, rather than cushioned, these developments.<sup>9</sup> (See the box.)

Of course, a country may be subjected to more than one kind of economic shock simultaneously, and the discovery, through the application of our criteria, of a likely external shock does not preclude the contemporaneous presence and influence of other shocks. In addition, many shocks may be too mild to be detected by our criteria—and too innocuous to cause concern.

### *The Analytic Results*

Application of the foregoing analytic approach yielded the results reported in the remaining tables and charts in this article. The data readily available allowed the approach to be extended to the 11 industrial countries listed in these tables over fairly long time periods, as indicated for each country.

<sup>9</sup> Changes in the gap between actual and potential GNP rather than changes in actual GNP might be used as a criterion; but potential GNP is not readily measurable, and use of changes in the current-account balance and the terms of trade as additional criteria should help to insure accurate identification of external shocks.

sodes in which external cyclical shocks, including shocks from capital movements, have played a significant role. If real GNP, the current-account balance, and the terms of trade all change in the same direction, an external real demand or supply shock has probably contributed, and the offsetting change in net capital movements (required to maintain overall balance in the country's international payments) serves to cushion the shock. If real GNP and the terms of trade change in the same direction while the current-account balance changes in the opposite direction, a change in net capital movements

### Criteria for Identifying Likely External Economic Shocks

Type of Shock	Criteria		
	Change in Current-Account Balance	Change in Real GNP or GDP	Change in Terms of Trade (Ratio of Export Prices to Import Prices)
<b>A. Goods Market</b>			
1. Negative: Reduction in foreign supply of domestic imports <sup>a</sup> or in foreign demand for domestic exports	Decrease in surplus (or increase in deficit)	Decrease	Decline
2. Positive: Increase in foreign supply of domestic imports <sup>a</sup> or in foreign demand for domestic exports	Increase in surplus (or decrease in deficit)	Increase	Rise
<b>B. Capital Market</b>			
1. Negative: Reduction in net inflows from (or increase in outflows to) abroad	Increase in surplus (or decrease in deficit)	Decrease	Decline
2. Positive: Increase in net inflows from (or reduction in outflows to) abroad	Decrease in surplus (or increase in deficit)	Increase	Rise

<sup>a</sup> With price-inelastic domestic demand.

A country was deemed to have experienced a positive external demand or supply shock in a particular calendar quarter if its real GNP or GDP, its current-account balance, and its terms of trade all changed in a positive direction, and to have experienced a negative external demand or supply shock if those three variables all changed in a negative direction, where all changes were measured from the same quarter a year earlier. In these demand and supply shocks, net capital movements were offsetting, and might be construed as countercyclical. A capital-inflow shock (from an increase in inflows or a decrease in outflows) was deemed to have occurred in a particular calendar quarter if real GNP or GDP, net capital movements, and the terms of trade all changed positively for a country, while a capital-outflow shock was recorded if all three variables changed negatively, where all changes were again measured from the same quarter a year earlier. These capital-flow shocks tended to provoke, or at least to accommodate, expansions or recessions.

As indicated in Table 3, most of the 11 countries experienced external economic shocks in at least one-half of the calendar quarters covered for them, and no

country was exempt. Also, for most countries more quarters were affected by demand or supply shocks than by capital-movement shocks. Finland had the highest incidence of calendar quarters undergoing capital-flow shocks—40 out of the 96 quarters covered—with the United States second.

Has the incidence of external economic shocks risen over the years? No such trend is readily apparent in Figures 5 or 6. Instead, the number of countries affected seems to follow a fairly random pattern over time.

Conventional wisdom proclaims that capital shocks are administered most frequently by funds invested in short-term, rather than long-term, assets. To investigate this matter, we calculated, insofar as data would permit, the number of calendar quarters in which various major categories of capital participated in the capital-flow shocks listed in Table 3. The results are presented in Table 4 (which, because of data limitations, covers fewer quarters for most of the countries than Table 3).

The category, "other short-term capital," joined in inflow shocks more often than any other type of capital in only two of the 11 countries. Moreover, in

Table 3  
*Number of Calendar Quarters in Which Countries Listed Probably Experienced External Economic Shocks, over the Periods Indicated, by Type of Shock*

Country and Time Period	Demand or Supply Shock		Capital Flow Shock		Percentage of Quarters Shocked
	Positive	Negative	Positive (Inflow)	Negative (Outflow)	
Australia (1966Q4-94Q3: 108 Quarters)	11	0	17	10	35
Austria (1966Q4-94Q1: 106 Quarters)	25	3	15	1	42
Canada (1966Q4-94Q4: 109 Quarters)	22	2	30	8	57
Finland (1971Q1-94Q4: 96 Quarters)	20	4	28	12	67
France (1968Q1-94Q4: 104 Quarters)	26	3	23	3	53
Germany (1979Q3-94Q4: 62 Quarters)	14	4	7	0	40
Italy (1966Q4-93Q3: 104 Quarters)	26	2	22	2	50
Japan (1966Q4-93Q4: 105 Quarters)	43	2	15	1	58
Norway (1971Q1-94Q3: 95 Quarters)	25	0	19	1	47
United Kingdom (1966Q4-94Q4: 109 Quarters)	28	6	24	3	56
United States (1966Q4-94Q4: 109 Quarters)	14	3	33	7	52

Source: IMF data bases on DRI/McGraw-Hill and FAME (Board of Governors of the Federal Reserve System); and *International Financial Statistics*, various issues.

administering outflow shocks, short-term capital participated more frequently than any other capital category in only two countries. Thus, the customary characterization of short-term capital as the most recidivist villain of the capital-shock drama may be somewhat exaggerated. The fact is that long-term assets, such as stocks and bonds, need not be held

for the long term, but can often be sold quickly and the proceeds withdrawn. Moreover, the flow of ongoing investment in long-term assets can be abruptly reduced.

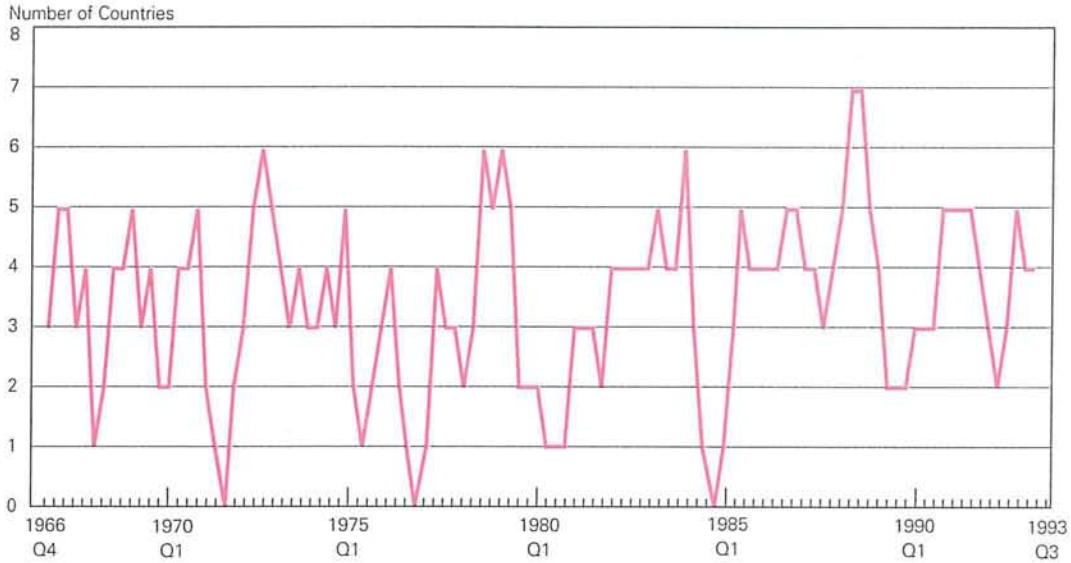
External economic shocks are of interest not only for their type and pervasiveness, but also for their economic impact. A thorough evaluation of that impact would require a detailed econometric model for each of the countries under consideration, an undertaking beyond the scope of this article. Still, some idea of the impact can be gleaned from examining the changes in current-account balances accompanying the shocks. Thus, Table 5 presents summary measures of these four-quarter changes, where each change is expressed as a percentage of the GNP or GDP in the quarter a year prior to the one in which the shock was experienced. Recall that a negative capital-flow shock, involving an increased outflow or reduced inflow of capital, must be accompanied by a positive change in the current-account balance.

As reported in the last column of the table, the median, or typical, four-quarter change in the current-account balance, when measured without regard to algebraic sign and as a percentage of GNP or GDP, amounted to as much as 2.75 percent in the case of Norway, with its relatively small and open economy, and as little as 0.65 percent in the case of the much larger U.S. economy.<sup>10</sup> While informative, these summary measures for all shocks do not distinguish between the impacts of capital-flow shocks and of demand or supply shocks. Which type of shock usually accompanies the larger change in current-account balances relative to GNP/GDP over four quarters?

<sup>10</sup> Note that these percentage changes are presented not as measures of the full change associated with the typical external shock (which might generate changes shorter or longer in duration than four quarters), but as measures of the typical change over four quarters, where the change is associated with an external shock. Apart from the difficulty of accurately measuring the full impact of the typical shock, one reason for measuring changes over four-quarter periods was to allow the use of some seasonally unadjusted data.

Figure 5

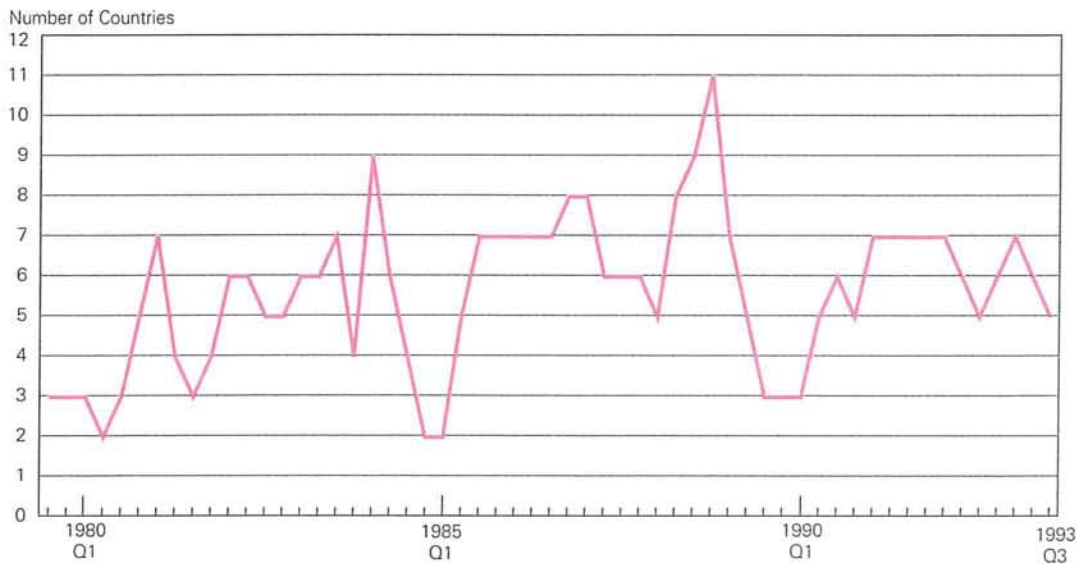
*Total Number of Countries Probably Experiencing External Economic Shocks  
Seven Industrial Countries with Data from 1966 Q4<sup>a</sup>*



<sup>a</sup> Australia, Austria, Canada, Italy, Japan, United Kingdom, and the United States.

Figure 6

*Total Number of Countries Probably Experiencing External Economic Shocks  
Eleven Industrial Countries with Data from 1979 Q3<sup>a</sup>*



<sup>a</sup> Australia, Austria, Canada, Finland, France, Germany, Italy, Japan, Norway, United Kingdom, and the United States.

Table 4

*Number of Calendar Quarters in Which Countries Listed Probably Experienced Capital-Movement Shocks, over the Periods Indicated, by Type of Shock and Capital*

Country and Time Period	Inflow (Positive) Shock					Outflow (Negative) Shock				
	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital
Australia (1971Q1-94Q3: 95 Quarters)	9	4	9	9	11	6	5	5	6	4
Austria (1971Q1-94Q1: 93 Quarters)	8	5	5	7	5	1	0	0	0	1
Canada (1971Q1-94Q4: 96 Quarters)	15	16	15	17	20	2	5	5	4	4
Finland <sup>a</sup> (1971Q1-94Q4: 88 Quarters)	5	10	14	13	13	7	5	7	6	8
France (1973Q1-94Q4: 88 Quarters)	3	7	8	7	7	1	2	2	3	2
Germany (1979Q3-94Q4: 62 Quarters)	5	2	3	4	5	0	0	0	0	0
Italy (1971Q1-93Q3: 91 Quarters)	7	7	9	8	8	1	0	2	0	2
Japan (1971Q1-93Q4: 92 Quarters)	1	4	1	3	4	0	0	0	0	1
Norway (1976Q1-94Q3: 75 Quarters)	8	6	6	7	5	1	0	0	0	1
United Kingdom (1971Q1-94Q4: 96 Quarters)	9	9	13	10	11	1	2	1	2	2
United States (1974Q1-94Q4: 84 Quarters)	13	15	13	18	14	4	2	5	3	5

<sup>a</sup>Data not available from 1974Q1 to 1975Q4.

Source: IMF data bases on DRI/McGraw-Hill and FAME, and *International Financial Statistics*, various issues.

Examination of the data in Table 5 reveals that the median percentage change (without regard to sign) associated with all capital-flow shocks exceeds the median percentage change associated with all demand or supply shocks for only three of the 11 countries. Thus, just as the frequency of short-term capital in disturbances seems to have been exaggerated, so has

the typical impact of capital in general, at least for the countries and time periods under consideration here.

Aside from the impact of capital in general, how large are the shifts in various categories of capital movements during capital shocks? As can be seen in Table 6, the median four-quarter changes (as a

Table 5

*Median Change, as a Percent of GNP/GDP, in the Current-Account Balance from a Year Prior, for Calendar Quarters Probably Experiencing External Economic Shocks, by Type of Shock*

Country and Time Period	Demand or Supply Shock			Capital-Flow Shock			All Shocks Absolute Value
	Positive	Negative	All Absolute Value	Positive (Inflow)	Negative (Outflow)	All Absolute Value	
Australia (1966Q4–94Q3: 108 Quarters)	1.12	None	1.12	–2.62	1.75	2.30	2.21
Austria (1966Q4–94Q1: 106 Quarters)	1.23	–.72	1.06	–1.19	2.17	1.34	1.21
Canada (1966Q4–94Q4: 109 Quarters)	1.04	–.91	1.04	–.82	.95	.82	.96
Finland (1971Q1–94Q4: 96 Quarters)	1.49	–.83	1.31	–2.32	2.64	2.32	1.97
France (1968Q1–94Q4: 104 Quarters)	1.09	–.86	1.08	–.46	.52	.49	.80
Germany (1979Q3–94Q4: 62 Quarters)	1.46	–.56	1.12	–.66	None	.66	.94
Italy (1966Q4–93Q3: 104 Quarters)	1.24	–2.13	1.32	–.59	2.73	.68	1.15
Japan (1966Q4–93Q4: 105 Quarters)	1.24	–3.00	1.26	–.68	1.26	.69	1.17
Norway (1971Q1–94Q3: 95 Quarters)	4.21	None	4.21	–1.60	.63	1.57	2.75
United Kingdom (1966Q4–94Q4: 109 Quarters)	1.26	–2.15	1.38	–1.13	1.26	1.18	1.28
United States (1966Q4–94Q4: 109 Quarters)	.98	–.78	.96	–.54	.49	.51	.65

Source: IMF data bases on DRI/McGraw-Hill and FAME, and *International Financial Statistics*, various issues.

percentage of GNP/GDP) vary widely, not only by category of capital, but by type of shock, over the periods for which data were readily available. One generalization that emerges is that short-term capital flows commonly change more, in relation to GNP/GDP, than do other capital flows. However, for each capital category in the table the median is computed for only those quarters in which that category partic-

ipated in a capital shock, and, as has been noted, short-term capital participated less frequently than did other categories.

The medians reported in Tables 5 and 6 denote the typical four-quarter impacts of the various shocks, but tell us nothing about the maximum impacts. Those are presented in Tables 7 and 8. A comparison of the two sets of tables reveals that the maximum

Table 6

*Median Change, as a Percent of GNP/GDP, in Various Capital Flows from a Year Prior, for Calendar Quarters Probably Experiencing Capital-Movement Shocks, by Type of Shock and Capital Participating*

Country and Time Period	Inflow (Positive) Shock					Outflow (Negative) Shock				
	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital
Australia (1971Q1-94Q3: 95 Quarters)	1.57	.98	1.90	3.48	.64	-1.47	-1.02	-1.91	-4.14	-1.22
Austria (1971Q1-94Q1: 93 Quarters)	.11	2.92	.84	3.09	1.47	-.33	None	None	None	-7.94
Canada (1971Q1-94Q4: 96 Quarters)	.75	1.13	1.04	1.67	1.96	-.45	-2.76	-.90	-1.58	-6.86
Finland <sup>a</sup> (1971Q1-94Q4: 88 Quarters)	.44	.95	2.25	1.30	2.36	-.28	-3.00	-1.88	-3.19	-5.94
France (1973Q1-94Q4: 88 Quarters)	.17	.66	.44	.91	2.37	-.45	-.83	-2.02	-.60	-1.05
Germany (1979Q3-94Q4: 62 Quarters)	.51	3.40	1.28	1.03	3.85	None	None	None	None	None
Italy (1971Q1-93Q3: 91 Quarters)	.12	.64	1.27	.83	2.33	-.41	None	-.56	None	-11.22
Japan (1971Q1-93Q4: 92 Quarters)	.36	1.18	1.15	.76	1.36	None	None	None	None	-1.58
Norway (1976Q1-94Q3: 75 Quarters)	1.49	2.69	4.21	4.73	5.73	-1.15	None	None	None	-5.30
United Kingdom (1971Q1-94Q4: 96 Quarters)	.76	1.13	.79	2.19	1.00	-2.59	-4.02	-1.50	-4.94	-4.85
United States (1974Q1-94Q4: 84 Quarters)	.37	.41	.26	.62	1.71	-.66	-.94	-.26	-1.41	-.83

<sup>a</sup>Data not available from 1974Q1 to 1975Q4.

Source: IMF data bases on DRI/McGraw-Hill and FAME, and *International Financial Statistics*, various issues.

impacts far exceed the medians for most countries. Especially striking is the current-account balance decline amounting to 15.5 percent of GDP for Norway (Table 7), a phenomenon associated with a sharp increase in net capital flows into the country during

the year ending in the second quarter of 1975, following the surge in oil prices during the oil shock in the prior year. While the largest of the maximum current-account impacts—for Norway and for Finland—were associated with capital-flow shocks, it was demand or



Table 7

*Maximum Change, as a Percent of GNP/GDP, in the Current-Account Balance from a Year Prior, for Calendar Quarters Probably Experiencing External Economic Shocks, by Type of Shock*

Country and Time Period	Demand or Supply Shock		Capital-Flow Shock		All Shocks Absolute Value
	Positive	Negative	Positive (Inflow)	Negative (Outflow)	
Australia (1966Q4-94Q3: 108 Quarters)	4.42 (1972Q4)	None	-4.38 (1989Q1)	2.73 (1982Q4)	4.42 (1972Q4)
Austria (1966Q4-94Q1: 106 Quarters)	7.52 (1982Q3)	-3.83 (1975Q2)	-4.00 (1977Q2)	2.17 (1981Q1)	7.52 (1982Q3)
Canada (1966Q4-94Q4: 109 Quarters)	3.65 (1970Q4)	-1.26 (1991Q3)	-2.93 (1989Q2)	4.20 (1982Q3)	4.20 (1982Q3)
Finland (1971Q1-94Q4: 96 Quarters)	5.40 (1977Q1)	-2.95 (1991Q1)	-8.12 (1975Q1)	6.44 (1976Q2)	8.12 (1975Q1)
France (1968Q1-94Q4: 104 Quarters)	2.56 (1983Q3)	-1.10 (1980Q4)	-3.29 (1982Q2)	2.12 (1984Q1)	3.29 (1982Q2)
Germany (1979Q3-94Q4: 62 Quarters)	4.12 (1986Q3)	-1.03 (1980Q3)	-2.32 (1991Q4)	None	4.12 (1986Q3)
Italy (1966Q4-93Q3: 104 Quarters)	3.41 (1977Q2)	-2.65 (1981Q1)	-2.41 (1969Q4)	2.76 (1993Q2)	3.41 (1977Q2)
Japan (1966Q4-93Q4: 105 Quarters)	3.35 (1986Q3)	-4.06 (1974Q1)	-2.22 (1979Q1)	1.26 (1974Q4)	4.06 (1974Q1)
Norway (1971Q1-94Q3: 95 Quarters)	12.22 (1990Q4)	None	-15.49 (1975Q2)	.63 (1988Q4)	15.49 (1975Q2)
United Kingdom (1966Q4-94Q4: 109 Quarters)	2.73 (1969Q2)	-4.23 (1974Q2)	-4.09 (1988Q1)	1.33 (1991Q4)	4.23 (1974Q2)
United States (1966Q4-94Q4: 109 Quarters)	1.39 (1979Q1)	-1.03 (1974Q3)	-2.06 (1984Q1)	2.41 (1991Q1)	2.41 (1991Q1)

Source: IMF data bases on DRI/McGraw-Hill and FAME, and *International Financial Statistics*, various issues.

supply shocks that occasioned the maximum impacts for a majority of the countries.

Scrutiny of Table 8 reinforces the conclusion that short-term capital movements undergo larger relative shifts than other types of capital in most countries

during capital shocks in which they take part. Again, however, short-term capital apparently participates in such shocks somewhat less frequently than other types of capital.

#### *IV. Policy toward Capital Movements*

Although, by the measures presented here, external demand or supply shocks typically exceed capital-movement shocks, capital-movement shocks are sometimes sizable and disruptive, and can become contagious, posing threats to the viability of the international financial system. How can governments cope with or, even better, prevent destabilizing shocks?

One approach, currently employed by many governments in varying degrees, is the use of direct controls over capital flows. Ordinarily, such restrictions take the form of multiple exchange-rate arrangements, or taxes or quantitative limits on international capital movements. This regulatory approach faces the formidable challenge of distinguishing between stabilizing and destabilizing episodes of capital movements, and the equally formidable challenge of effectively enforcing restrictions over the destabilizing flows. Not surprisingly, empirical studies commonly show that the capital controls imposed in recent years have generally failed to attain their goals (Fieleke 1994).

A far better approach is for governments to pursue economic policies generally perceived as "sound," so that speculators observe little opportunity for successful attacks. Such counsel, however, fails to acknowledge the fallibility of both government officials and speculators. Given that policies will occasionally err or be misconstrued, what measures might

Table 8

*Maximum Change, as a Percent of GNP/GDP, in Various Capital Flows from a Year Prior, for Calendar Quarters Probably Experiencing Capital-Movement Shocks, by Type of Shock and Capital Participating*

Country and Time Period	Inflow (Positive) Shock					Outflow (Negative) Shock				
	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital	Direct Investment	Portfolio Investment	Other Long-Term Capital	All Long-Term Capital	Other Short-Term Capital
Australia (1971Q1–94Q3: 95 Quarters)	5.92 (1988Q4)	4.52 (1994Q3)	8.49 (1989Q1)	9.48 (1988Q4)	2.81 (1994Q3)	-5.90 (1991Q4)	-3.91 (1990Q4)	-6.56 (1983Q2)	-8.64 (1983Q2)	-1.74 (1977Q4)
Austria (1971Q1–94Q1: 93 Quarters)	.70 (1987Q2)	4.37 (1993Q3)	3.50 (1990Q1)	6.51 (1992Q4)	6.14 (1986Q4)	-.33 (1981Q1)	None	None	None	-7.94 (1981Q1)
Canada (1971Q1–94Q4: 96 Quarters)	2.43 (1987Q4)	6.06 (1976Q1)	4.47 (1989Q1)	5.01 (1989Q1)	6.76 (1983Q2)	-.86 (1991Q1)	-4.28 (1982Q4)	-2.78 (1982Q4)	-4.23 (1982Q4)	-12.66 (1982Q2)
Finland <sup>a</sup> (1971Q1–94Q4: 88 Quarters)	1.76 (1989Q2)	6.63 (1989Q1)	4.52 (1989Q4)	3.87 (1981Q4)	15.75 (1987Q2)	-.71 (1993Q1)	-4.85 (1992Q2)	-4.41 (1992Q2)	-8.09 (1992Q2)	-21.56 (1992Q4)
France (1973Q1–94Q4: 88 Quarters)	1.63 (1994Q4)	2.12 (1982Q2)	2.94 (1994Q2)	1.64 (1983Q1)	13.58 (1994Q3)	-.45 (1984Q3)	-1.31 (1984Q2)	-3.41 (1984Q3)	-2.49 (1984Q3)	-1.18 (1984Q2)
Germany (1979Q3–94Q4: 62 Quarters)	1.01 (1987Q3)	6.32 (1992Q3)	2.64 (1992Q2)	7.33 (1992Q3)	7.14 (1992Q3)	None	None	None	None	None
Italy (1971Q1–93Q3: 91 Quarters)	.87 (1988Q3)	1.95 (1990Q2)	4.06 (1990Q3)	4.72 (1990Q2)	5.71 (1992Q1)	-.41 (1993Q1)	None	-.62 (1993Q1)	None	-12.29 (1993Q1)
Japan (1971Q1–93Q4: 92 Quarters)	.36 (1991Q1)	2.82 (1991Q1)	1.15 (1991Q1)	4.33 (1991Q1)	3.43 (1988Q3)	None	None	None	None	-1.58 (1974Q4)
Norway (1976Q1–94Q3: 75 Quarters)	2.83 (1987Q3)	6.75 (1977Q2)	7.62 (1982Q4)	11.87 (1977Q2)	17.86 (1987Q4)	-1.15 (1988Q4)	None	None	None	-5.30 (1988Q4)
United Kingdom (1971Q1–94Q4: 96 Quarters)	5.00 (1987Q4)	12.77 (1987Q4)	2.92 (1993Q4)	18.15 (1987Q4)	10.89 (1988Q4)	-2.59 (1991Q3)	-7.40 (1991Q3)	-1.50 (1992Q1)	-8.54 (1991Q3)	-8.46 (1992Q1)
United States (1974Q1–94Q4: 84 Quarters)	1.78 (1986Q4)	1.31 (1986Q2)	1.00 (1985Q1)	1.59 (1985Q1)	4.18 (1984Q1)	-1.81 (1975Q1)	-1.55 (1990Q4)	-.43 (1975Q1)	-2.56 (1975Q1)	-1.70 (1991Q1)

<sup>a</sup>Data not available from 1974Q1 to 1975Q4.

Source: IMF data bases on DRI/McGraw-Hill and FAME, and *International Financial Statistics*, various issues.

be taken to mitigate any ensuing shocks and their consequences?

To begin with, countries might publish more timely and comprehensive data for international lenders to use in evaluating creditworthiness, so that

loan decisions could be based on better information. Another measure would be to enlarge the emergency lending facilities of the International Monetary Fund, so that larger loans could be made quickly—but under strict conditions—in order to assist coun-

tries that fall into a debt crisis, as Mexico did late in 1994.

Still another proposal to deal with international debt crises is more novel. It would give debtor countries relief similar in some respects to that provided for debtors in some domestic bankruptcy proceedings. First, a troubled debtor might be granted a brief moratorium—a period during which it would make

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*Direct controls over capital flows  
in recent years have generally  
failed to attain their goals.*

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no debt payments—and during this period its debt might be restructured. Second, to help the debtor country avoid a severe recession, the country might be allowed to attract a limited amount of new loans by guaranteeing priority of repayment for the new loans over the country's previously outstanding borrowings. None of this relief would be granted unless the country committed itself to a rigorous adjustment program.

### *V. Summary and Conclusion*

By more than one measure, national capital markets, especially those of the advanced economies, are closely linked. Contrary to an oft expressed view, this high degree of integration is not a recent phenomenon. Moreover, for the industrial countries, the volatility of capital flows relative to national outputs seems to be no greater than in the late 1950s.

While such volatility may not have increased, countries do undergo external economic shocks quite frequently. Most of the 11 industrial countries examined in this article apparently were experiencing such shocks in at least half of the calendar quarters scruti-

nized over long time periods, although the majority of the shocks identified for most countries seem to have originated in the goods markets rather than in the capital markets. The total number of industrial countries probably affected by shocks has fluctuated fairly randomly over time, neither increasing nor decreasing over the long term.

Conventional wisdom proclaims that capital-movement shocks are administered most frequently by funds invested in short-term, rather than long-term, assets. But funds invested in some form of long-term assets apparently participated no less frequently in such shocks in most of the countries studied.

Another likely misconception is that capital-flow shocks pose a greater problem than shocks in goods markets. For most of the countries examined in this article, it seems that goods-market shocks typically accompanied larger four-quarter changes in current-account balances relative to GNP than did capital-movement shocks, although capital-movement shocks did accompany the very largest of all such current-account changes. Among the various categories of capital, the largest swings in capital flows (relative to GNP/GDP) during capital-movement shocks occurred in short-term capital, a fact that may account for its troublemaking reputation.

Government restrictions over capital movements have had little success in dealing with capital shocks. A far superior approach is for governments to pursue policies generally recognized as "sound," so that speculators discern little opportunity for successful attacks. But given that policies will sometimes err or be misconstrued, other steps to reduce the adverse consequences might be taken, such as the publication of more timely and comprehensive data regarding the creditworthiness of borrowing countries, the enlargement of the emergency lending facilities of the International Monetary Fund, and the provision to countries experiencing debt crises of conditional relief akin to that given borrowers in domestic bankruptcy proceedings.

## Appendix

I. The following results were obtained from an ordinary least squares regression performed to test for trend in the data in the last column of Table 1. Starred t-ratios are significant at the 0.05 level.

$$1) \quad y = 1.66 + .03t \\ (9.06)^* (3.89)^* \quad \bar{R}^2 = .28,$$

where  $y$  assumes the values in the last column of Table 1, and  $t$  represents trend.

II. The following results were obtained from an ordinary least squares regression performed to test for trend in the data in the last column of Table 2. Starred t-ratios are significant at the 0.05 level.

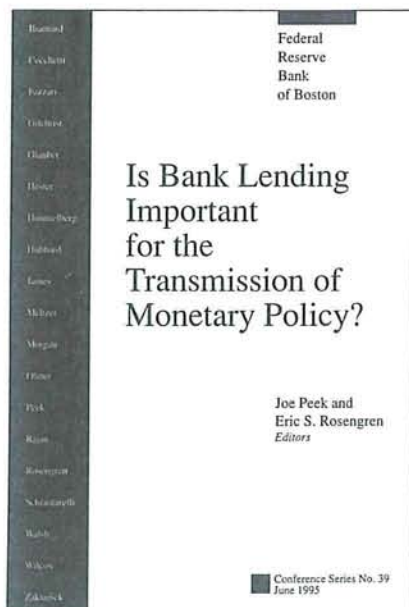
$$2) \quad y = 1.47 + .00t \\ (8.54)^* (.38) \quad \bar{R}^2 = .00,$$

where  $y$  assumes the values in the last column of Table 2, and  $t$  represents trend.

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