Capital Flight

A Response to Differences in Financial Risks

MICHAEL P. DOOLEY*

Empirical tests incorporating measures of capital flight from developing countries that are substantially different from those used in existing studies suggest that capital flight can be explained by differences in risk perceived by residents and nonresidents in holding claims on residents of the countries studied. To the extent that capital flight reflects differences among holders in expected yields on claims on residents of capital-flight countries, it may not be related to conventional determinants of net capital movements such as yield differentials between countries.

For the purposes of this paper, flight capital is defined as the stock of claims on nonresidents that do not generate investment income receipts in the creditor country's balance of payments data. This definition permits an empirical distinction between capital outflows motivated by normal portfolio decisions and those based on the desire to place assets beyond the control of domestic authorities.

Empirical tests incorporating this measure suggest that capital flight can be explained by differences between what residents and nonresidents perceive to be the risk-adjusted returns from holding claims on residents of the countries studied. The tests also suggest that attempts to arbitrage these different risk-adjusted returns may lead to increases in stocks of gross external debt. To the extent that capital flight reflects differences between the rates of return that residents and nonresidents can expect to earn on their claims on residents of the countries studied, capital flight may not be related to international yield differentials between these countries and the rest of the world or to other determinants of net international capital movements.

The plan of study of the remainder of the paper is as follows. Section I develops the analysis of the aggregate gross external asset position of the seven countries studied.1 It is shown that this position is large relative to the stock of external debt. Measured investment income receipts, however, have been well below the level that would be consistent with market interest rates. The below-market yields measured on external claims are interpreted as the result of capital flight. That is, since residents have chosen to acquire financial assets that are outside the control of domestic authorities, it is reasonable to assume that the associated investment income is not reported in balance of payments data.

It follows that measured yields on external claims that are below risk-free market rates reflect many of the same considerations as risk premiums on external debt. The latter reflect nonresident creditors' assessment of risks associated with claims on residents of particular countries. The former reflect residents' assessment of risks associated with domestic financial assets. Thus, a country's net investment income payments to nonresidents would be quickly affected by a change in the attitudes of residents and nonresidents toward the country's prospects, particularly in cases where gross assets and liabilities are large relative to the net position. For example, in cases where risk premiums on liabilities have been large and variable, a successful adjustment effort can lead to a substantial reduction in such premiums and to a significant fall in investment income payments as debts are renegotiated. Moreover, in cases where a significant share of external claims reflects capital flight, an improvement in the outlook can be expected to lead to an increase in the realized yield on external assets and to an increase in investment income receipts.

The analysis of yields on external claims suggests a definition of capital flight that is somewhat different from alternatives suggested in previous studies.2 In Section II, capital flight is defined as that part of the estimated stock of external claims that yields no recorded investment income to the creditor country. It is shown that this alternative measure supports the view that capital flight has been an important aspect of recent economic developments. Section III reports the results of empirical tests of the hypothesis that capital flight can be explained by variables that influence residents' and nonresidents' perceptions of risk asso-

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1 Argentina, Brazil, Chile, Mexico, Peru, the Philippines, and Venezuela.
2 See Cumby and Levich (1987) for a discussion of alternative definitions of capital flight. See also Lessard and Williamson (1987) for case studies and further discussions of these issues.
associated with claims on the subject country. It is also suggested that, although capital flight may have been related to increases in external debt in recent years, there is no necessary relationship between these two phenomena. For example, in circumstances in which residents face incentives to acquire claims on nonresidents but opportunities for external borrowing are limited, capital flight may still be financed through current account transactions. Section IV provides some conclusions and possible extensions of the paper.

I. Stocks of External Claims and Rates of Return

In this section estimates of stocks of gross claims on nonresidents and yields on these claims are presented and analyzed. The major problem in estimating stocks of external claims held by residents of the countries studied is that balance-sheet data for such claims may be much less reliable compared with similar data for external debts. Indeed, to the extent that claims result from capital flight, these positions might be difficult to identify. For this reason, aggregate data for the countries studied are presented.

Column 1 of Table 1 shows the aggregate stock of private and official claims on nonresidents calculated from cumulated balance of payments data. The initial value was estimated by capitalizing investment income receipts in the initial year. Column 2 shows the aggregate stock of errors and omissions in the cumulated balance of payments accounts. This item is often associated with accumulations of financial claims on nonresidents in that it could reflect, among many other things, unrecorded capital outflows. The sum of columns 1 and 2, shown in column 3, can be taken as an aggregate cumulative capital outflow from the seven countries considered, or an increase in gross claims, as estimated from balance of payments data.

These data, however, could seriously underestimate the stock of external claims. Balance of payments data seem to underestimate the aggregate accumulation of external debt. For the countries studied, external debt in 1984 as estimated from balance of payments data was only 60 percent as large as external debt as estimated by World Bank data. If it is assumed that the World Bank data are accurate, there must have been

\[2\] For a recent effort to provide balance-sheet data on claims for groups of developing countries, see Williamson (1986).

\[4\] The sign of this item is reversed compared with balance of payments data; a positive value therefore indicates an increase in claims. See also Appendix I.

\[2\] See Dooley (1986) for further data and analysis.

Table 1. Alternative Measures of Aggregate External Claims, 1977–84
(In billions of U.S. dollars)

<table>
<thead>
<tr>
<th>Year</th>
<th>Recorded Claims on Nonresidents Other Than Direct Investment</th>
<th>Cumulated Balance of Payments</th>
<th>Total External Claims, Cumulated Balance of Payments</th>
<th>Unrecorded Stock of External Claims</th>
<th>Total Stock of External Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>37.2</td>
<td>2.4</td>
<td>39.6</td>
<td>24.2</td>
<td>63.8</td>
</tr>
<tr>
<td>1978</td>
<td>46.8</td>
<td>0.7</td>
<td>47.5</td>
<td>32.7</td>
<td>80.1</td>
</tr>
<tr>
<td>1979</td>
<td>58.0</td>
<td>-2.3</td>
<td>55.8</td>
<td>43.4</td>
<td>99.1</td>
</tr>
<tr>
<td>1980</td>
<td>63.4</td>
<td>3.3</td>
<td>66.7</td>
<td>56.0</td>
<td>122.8</td>
</tr>
<tr>
<td>1981</td>
<td>71.5</td>
<td>14.1</td>
<td>85.7</td>
<td>56.4</td>
<td>142.1</td>
</tr>
<tr>
<td>1982</td>
<td>62.7</td>
<td>23.1</td>
<td>85.8</td>
<td>60.2</td>
<td>146.0</td>
</tr>
<tr>
<td>1983</td>
<td>68.1</td>
<td>25.1</td>
<td>93.2</td>
<td>66.9</td>
<td>160.1</td>
</tr>
<tr>
<td>1984</td>
<td>88.0</td>
<td>23.7</td>
<td>111.7</td>
<td>71.1</td>
<td>182.8</td>
</tr>
</tbody>
</table>

Note: See Appendix I for definitions and sources.

A corresponding underestimate of "balancing transactions." These could include any type of transaction with a nonresident. For example, imports of goods and services or purchases of financial claims on nonresidents could have been financed by the accumulation of external debt not captured in the balance of payments reporting system. In order to proceed, it is assumed that all of the balancing transactions shown in column 4 represent increases in private financial claims on nonresidents. The sum of columns 3 and 4, shown in column 5, is an estimate of the total cumulated stock of financial claims on nonresidents for the countries considered.

With this in mind, it is natural to compare investment income receipts as recorded in the balance of payments with alternative measures of the stock of claims on nonresidents. Columns 1, 2, and 3 of Table 2 show the weighted-average ratio of investment income receipts to the three measures of gross external claims presented in columns 1, 3, and 5 of Table 1. These implicit yields can be compared with the weighted-average "market yield" shown in column 4 of Table 2. Investment income re-

\[6\] For example, Gulati (1987) argues that systematic errors in international trade data may have generated a positive bias in the estimates of capital flight presented in this paper.

\[7\] Because relatively little information exists concerning the composition of external claims, the market yield reported here is equal to the yield on external liabilities to private creditors calculated in Dooley (1986, Appendix D).
Table 2. Weighted-Average Yields on Alternative Measures of External Claims and a Measure of Capital Flight, 1977–84

<table>
<thead>
<tr>
<th>Year</th>
<th>Weighted-Average Yield on Recorded External Claims, Cumulated Balance of Payments</th>
<th>Weighted-Average Yield on Total External Claims, Cumulated Balance of Payments</th>
<th>Weighted-Average Yield on Total Stock of External Claims</th>
<th>Weighted-Average Market, Yield on External Claims</th>
</tr>
</thead>
<tbody>
<tr>
<td>1977</td>
<td>4.3</td>
<td>4.0</td>
<td>2.5</td>
<td>6.6</td>
</tr>
<tr>
<td>1978</td>
<td>5.7</td>
<td>5.6</td>
<td>3.3</td>
<td>8.2</td>
</tr>
<tr>
<td>1979</td>
<td>7.3</td>
<td>7.6</td>
<td>4.3</td>
<td>10.6</td>
</tr>
<tr>
<td>1980</td>
<td>10.3</td>
<td>9.7</td>
<td>5.3</td>
<td>12.7</td>
</tr>
<tr>
<td>1981</td>
<td>11.6</td>
<td>9.7</td>
<td>5.9</td>
<td>14.4</td>
</tr>
<tr>
<td>1982</td>
<td>10.5</td>
<td>7.7</td>
<td>4.5</td>
<td>12.0</td>
</tr>
<tr>
<td>1983</td>
<td>6.8</td>
<td>4.9</td>
<td>2.9</td>
<td>9.7</td>
</tr>
<tr>
<td>1984</td>
<td>7.4</td>
<td>5.9</td>
<td>3.6</td>
<td>10.7</td>
</tr>
</tbody>
</table>

Note: See Appendix II for definitions and sources.

Receipts seem to imply plausible yields relative to market yields if it is assumed that only cumulated recorded external claims yield income that is captured in the balance of payments accounts. In Table 2, the addition of cumulated errors and omissions to the level of external claims (column 2), or this plus unrecorded claims (column 3), reduces the implied yield to implausibly low levels.

These very low calculated yields on the more inclusive measures of external claims raise two interesting possibilities. One is that the data on investment income receipts are systematically understated. In some cases (the United States is an example), balance of payments data on such receipts are not measured directly but instead are estimated by applying a market yield to an estimated stock of gross claims. When this procedure is followed, the use of cumulated balance of payments statistics to estimate the stock of claims could understate the value of receipts. It would seem reasonable in this event to revise the balance of payments statistics, particularly in cases where liabilities reported by nonresidents to the subject country are substantial. Indeed, a satisfactory resolution of important problems in evaluating the role of external claims would seem to require an effort to gather data on the stock of external claims held by residents of developing countries comparable to the data available on the external debt of these countries. In cases where the under-

stating of investment income receipts is due simply to an inappropriate estimate of the stock of external claims, a correction of this error would result in a substantial "improvement" in the current accounts of some of the countries studied.

The second possibility is that unreported earnings on external claims reflect residents' preferences for assets that are beyond the control of domestic authorities. In this case repatriation of external claims, or of the earnings thereon, might depend on a reduction of expected taxation or on other penalties on residents' financial wealth. It is worth noting, however, that additional steps may be necessary in cases where domestic financial markets are relatively underdeveloped and not fully recovered from the difficulties experienced in recent years.

II. Capital Flight

There is no widely accepted definition of capital flight. Capital outflows per se, types of outflows such as increases in private short-term claims, or errors and omissions are not a reasonable measure of this phenomenon. The United States, for example, by the end of 1983 had accumulated roughly US$700 billion in gross claims on nonresidents. These claims were offset by a roughly equivalent stock of external debt, and, because the average yield on claims is estimated to be higher than that on liabilities, the investment income accounts showed a substantial net credit in the U.S. balance of payments accounts. The situation would of course be immediately altered if, for some reason, these foreign exchange earnings were not available to U.S. residents who had to make investment income payments. This possibility suggests a useful defini-

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8 Such a procedure could be misleading, since the debtor country's government cannot use such earnings to make payments on external debt unless the income is repatriated. Nevertheless, it seems inappropriate to exclude these private external claims from balance of payments estimates. Retained earnings on foreign direct investment, for example, are recorded as investment income regardless of their effect on government revenues.

9 See Dooley (1980–81) for a discussion of some of the factors that have generated gross capital inflows and capital outflows in the U.S. balance of payments in recent years.

10 Diaz Alejandro (1984), for example, has argued that this problem occurs in cases where private external debt has been socialized, or payments subsidized, by the government but where private external assets and earnings remain private. Khan and Haege (1985) have provided a formal analysis of circumstances in which an individual will simultaneously acquire external debt and invest at home as well as abroad. Ize and Ortiz (1987) emphasized the fiscal implications of capital flight.
tion of capital flight. In cases where all or some portion of the income receipts are lost to the country, it is assumed that the capital outflow was motivated by the desire of residents to obtain financial assets, and earnings on those assets, that remain outside the control of the domestic authorities. Capital flight, by this definition, does not require a change in the stock of total claims on nonresidents but only that earnings on existing claims be placed outside the control of the domestic authorities. Thus, capital flight can occur, and be reversed, quite rapidly.\(^{11}\)

The appropriate way to measure capital flight by this definition is to calculate the stock of claims implied by investment income receipts and market interest rates. This stock of “interest-earning” claims is interpreted as the stock of external claims not attributable to capital flight but attributable to normal foreign portfolio investment. The difference between this estimate and the estimate of the total stock of external claims (for the latter, see Table 1, column 5) is presented in column 1 of Table 3. It should be emphasized that whether such holdings are “beyond the reach” of the authorities is a matter of fact that cannot be established here. Thus, the estimates of aggregate capital flight shown in Table 3 are, at best, approximations.\(^{12}\) One can gain some perspective on the possible importance of capital flight by comparing capital flight with other financial aggregates. By these estimates, the stock of flight capital accounted for about two thirds of the total stock of external claims of the seven countries studied and was equal to about one third of their external debt.

### III. Empirical Tests

This section presents empirical tests of the view that capital flight occurs in circumstances in which residents and nonresidents have perceived different risks associated with domestic investments. The existing empirical literature on risk premiums and on capital flight emphasizes the idea that residents and nonresidents do face different risks. For

\(^{11}\) For this reason the timing and amount of capital flight, as measured in this paper, can be quite different compared with the estimates of other studies. In most cases the measures of capital flight reported in this paper are much larger than those reported elsewhere. See, for example, Cuddington (1986) and Dornbusch (1985).

\(^{12}\) For example, this measure could provide a misleading pattern of capital flight to the extent that investment income receipts recorded in the balance of payments reflect repatriated earnings rather than reported (or estimated) accrued earnings. In such cases analysis of year-to-year changes in this measure of capital flight would be less useful, although the trend over longer periods might still provide useful information.
with a fiscal deficit may be forced to impose taxes on domestic and nonresident investors in a variety of forms that tend to reduce the value of such investments. Thus, any shock to the system that increases government expenditure or reduces revenues raises the possibility that new sources of revenue will be exploited. This possibility does not imply that all financial positions will be affected equally or at the same time. The revenue generated by a change in the tax on a financial position depends on the size of the position to be taxed and on the opportunities that asset holders have to avoid the tax. An unexpected increase in the inflation rate, for example, provides revenue to the government that is dependent on the stock of fixed-interest domestic currency liabilities of the government and on the ability of holders of such liabilities to shift into alternative assets to avoid the tax. In cases where the ability to shift into a less exposed position is limited—for example, by a limitation on the right to purchase foreign exchange at the official rate—the government might be expected first to "tax" domestic residents through money creation and inflation. In response, residents will seek to acquire financial assets denominated in foreign currency. If these are not available domestically, residents will attempt to acquire claims on nonresidents denominated in foreign currency.

The incipient capital outflow must be matched either by some offsetting transaction or by a change in other variables that discourages the outflow. One possible outcome is that nonresident investors will be attracted by the fall in prices (increases in yields) that will be generated as residents attempt to liquidate domestic securities. Nonresident investors, however, will not be interested in liabilities of the debtor country that are denominated in domestic currency because such investment also exposes them to the inflation tax. Unlike residents, nonresident investors may be able to purchase claims on residents denominated in foreign currency. Moreover, external creditors may have access to explicit or implicit government guarantees not available to residents. In this case the capital outflow to avoid the inflation tax would be matched by a capital inflow that is protected from the inflation tax because of its currency denomination and that also enjoys a government guarantee.

The capital flows generated in the above example can best be understood as attempts by asset holders to arbitrage a yield differential that is generated by the inflation tax on residents. Because nonresidents can avoid this tax in ways not available to residents, capital flight is the expected outcome of this incentive structure. Similar types of capital flows among industrial countries have been called "round-trip" capital flows (see Dooley (1980–81)). In some cases fairly small tax incentives in terms of differential reserve requirements on bank deposits have led to very large gross capital inflows and outflows in the U.S. balance of payments. Such flows are not referred to as capital flight in this context, although they are analytically equivalent to what is called capital flight in developing countries.

There are limits to round-trip capital flows. At some point the stock of liabilities to nonresident investors becomes sufficiently large to make it worthwhile for the government to consider a tax on these financial positions. The inflation tax will not be effective, but other more direct measures that reduce payments on such liabilities will yield greater revenues as the stock of liabilities to nonresidents grows. As the perceived risk faced by nonresident creditors grows, the opportunities for arbitraging the differential risks faced initially by residents compared with nonresidents will be reduced and may eventually be eliminated. At this point the round-trip capital flows will end.

In this new situation resident investors could avoid domestic taxes on financial assets only by net transfers of goods and services to nonresidents. Thus, although capital flight as measured in this paper will be much reduced or eliminated, the consequences of continued actual or expected taxation of residents' financial assets remain serious. Indeed, the consequences will be more serious because the flow of real saving available for increases in the domestic stock of real capital is threatened, since taxes on domestic financial saving can no longer be avoided by round-trip capital flows.

The discussion above suggests that capital flight should be evident in circumstances in which residents perceive risks to income derived from domestic claims, but in which nonresidents have perceived relatively smaller risks on credits to the residents of the country studied. To evaluate this idea, the relationships between capital flight defined above, and several possible determinants of capital flight, are tested empirically. The variables considered that might be determinants of capital flight include the following.

- Domestic inflation (\(\text{INP}\)) is interpreted as measuring the extent to which the government has resorted to taxing domestic financial assets through money creation. This easily observed measure of "tax" policy can be considered a proxy for the difficulty the government is experiencing in generating revenue. Thus, even domestic investments that are indexed to the inflation rate may be considered at risk when the government is using the inflation tax.
Financial repression (FR) measures the difference between interest rates paid on short-term assets denominated in U.S. dollars and time deposits denominated in the subject country’s domestic currency and adjusted for actual exchange rate changes. A positive value for this differential indicates that such deposits are vulnerable to the inflation tax. A differential in favor of dollar-denominated assets would suggest more capital flight.

The risk premium (RP) is the risk premium on external debt reported in Dooley (1986) and interpreted as measuring nonresidents’ perception of the risk of being “taxed” by the subject country’s government. As this perceived risk increases, it is expected that capital flight will be reduced because the differential risk faced by resident and nonresident investors is reduced.

As discussed above, these are clearly endogenous variables that reflect basic changes in the environment faced by governments of debtor countries. For this reason, instrumental variables were used in the regressions reported below. The pressure for domestic inflation is assumes to be related to the fiscal deficit of the debtor country, expressed as a share of gross national product. The default risk faced by nonresidents is assumed to be related to the ratio of debt to exports and to the ratio of interest payments to exports.

The results of a pooled regression for annual observations for six countries for the 1976–83 time period are shown in Table 4. In general, these results support the view that capital flight is related to the relative perceptions of risks that residents and nonresidents associate with claims on residents of the countries studied.

The positive coefficient for domestic inflation (INF) in the estimation results in Table 4 can be interpreted as indicating that, where the authorities are “taxing” domestic money balances through inflation, residents prefer to hold a larger share of their financial assets in a form that is outside the control of the domestic authorities. The coefficient on the political risk premium (RP) indicates the expected negative impact on capital flight. Thus it appears that the increases in this premium in recent years, and the associated reluctance of nonresident investors to “recycle” flight capital, have tended to limit the scale of such transactions. Finally, the positive relationship between financial repression (FR) and capital flight suggests that residents acquire foreign assets in cases where the yield on domestic currency time deposits is less than short-term rates in international markets (adjusted for exchange rate changes). In some cases this may reflect controls on domestic interest rates, or it may simply reflect relatively slow adjustment of domestic interest rates to rapidly changing economic conditions.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition and Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF</td>
<td>Capital flight, from data reported in Table 3</td>
</tr>
<tr>
<td>INF</td>
<td>Domestic inflation, calculated as differences in logarithms of consumer price indices, from International Monetary Fund, <em>International Financial Statistics (IFS)</em> (Washington, various issues), line 64</td>
</tr>
<tr>
<td>FR</td>
<td>Financial repression, ( FR = \frac{\frac{(1 + r_{de})}{(1 + r)}}{\frac{1}{\ln X - \ln X(-1)}} ), where ( r ) is the domestic time deposit interest rate (national sources), ( r_{de} ) is the U.S. Treasury bill interest rate (IFS line 60c), and ( X ) is domestic currency per dollar (IFS line ac)</td>
</tr>
<tr>
<td>RP</td>
<td>Risk premium ( r ), from data reported in Dooley (1986)</td>
</tr>
</tbody>
</table>

| Fiscal deficit/gross national product (GNP) | Fiscal deficit from IFS line 80ez and Fund staff estimates; GNP from IFS line 99a |
| Debt/GNP | Debt from World Bank, *World Debt Tables* (Washington, various issues) |
| Interest payments/GNP | London interbank offered rate (LIBOR) and IFS line 60eb, times Debt/GNP |

**Estimation results**

\[
\begin{align*}
CF &= 23.10/INF + 18.91FR - 1.12RP \\
(4.34) & \\
(4.09) & \\
(-1.66) & \\
R^2 &= 0.83
\end{align*}
\]

*"Estimation results" were obtained by instrumental variables and ordinary least squares with country-specific dummy variables. Annual observations for six countries (Argentina, Brazil, Chile, Mexico, the Philippines, and Venezuela) were pooled for the regression; Peru was excluded because data on deposit rates were unavailable. Numbers in parentheses are t-statistics; \( R^2 \) is the coefficient of determination, corrected for degrees of freedom.*

**IV. Conclusions**

An important challenge for analyses of external debt is to identify factors that are quantitatively important in shaping individual countries' current and prospective external positions. Existing studies have in general compared a very simple representation of a country’s external finan-
cial position—the ratio of interest payments or debt service payments to some measure of the country’s ability to make such payments—under alternative assumptions about economic growth in Organization for Economic Cooperation and Development countries, interest rates in creditor countries, and several other domestic and external variables. The analysis developed in this paper suggests that in many cases a more complete representation of individual debtor countries’ financial positions would be useful.

Review of historical experience for selected debtor countries suggests that different incentives faced by nonresident and resident investors seem to be an important determinant of gross external claims and liabilities of the countries studied. Moreover, the size of such gross positions may have little to do with the determinants of net external debt of the country studied. Finally, because investment income payments associated with external debt and investment income receipts associated with external claims appear to have been quite sensitive to residents’ and nonresidents’ attitudes toward claims on debtor countries, a better understanding of the behavior that determines such positions might be an important element in evaluating and improving a country’s external position.

APPENDIX I
Definitions and Sources, Table 1

These series are aggregates derived from the seven individual countries studied: Argentina, Brazil, Chile, Mexico, Peru, Philippines, and Venezuela.

Column 1, “Recorded Claims on Nonresidents Other Than Direct Investment, Cumulated Balance of Payments,” is the cumulated sum of BOPY (International Monetary Fund, Balance of Payments Statistics Yearbook, Washington, various issues) lines 62–64, 69–71, 77–79, 84, 85, 89, 93, 94, and 98–109 plus the estimated value at the end of the first year shown. The estimated value is equal to the value of nondirect investment income receipts in that year, BOPY lines 15, 17, and 19 divided by line 60c of the International Monetary Fund’s International Financial Statistics (Washington, various issues).

Column 2, “Cumulated Balance of Payments Errors and Omissions,” is the cumulated sum of BOPY line 112. Value at the end of the first year shown is zero.

Column 4, “Unrecorded Stock of External Claims,” is the difference between debt reported by the World Bank, which includes data for public and publicly guaranteed long-term and short-term debt (source: World Bank, Statistics on External Indebtedness: External Liabilities of Individual Countries and Territories, Washington, various issues), and BOPY.

APPENDIX II
Definitions and Sources, Table 2

These series are weighted-average yields derived from the seven individual countries studied: Argentina, Brazil, Chile, Mexico, Peru, Philippines, and Venezuela.

Column 1, “Weighted-Average Market Yield on Recorded External Claims, Cumulated Balance of Payments,” is the ratio of investment income receipts (BOPY lines 15, 17, and 19) to “Recorded Claims on Nonresidents Other Than Direct Investment, Cumulated Balance of Payments” (see Appendix 1, note on column 1).

Column 2, “Weighted-Average Yield on Total External Claims, Cumulated Balance of Payments,” is the ratio of BOPY lines 15, 17, and 19 to “Total External Claims” (Table 1, column 3).

Column 3, “Weighted-Average Yield on Total Stock of External Claims,” is the ratio of BOPY lines 15, 17, and 19 to “Total Stock of External Claims” (Table 1, column 5).

Column 4, “Weighted-Average Market Yield on External Claims,” is from Dooley (1986), Appendix D.

APPENDIX III
Definitions and Sources, Table 3

These series are aggregates derived from the seven individual countries studied: Argentina, Brazil, Chile, Mexico, Peru, Philippines, and Venezuela.

Column 1, “Aggregate Calculated Capital Flight,” is the difference between the capitalized value of investment income receipts—that is, investment income receipts (see Appendix II, note on column 1) divided by the “Weighted-Average Market Yield on External Claims” (see Appendix II, note on column 4) — and “Total Stock of External Claims” (see Appendix I, note on column 5).

Column 2, “Ratio of Aggregate Capital Flight to External Debt,” is the ratio of column 1, as defined above, and “Total Stock of External Claims” (see Table 1, column 5).

Column 3, “Ratio of Aggregate Capital Flight to External Debt,” is the ratio of column 1, as defined above, to debt reported by the World Bank (see Appendix I, note on column 4).

REFERENCES


Dual Exchange Rates in the Presence of Incomplete Market Separation

Long-Run Effectiveness and Policy Implications

DANIEL GROS*

The literature on dual exchange rate regimes assumes that the separation between the two foreign exchange markets is perfect. In this paper a divergence between the two exchange rates induces a flow of arbitrage activity, the magnitude of which depends on both the costs of evading exchange controls and the size of the exchange rate differential. These arbitrage flows lead to a gradual convergence of the two exchange rates. In the long run, therefore, a dual exchange rate regime with a fixed commercial rate imposes the same constraints as a fixed unified exchange rate.

A LARGE NUMBER of countries maintain separate exchange rates for commercial and financial transactions. In these so-called dual exchange rate regimes, the central bank usually intervenes only in the market for commercial transactions to maintain a stable exchange rate for exports and imports. The absence of official intervention in the market for financial transactions implies that the financial exchange rate has to move to ensure capital account equilibrium. Dual exchange rates are therefore often used by countries with balance of payments difficulties as a substitute for direct capital controls.

Dual exchange rate regimes have been discussed extensively in the economic literature, where it has been emphasized that the separation of the goods and financial markets that can be achieved with different

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