External Debt and Capital Flight in the Indian Economy

NIRANJAN CHIPALKATTI & MEENAKSHI RISHI

ABSTRACT This paper estimates Indian capital flight at US $88 billion (in 1997 dollars) over the 1971–97 period, a sum that is roughly 20% of the US $448 billion real external debt disbursed to the country over the same time period. There is also evidence of a strong year-to-year correlation between debt inflows and flight-capital outflows. The paper explores the nature of this association between capital flight and external debt in the Indian economy. An analysis by Boyce (1992, World Development, 20, pp. 335–349) for the Philippines revealed the presence of contemporaneous bi-directional causality, in other words, a financial revolving door relationship between external debt and capital flight in that economy. The research question addressed by this paper is whether such a financial revolving door relationship exists in India, given its higher level of external indebtedness and lower debt-to-GNP ratio as compared with the Philippines. Utilizing a simultaneous equation model to examine the association between capital flight and external debt in the Indian economy, the paper confirms the existence of a financial revolving door relationship between the two endogenous variables.

1. Introduction

The relationship between external debt and capital flight has been well documented in the literature, which recognizes that capital flight is quantitatively large in high-debt countries. In the case of Argentina, Dornbusch & de Pablo (1987) noted that “commercial banks in New York, Zurich and Tokyo had lent to the government the resources to finance capital flight which returned to the same banks as deposits”. A Morgan Guaranty Trust Company study (1986) estimated that, for the time period 1976–85, less-developed countries (LDCs) experienced “net capital flight of nearly $200 billion, while simultaneously accumulating $450 billion additional foreign debt”. The simultaneous existence of debt and capital flight in this fashion is paradoxical. It contradicts the usual textbook understanding of the issue, which postulates that a favourable investment climate in any country would not only attract foreign capital, but also retain domestic investment.

This paper seeks to add to the current literature on the association between capital flight and external debt by examining the debt–flight linkage for the Indian economy. The paper (Section 2) estimates Indian capital flight at US $88 billion (in 1997 dollars) over the 1971–97 period, a sum that is roughly 20% of the US $448 billion real
external debt disbursed to the country over the same time period (World Bank, 1999). Given the magnitudes of the flows involved, an analysis of the debt-flight linkages for the Indian economy should provide useful insights.

An investigation of such two-way flows conducted by Boyce (1992, p. 335) for the Philippines indicated, “that large sums of capital flowed into and out of the Philippines through a financial revolving door”. The phenomenon refers to a bi-directional flow of capital, i.e. where capital enters the country in the guise of external borrowing and simultaneously slips out of the country as private capital flight. The analogy to a revolving door is evident.

A qualitative comparison of external debt statistics for the Philippines and for India reveals interesting differences. While the total external debt of the Philippines stood at US $45.4 billion in 1997, about two-thirds that of India’s, it represented 53% of its gross national product (World Bank, 1999). The ratio of total external debt-to-GNP for the Philippines peaked at 91.3% in 1987. By contrast, India has consistently recorded a lower external debt-to-GNP ratio: the debt-to-GNP ratio stood at 21.9% in 1987 and increased to 25% in 1997. Thus, the research question addressed by this paper is whether the financial revolving door observed for the Philippines exists for India, given its relatively lower debt-to-GNP experience and high levels of external debt outstanding.³

This paper is organized as follows. An operational measure of capital flight for the Indian economy over the time period 1971–97 is described in the next section. Section 3 provides an outline of the various theoretical linkages between external debt and capital flight. The framework established in this section is subjected to econometric testing in Section 4. Section 5 proceeds with an interpretation of the empirical results and Section 6 offers a summary of the main findings and provides initial policy implications.

2. An Operational Measure of Capital Flight

This paper interprets capital flight as consisting of private capital outflows of any kind that result in the acquisition of foreign assets by the residents of a country. This definition of capital flight is based on the motivations of the holders of capital and does not distinguish between normal and abnormal capital outflows. Instead, it rests on the assumption that an individual’s control over capital is not complete, but is subject to complex and alterable social control. A similar perspective on capital flight has been adopted by Boyce & Zarsky (1988, p. 192) who conceptualize capital flight as “the movement of private capital from one jurisdiction to another in order to reduce the actual or potential level of social control over capital”. Dooley (1986, p. 15) espouses a similar motivational interpretation of flight and defines it as capital outflows “motivated by the desire of residents to obtain financial assets and earnings on those assets which remain outside the control of the domestic authorities”.

The task of operationalizing the above interpretation of capital flight is complicated by the existence of legal restrictions placed upon the outflow of capital. Residents engaged in capital flight are “unlikely to make a point of informing the compilers of balance-of-payments statistics of their actions” (Lessard & Williamson, 1987, p. 205). Estimation of capital flight, therefore, involves an analysis of the official (World Bank and IMF) statistics for the derivation of a “residual” measure of capital flight.⁴ The methodology defines capital flight as “the sum of gross capital inflows and the current account deficit, less increases in foreign reserves” (World Bank, 1985, p. 64). Capital inflows are defined as the sum of net foreign direct investment and the changes in gross
public and private debt. This suggests that any inflow that does not finance the current account deficit or adds to reserves, flees the country in the form of capital flight. This paper utilizes data from the World Bank (1996, 1999) and IMF (1996, 1999) to calculate residual capital flight estimates. The basic residual measure is then refined by applying an adjustment for the presence of trade misinvoicing.

In countries with strong proclivities to capital flight, it is not unreasonable to assume that trade misinvoicing may be utilized as a mechanism for flight. Residents can acquire foreign assets by overinvoicing imports and underinvoicing exports. However, domestic policies may encourage misinvoicing in the reverse: imports may be underinvoiced for the purposes of tariff evasion and export promotion schemes may generate an incentive for export overinvoicing. Such reverse misinvoicing results in an understatement of the current account deficit and consequently leads to an overstatement of the residually derived capital flight estimates. Owing to the presence of these counteracting effects, the net effect of trade misinvoicing upon capital flight estimates can go in either direction. Hence, a “net misinvoicing adjustment” applied to the basic residual will provide more accurate estimates of capital flight.

Corrections for trade misinvoicing can be derived by comparing official Indian trade statistics with those furnished by industrial country (OECD) trading partners. The use of industrial country trade data, for trading partner data comparisons, is based on the assumption that industrial country trade statistics are accurately recorded in the IMF’s *Direction of Trade Statistics Yearbook* (Gulati, 1987). The misinvoicing-adjusted residual is further modified to allow for the effects of inflation on the value of external assets. This is achieved by converting nominal capital flow estimates into constant (1997) dollars by means of the US wholesale price index as reported in IMF (1999).

Table 1 presents summary estimates of capital flight from India from 1971 to 1997. Nominal capital flight totalled US $237 million in this 27-year period. Real capital flight adjusted for trade misinvoicing amounted to US $88 billion over the same period. This inflation-adjusted total is roughly equivalent to 20% of net real debt disbursements to the economy from 1971 to 1997. In other words, for every dollar of external debt accumulated by India from 1971 to 1997, private Indian residents accumulated 20 cents of external assets.

Alternative estimates of capital flight were obtained by imputing interest earnings on the stock of externally held assets. The cumulative total during 1971–97 was US $809 million, approximately 1% of India’s 1997 GDP. This finding is consistent with Chang *et al.* (1997), who suggest low (10% or less) capital flight stock-to-GDP ratios for South Asia. The authors also report that the capital flight stock-to-GDP ratio was highest for the Middle East and North Africa, where flight capital stock amounted to 95% of the region’s 1990 GDP.

Figure 1 plots the relationship between real capital flight flows from India and the net (real) debt disbursements to the economy from 1971 to 1997. A positive correlation is clearly indicated with a simple correlation coefficient of 0.64.

Are there any theoretical, *a priori* reasons to expect a positive association between capital flight and net external debt flows? This question is addressed in the following section.

### 3. External Debt and Capital Flight: Theoretical Linkages

A survey of the literature suggests that the coexistence of capital flight and external debt in a country is theoretically plausible. This section provides a brief discussion of the hypothesized linkages between the two variables.
<table>
<thead>
<tr>
<th>Year</th>
<th>Change in external debt outstanding (CHEX)</th>
<th>Current account surplus (CAS)</th>
<th>Change in official reserves (CHOR)</th>
<th>Foreign direct investment (FDI)</th>
<th>Nominal unadjusted capital flight (UKF)</th>
<th>Trade misinvoicing adjustment (MA)</th>
<th>Real (1997 US$) adjusted capital flight (KF)</th>
<th>Net real (1997 US$) debt disbursements (DD)</th>
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<td>237</td>
<td>-12 567.6</td>
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</table>

**Note:**


\( MA = \text{export discrepancy minus import discrepancy}, \) as defined in Rishi & Boyce (1990). Data were obtained from IMF (1996, 1999).

\( KF = \text{UKF + MA}, \) deflated by the US wholesale price index as reported in IMF (1999).

\( DD = \text{change in external debt outstanding, deflated by means of the US wholesale price index as reported in IMF (1999)}. \)
One view of the debt–flight linkage maintains that the association between the two variables may be attributable to poor economic management and track records of debtor governments. For instance, the Morgan Guaranty Trust Company (1986, p. 15) contends that indirect factors such as low growth regimes, overvalued exchange rates and poor fiscal management by third world governments not only cause capital flight but also generate demand for foreign credit. However, this perspective on the debt–flight association is unable to provide a rationale for the observed year-to-year (contemporaneous) linkages between debt and capital flight in a country. Indeed, an alternative scenario of the indirect nature of the debt–flight relationship is that lower debt inflows mirror and contribute to deteriorating local economic conditions that result in greater capital flight. This line of reasoning suggests a negative (lagged) correlation between external debt and capital flight.

Other researchers have advanced the argument that external borrowing can directly cause capital flight by providing the resources necessary to effect flight (Cuddington, 1987; Henry, 1986). External borrowing may also trigger conditions that motivate residents to engage in capital flight. Lessard (1987, p. 99) argues that debt disbursements “signal an increase in the probability of a fiscal crisis” and thus induce capital flight. Similarly, Conesa (1987, p. 55) hypothesizes that the provision of external debt to a country provides upward pressure on its currency, thereby motivating residents to “dollarize” their assets before an expected devaluation. Dooley & Kletzer (1994) provide a different interpretation of the debt–flight association. The authors theorize that publicly guaranteed private debt can encourage domestic investors to make risky investment choices. This results in an increase in the contingent liability of the borrowing government and induces capital flight by domestic savers who anticipate future higher taxation of capital. Subsidized external debt can also fuel capital flight if such subsidy allows residents directly to acquire foreign assets or income that is beyond the reach of local tax authorities.

Another perspective on the association between external debt and capital flight maintains that the causality runs from capital flight to external borrowing. Capital outflows may drive a country into external indebtedness where debt essentially replaces the funds lost on account of capital flight. Boyce (1992) notes that foreign creditors

Figure 1. External debt and capital flight in India, 1971–97, US$ million (1997 dollars).
may be willing to fill the vacuum created by flight if they perceive a “comparative advantage” in risk and return. In this context, Lessard & Willamson (1987, p. 217) suggest that disparities in taxation, interest rate ceilings and risk pooling may lead to systematic differences in risk-adjusted returns to resident and non-resident capital.

The role of policy is also emphasized in Dooley & Kletzer (1994, p. 31), who suggest that “international arbitrage of domestic policies” can simultaneously induce capital flight as well as attract foreign capital. Khan & U1 Haque (1985) have also highlighted the coexistence of two-way capital flows and describe instances where flown resident capital re-enters the country as a publicly guaranteed loan. The mechanisms utilized for such “back-to-back” loans range from inter-bank transfers to money laundering schemes involving offshore financial intermediation. Similarly, Boyce (1992) observes a positive year-to-year correlation between debt and capital flight, which is taken to be indicative of a direct link between the two variables in the Philippine economy. On this basis, he concludes that the Philippine experience from 1962 to 1986 was one where “external debt did not simply scare-off domestic capital … nor did capital flight create a vacuum into which external capital was pulled; rather the same capital circulated in both directions through the revolving door” (Boyce, 1992, p. 344).

This paper investigates whether such a financial revolving door mechanism exists in the case of India, i.e. whether there is a contemporaneous bi-directional causality between debt and capital flight in the economy. In this context, the following section details an econometric model that can be utilized to examine the hypothesized simultaneous relationship between external debt and capital flight.

4. Methodology

The debt–flight relationship has been modelled as a system of equations to account for the possible simultaneity bias between the two dependent variables, external debt and capital flight.¹¹ The specification of the relationship is depicted in equations (1) and (2). The literature on capital flight identifies external debt, interest rate differentials, budgetary deficits and overvalued exchange rates as important determinants of flight. Research has also documented the influence of these same variables in determining a country’s indebtedness (See Conesa, 1987; Erbe, 1985; Cuddington, 1986; Pastor, 1988; Boyce, 1992; Henry, 1996).

The model estimated is as follows:

\[ KF_t = a_0 + a_1(KF_{t-1}) + a_2(DD_t) + a_3(DD_{t-1}) + a_4(BD_{t-1}) + a_5(RES_{t-1}) + a_6(INT_t) + a_7(INT_{t-1}) + a_8(DUMMY_t) + \phi_t \]

\[ DD_t = b_0 + b_1(KF_t) + b_2(DD_{t-1}) + b_3(BD_{t-1}) + b_4(GDPGR_{t-1}) + b_5(INT_{t-1}) + b_6(DUMMY_t) + \Delta_t \]

The variables in the specification¹²,¹³ are defined and discussed next.

In equations (1) and (2) the subscript \( t \) refers to the years 1971–97. \( KF \) is the residual estimate of capital flight in real (1997) dollars; \( DD \) refers to net debt disbursement in 1997 dollars. \( RES \) is the level of the country’s foreign exchange reserves (in 1997 dollars);¹⁴ \( GDPGR \) is the percentage rate of growth of real gross domestic product; \( INT \) is the difference between US and domestic real interest rates; \( BD \) is the government’s budget deficit as a percentage of gross domestic product; and \( DUMMY \) is a constructed dummy variable that takes the value of “0” prior to 1991 and “1” thereafter. An explicit policy reorientation towards the liberalization of the Indian economy was adopted in July 1991 following a balance-of-payments crisis in late-1990.
In keeping with the theoretical literature discussed above, \( DD \) is expected to have a positive association with \( KF \) in equation (1) (the capital flight equation). In addition, a positive and significant \( a_2 \) would validate the existence of a contemporaneous liquidity effect where external debt directly provides the resources for individuals to engage in capital flight. It is expected that the level of a country’s foreign exchange reserves (\( RES \)) would be negatively associated with the capital flight. Higher reserves, \( ceteris paribus \), indicate a lower likelihood of an impending fiscal crisis and reduced incentive for \( KF \) in the next year. On the other hand, the variable \( INT \), the difference between the US and the Indian real domestic interest rates, is expected to have a positive association with capital flight. The higher the interest rate differential, the greater the incentive for \( KF \). The policy-induced liberalization of the Indian economy is expected to reduce the incentive for \( KF \). Hence, the dummy variable should have a negative coefficient.

The sign on the government budget deficit (\( BD \)) variable is ambiguous. On the one hand, a positive \( BD \) coefficient suggests that higher budget deficits may prompt increased capital flight due to increased risk of a fiscal crisis. On the other hand, an increasing budget deficit may result in reduced capital flight if such deficits are associated with greater public investment and the “crowding-in” of private capital. In such a situation, one would obtain a negative correlation between \( BD \) and \( KF \). The relative strengths of these two opposing effects would therefore determine the sign on the \( BD \) variable.

Turning next to the expected signs of the explanatory variables in equation (2) (the external debt equation), the theoretical discussion in Section 3 suggests a positive association between \( KF \) and \( DD \). Moreover, a positive and significant \( b_1 \) would indicate that capital flight can provide the fuel required by the private sector to engage in “round-tripping” of capital. Again, the sign of the coefficient on the \( BD \) variable is uncertain. While higher budget deficits may increase the demand for external borrowing, these may also reduce the supply of foreign credit to a country. The direction of the net impact depends, therefore, on the relative strengths of these two opposing forces. The expected sign of the coefficient on \( GDPGR \) is also uncertain. Supply-side considerations are straightforward—a higher GDP growth rate is expected to increase the supply of foreign credit to a country. The impact on the demand for external credit, however, is ambiguous —public sector demand for external borrowing may decline while private sector (investment) demand may be enhanced as a result of higher growth rates. The sign of the coefficient for \( INT \) will also be a function of the relative strengths of demand and supply forces. The higher the value of \( INT \), the differential between the real interest in the US and that in the Indian economy, the lower the demand for external finance and the higher the supply of debt. The sign on the dummy variable is expected to be either positive or negative. A positive sign would suggest an increased supply of foreign credit as a consequence of economic liberalization. A negative sign, on the other hand, would reflect a reduced demand for external borrowing. This can occur for two reasons. First, economic liberalization reduces the incentive for capital flight and the possibility of a flight-driven demand for external debt (i.e. where debt essentially replaces capital that has flown out). Second, economic liberalization can increase the inflow of foreign direct investment (FDI) and, consequently, reduce the demand for external borrowing. In this regard, the Economic Wing of the Embassy of India states that “prior to economic reforms ... flow of FDI into India was barely $100 million to $200 million a year. But since 1991 there has been a significant spurt in FDI, with both approvals and actual inflows recording phenomenal growths”.15

The sign and joint significance of \( a_2 \) and \( b_1 \) would enable a testing of the existence of contemporaneous causality between \( DD \) and \( KF \), consistent with the financial
revolving door hypothesis discussed earlier. To allow for the simultaneity between \( KF \) and \( DD \), the system of equations was initially estimated using two-stage least squares (2SLS). The existence of significant contemporaneous cross-correlation between the structural disturbances\(^{16} \) indicated that three-stage least squares (3SLS) would provide more efficient estimates of the structural coefficients. The following section discusses the results and the policy implications of the 3SLS estimation\(^{17} \).

5. Results

The results of the 3SLS estimation are summarized in Table 2.

As judged by the Wald Chi-square statistic, the overall results are strong and suggest the existence of significant contemporaneous correlation between debt and capital flight. In both the capital flight and the external debt equations, the coefficients on the endogenous variables (\( DD \) and \( KF \), respectively) are positive and significant. The

<table>
<thead>
<tr>
<th>Table 2. The relationship between capital flight and external debt flows: three-stage least squares results</th>
</tr>
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<td>(A) Capital flight equation</td>
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<td>( KF_t = a_0 + a_1(KF_{t-1}) + a_2(DD_t) + a_3(DD_{t-1}) + a_4(BD_{t-1}) + a_5(RES_{t-1}) + a_6(INT_t) + a_7(INT_{t-1}) + a_8(\text{DUMMY}_t) + \Phi_t ) (1)</td>
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<td>Variable</td>
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(B) External debt equation

\( DD_t = b_0 + b_1(KF_t) + b_2(DD_{t-1}) + b_3(BD_{t-1}) + b_4(GDPGR_{t-1}) + b_5(INT_t) + b_6(\text{DUMMY}_t) + \Delta_t \) (2)

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<td>0.30</td>
<td>2.42*</td>
<td>0.06*</td>
</tr>
<tr>
<td>( DD_{t-1} )</td>
<td>-0.03</td>
<td>-0.27</td>
<td>-0.03</td>
</tr>
<tr>
<td>( BD_{t-1} )</td>
<td>1 804.34</td>
<td>3.22*</td>
<td>0.70*</td>
</tr>
<tr>
<td>( GDPGR_{t-1} )</td>
<td>-858.43</td>
<td>-2.40*</td>
<td>-0.27*</td>
</tr>
<tr>
<td>( INT_{t-1} )</td>
<td>194.51</td>
<td>1.30</td>
<td>0.01</td>
</tr>
<tr>
<td>( DUMMY_t )</td>
<td>-14 899.38</td>
<td>-5.25*</td>
<td>-0.25*</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wald Chi-square</td>
<td>136.53*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(overall)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wald Chi-square test for joint significance of \( a_2 \) and \( b_1 \)

\* Significance at \( p < 0.05 \) levels.
coefficients \( a_2 \) and \( b_1 \) are jointly significant on the basis of the Wald Chi square test statistic reported in Table 2.

Section 3 mentioned several alternative hypothetical linkages between external debt and capital flight. The results obtained quite clearly validate the hypothesis of a bi-directional, contemporaneous relationship between debt and capital flight.\(^{18}\) Thus, the nature of the association between debt and capital flight in India, not unlike the Philippines, is characterized by a financial revolving door, where external debt and capital flight fuel each other by providing capital for the reverse flow. It is also important to note that this bi-directional relationship exists despite India’s relatively lower debt-to-GNP ratio as compared with the Philippines.

In order to interpret the economic meaning of the coefficients, elasticities have also been computed.\(^{19}\) Elasticities are useful in interpreting the effect of a percentage change of an independent variable on the dependent variable, especially because they are unit-free measures. From Table 2(A) it is apparent that a per cent increase in net real debt disbursements is associated with approximately a 5% increase in real capital flight. This provides support for the hypothesis that external borrowing can directly cause capital flight by providing the necessary liquidity. Likewise, Table 2(B) indicates that a per cent increase in real capital flight is significantly associated with a 0.06% increase in net real debt disbursements. Again, this finding is suggestive of a possible “round-tripping” of capital where loaned resident capital re-enters the country in the guise of an external loan. Taken together, the elasticity results in Table 2 reinforce the fact that during 1971–97 capital flowed into and out of the Indian economy through a financial revolving door.

The negative coefficient on lagged \( BD \) in Table 2(A) indicates that a contracting budget deficit prompts capital flight. The computed elasticity for this variable suggests that a per cent decrease in the budget deficit variable is associated with an approximately 5% increase in real capital flight. One explanation of the negative association between lagged budget deficits and capital flight has been provided above—that large budget deficits in combination with increased public investment may “crowd-in” private investment and reduce proclivities for capital flight. Thus, cutbacks in budgetary deficits and in public investment signal a slowdown of growth and a less than salubrious climate for private investment, prompting greater capital flight.\(^{20}\) This line of reasoning may also help explain why IMF-engineered restrictive macroeconomics policies that called for cutbacks in government spending actually heightened the outflow of private capital from Asia during 1997–98.

Another probable interpretation of the budget deficit–capital flight association has to do with the character of the annual budget of the Indian State. Bardhan (1984, pp. 65–74) has emphasized the elaborate network of patronages and subsidies that characterize the current expenditure of the Indian government. Basically, such expenditure serves directly to provide liquidity to the private sector. A contracting budget deficit may signal future reductions in the largesse doled to the private sector and therefore induce the holders of capital to effect flight. Hence, lower budget deficits, with a lag, encourage increased capital flight.

There is a significant and positive association, as was expected, between the real interest rate differential and capital flight. From the elasticity computations, a per cent increase in the real interest rate differentials is associated with a 0.12% increase in capital flight from India.

Table 2(A) also depicts a negative relationship at the lagged level between debt and capital flight. This may indicate the existence of an indirect linkage between the two variables: lower debt inflows signal deteriorating economic conditions that may prompt
increased capital flight. However, as mentioned earlier, the cutting power of such indirect explanations is limited by the fact that they cannot explain the significantly positive contemporaneous correlation between $DD$ and $KF$ as observed in Table 2.

Table 2(B) indicates that the government budget deficit variable, $BD$, is positively and significantly associated with net debt disbursements. This highlights the relative importance of demand-side factors in the market for external credit: higher budget deficits increase the demand for external capital. The computed elasticities suggest that a per cent increase in the $BD$ variable is associated with a 0.70% increase in net debt disbursements.

The relative importance of demand-based factors in the market for external credit is also borne out by the negative coefficient on the $GDPGR$ variable. Table 2(B) reports that a percentage increase in the real growth rate of the Indian economy is associated with a 0.27% decline in net debt disbursements. The negative sign on this variable is not hard to interpret. As India’s debt is mostly public and/or publicly guaranteed, the demand for external debt should decline as a result of higher growth rates.

The negative and significant coefficient on the dummy variable is also as expected for reasons discussed in Section 4. The economic reforms of 1991 have led to a significant spurt in FDI in the Indian economy. From US $74 million in 1991 to almost US $3 billion in 1997, FDI in India has grown at a compound rate of approximately 88% per annum. The tremendous increase in non-debt creating inflows such as FDI may have resulted in a significant decline in the demand for external borrowing.

In sum, while capital flight and external debt cannot be completely explained in terms of one another, there is strong evidence to support the hypothesis of contemporaneous bi-directional causality, in other words, a financial revolving door in the Indian economy.

6. Concluding Remarks

This paper validates the existence of a bi-directional, contemporaneous relationship between external debt and capital flight for the Indian economy. The econometric analysis also suggests that neither capital flight nor external debt can be fully explained in terms of one another. Indian capital flight is significantly influenced by lagged budget deficits and by the difference between US and Indian (real) interest rates. Likewise, lagged budget deficits, lagged GDP growth and the liberalization of the economy have a significant influence on its external borrowing.

The finding that capital flowed in and out of a revolving door in the same year implies that there is a direct relationship between debt and capital flight, where the flows directly fuel one another by providing capital for each other. This is in marked contrast to indirect interpretations of the phenomenon, such as the one postulated by the Morgan Guaranty Trust Company (1986), which attributes the association to poor economic management and track records of debtor governments.

In so far as other theoretical explanations are concerned, the results suggest that, at least in the Indian case, unidirectional characterizations of the debt-flight relationship, i.e. from debt to flight or from flight to debt, are incomplete at best. Indeed, the econometric evidence of a financial revolving door presented above implies a mutually reinforcing, bi-directional relationship between debt and capital flight in India.

The mutually reinforcing, contemporaneous nature of the debt-flight relationship has implications for policy, particularly in the area of external debt management. India’s external debt is conceived to be relatively high by international standards. An outstanding external debt of US $94.4 billion at the end of 1997 places India among
the top 10 debtors among all developing nations. However, in light of the foregoing analysis, if the accumulation of external debt by India has merely financed capital flight, then the “legitimacy of efforts to service external debt” can be called to question (Diaz-Alejandro, 1984, p. 379). Boyce (1992) takes a more fundamental view of this policy stance by proposing that debtor nations whose financial interactions with the world economy are characterized by revolving door mechanisms can actually challenge the “odious” portion of their external debt. Thus, it can be argued that governments should let external creditors know that they are willing to repay only that part of the debt that was used for bona fide investment or consumption in the country (Boyce, 1992, p. 345). This interpretation, radical as it sounds, certainly challenges the legitimacy of a portion of a country’s external debt.

Finally, the results of the paper also suggest that continued liberalization of the economy might be useful in lowering the demand for external borrowing, if the liberalization leads to increased FDI. A reduction in debt inflows may, in turn, prompt a reduction in flight-capital outflows, given the strong year-to-year correlation between external debt and capital flight.

Notes
1. The 18 countries in the sample were Argentina, Bolivia, Brazil, Chile, Columbia, Ecuador, India, Indonesia, Malaysia, Mexico, Nigeria, Peru, Philippines, South Africa, South Korea, Thailand, Uruguay and Venezuela.
3. World Bank (1999) ranks India as the eighth most indebted country in Asia, Africa and Latin America and the fourth most heavily indebted nation in Asia.
4. In addition to the residual measure of capital flight, the literature has also discussed the possibility of using a narrower “hot money” measure of capital flight (Cumby & Levich, 1987). This measure is not derived from debt data and defines capital flight as the acquisition of short-term external assets by the non-bank private sector. Cuddington (1986), for instance, adds the “errors and omissions” and private non-bank short-term capital outflows as reported in the balance-of-payments statistics in order to estimate capital flight from a country. In a recent study, Eggerstadt et al. (1995) compared alternate measures of capital flight and concluded that the residual estimate is far superior to the hot money measure. Firstly, the hot money measure only counts the acquisition of short-term external assets. It is unclear why private residents would acquire only short-term funds, as opposed to long-term assets, in order to achieve capital flight. Secondly, the inclusion of the “errors and omissions” term in the hot money measure is problematic. This is because the term is a catch-all entry that includes items that are entirely unrelated to capital flight, such as “measurement and recording errors, unreported imports (smuggling) and lagged registration” (Eggerstedt et al., 1995, p. 213). For these reasons, this paper opts in favour of the residual measure of capital flight as opposed to the hot money measure.
5. Data for the net mis invoicing adjustment were obtained from the IMF’s Direction of Trade Statistics Yearbooks (1996, 1999). All calculations were consistent with the mis invoicing adjustment measure reported in Rishi & Boyce (1990).
7. The “reversals” of capital flight observed over 1987–89, 1991, 1993 and 1995–96 are not easy to interpret. A possible explanation may be attributed to unrecorded and unofficial inward remittances into India. Another reason may be that import under invoicing in order to evade tariffs and quota restrictions significantly exceeded the export under invoicing for the years in question. This resulted in a considerable capital inflow, which in turn reduced the amount of capital flight estimated. Chang et al. (1997) provide a similar explanation for the
reversal of capital flight in a 58-country sample (India included) over 1987–89 and 1990. Moreover, the operational measure of capital flight developed in the paper does not capture the extent of flight due to kickbacks or commission payments. Thus, the capital flight estimates, depicted in Table 1, may underestimate the actual volume of capital flight from India.

8. Interest earnings were imputed on the stock of externally held assets by using the US short-term T-bill rate (International Financial Statistics, IMF 1996) as a proxy for average earnings. Capital flight stock at the end of each year is calculated as the sum of cumulative (end-of-year totals) of unadjusted capital flight, interest on the cumulative amount of capital flight at the beginning of the year and interest on current capital flight for half-year.

9. Cuddington (1987) showed that in Mexico and Uruguay more capital flight occurred contemporaneously with increased debt inflows, thus attesting to a strong liquidity effect in these countries.

10. This dynamic may turn out to be a self-fulfilling prophecy as an increased demand for dollars to effect capital flight can by itself exert a downward pressure on the local currency.

11. This is consistent with the work of Boyce (1992), who utilized the instrumental variables estimator to estimate the relationship between debt and capital flight. The use of the simultaneous equation approach is cross-validated by conducting the Hausman specification test for exogeneity using the expanded regression approach. See Maddala (1989, p. 439) for the omitted variable interpretation and the expanded regression approach to the Hausman specification test.

12. A fully specified model for the external debt variable would include the variables $K_{t-1}$ and $B_{t-1}$ in the DD equation and the variable $GDPGR_{t-1}$ in the $KF$ equation. The government’s stance on taxation as measured by tax revenues as a percentage of GDP may also be included in the $KF$ equation, given the mis invoicing outlined in note 6. However, these variables have been omitted and the restricted model selected based on Akaike’s Information Criteria to make it more parsimonious (See Maddala, 1989, p. 431).

13. Both equations (1) and (2) were tested for the order condition for identification and were found to be over and exactly identified. Both equations were identified for the rank condition.

14. This paper utilizes the level of official reserves rather the real effective exchange rate as an exogenous variable. This is done to avoid the methodological problems involved in estimating an (invariant) equilibrium exchange rate in order to derive the extent of overvaluation.

15. This information was downloaded from a paper entitled “FDI in India since the economic reforms”, Embassy of India, Economic Wing, 11 April 1996 (http://www.indiaserver.com/ieconews/1996/04/page3.html).

16. The existence of contemporaneous correlation was tested by examining the value of the Breusch and Pagan Lagrange multiplier statistic (see Judge et al., 1988, p. 456). The Chi-squared test statistic was significant at 95% confidence levels, i.e. the hypothesis that cross-correlation between the structural disturbances is zero was rejected. Hence, while the results of the 2SLS and the 3SLS estimation were qualitatively similar, the 3SLS estimates were more efficient, i.e. the standard errors of the estimated coefficients were lower.

17. In addition, the residuals from the 3SLS estimation were tested for the presence of non-normality, first-order serial correlation and the presence of autoregressive conditional heteroscedasticity. Since the residuals did not violate any of the classical assumptions, the 3SLS results are the ones reported in the paper. Additionally, to verify the robustness of the results and assuming the error structure has autocorrelation, the original model was re-estimated using the Autoregressive 3SLS (A3SLS) method suggested by Stewart & Wallis (1981, p. 295) and Kmenta (1986). This regression technique is recommended for the estimation of a system of equations with lagged endogenous variables, given the presence of autocorrelation. “When disturbances are auto-regressive, the lagged endogenous variables are correlated with the reduced form disturbances and the least squares estimate of the reduced form coefficients are biased and inconsistent” (Kmenta, 1986, p. 709). To obtain consistent and efficient estimates, the A3SLS technique treats the lagged endogenous variables as current endogenous and utilizes only the purely exogenous variables as instruments. A three-step iterative estimation procedure is adopted, where initially the first-order autocorrelation function is estimated using the instrumental variable-based estimates of the endogenous variables in place of the original values. The initial structural equations are then transformed using this estimate of the autocorrelation function. After this, instrumental variable-based estimates of the transformed lagged endogenous variables are obtained and
the transformed structural equations are simultaneously estimated using these as proxies for the lagged endogenous variables. The results obtained from this technique were qualitatively similar to those obtained for the 3SLS estimation and were, in fact, stronger for some of the variables concerned. Details are available from the authors.

18. Two-way Granger causality tests were also conducted for DD and KF. As Granger causal estimation requires stationarity of the variables involved, the Augmented Dickey Fuller test was utilized. Where non-stationarities were observed the variables were first-differenced during the course of the estimation. The Lagrange multiplier test was employed to check for serial correlation.

The following instrument variable (IV) models were independently estimated by an ordinary least squares (OLS) procedure for the KF and the DD variables:

\[
KF_t = 3238.61 + 0.70(KF_{t-1}) + 1.72(DDINST)_{t-1} + 0.39(DDINST)_{t-2} - 334.02(INT)_{t-1}
\]

\[
\begin{align*}
(4.82) & \quad (11.68) & \quad (5.8) & \quad (-2.97) \\
+ 502.16(\Delta GDPGR)_{t-1} + 1508.57(\Delta BD)_{t-1} - 0.14(\Delta RES)_{t-1} - 643.51(D2) + \varepsilon_t \\
(4.06) & \quad (2.49) & \quad (-2.31) & \quad (-0.46)
\end{align*}
\]

Adjusted R-squared: 0.98; F-statistic: 106.67 (significant at \( p < 0.05 \) levels).

\[
\Delta DD_t = -1826.01 - 0.20(\Delta DD)_{t-1} + 0.74(KFINST)_{t-2} - 0.45(KFINST)_{t-1} - 185.54(INT)_{t-1}
\]

\[
\begin{align*}
(-1.59) & \quad (-2.05) & \quad (10.20) & \quad (-4.15) & \quad (-1.23) \\
+ 62.21(\Delta GDPGR)_{t-1} - 1024.71(\Delta BD)_{t-1} - 0.005(\Delta RES)_{t-1} - 630.77(D2) + \varepsilon_t \\
(0.32) & \quad (-1.08) & \quad (-0.06) & \quad (-0.29)
\end{align*}
\]

Adjusted R-squared: 0.95; F-statistic: 30.53 (significant at \( p < 0.05 \) levels).

The variables have been defined in the paper. The ‘\( \Delta \)’ symbol implies first differencing. “INST” refers to the instrumental variable estimate for the relevant dependent variable, where other lagged variables were used as instruments to derive an estimate for KF and DD. The figures in parentheses represent the t-statistics for the relevant variables. The results clearly indicate that there is bi-directional causality between capital flight and net external debt disbursements. The results do not change qualitatively if all the variables are first-differenced.

19. Elasticities are calculated as the coefficient of the independent variable times the mean of the independent variable divided by the mean of the dependent variable (Pindyck & Rubinfeld, 1981, p. 91).

20. The correlation between lagged budget deficits and real growth rate of the Indian economy is positive, suggesting that a contraction in the budget deficits is associated with a contraction in the economy.

References


