# CAPITAL FLIGHT, EXTERNAL
# DEBT AND DOMESTIC POLICIES

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## ABSTRACT

It is now well documented that capital flight has been a dominant feature of capital movements between developing and industrial countries. Since 1988 reductions in the stock of flight capital more than account for private capital flows to emerging markets. This suggests that what appears to be a diversification of portfolios of residents of developed countries may be a restoration of "home bias" in the portfolios of residents of developing countries. We show that changes in the stock of capital flight can increase or decrease welfare depending on the structure of distortionary taxes and subsidies on capital income and the effects of capital flight on the tax base.

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# Capital Flight, External Debt and Domestic Policies

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In the aftermath of the 1982 international debt crisis economists were surprised to learn that a large part of the borrowing of developing countries from international commercial banks was not matched by net imports of goods and services but instead was matched by unrecorded private capital outflows from developing countries. A satisfactory explanation for why residents of a country simultaneously borrow and lend on international markets clearly calls for a model in which explains patterns of financial intermediation rather than conventional models for net investment opportunities in different countries.

In this paper we focus on a definition for "capital flight" developed in Dooley (1986) and a number of theoretical models that might help understand this measure of capital flight. Interest in capital flight has been recently rekindled by the resurgence of private capital inflows to developing countries after nearly a decade of very limited capital flows. The question is whether this is a "discovery" of emerging markets by residents of industrial countries or a return of capital flight by residents of the developing countries. In either case it is a private capital inflow but if the "home bias" of portfolios of

industrial countries really is being reduced the potential for continued inflows seems very large. In contrast if the "home bias" of residents of developing countries is being increased by a reduction of capital flight claims on industrial countries the scope for continued private inflows is quite limited. The data seems more consistent with the second interpretation.

We are concerned with the sources of capital flight and with the welfare consequences of capital flight in the presence of the policy and institutional environment that gives rise to it. The next section elaborates on the definition and estimation of capital flight and reports estimates of capital flight from 1971-1991 for a sample of eighty four developing countries . Section III presents a simple public finance model to discuss the effects of different tax treatments for resident and nonresident holders of claims on domestic assets. Section IV analyzes capital flight using this model and emphasizes that capital income taxation that varies de facto by residence and source leads two-way gross financial capital flows. The model used incorporates a welfare-improving role for capital income taxes. The welfare consequences of capital flight in this model are due to the restrictions its possibility imposes on the effectiveness of these taxes and, therefore, on the fiscal instruments for a social welfare maximizing government.

Section V discusses the welfare effects of capital flight in

the presence of financial market imperfections.  In this case,
capital flight can lead to inefficient international allocations
of physical capital stocks.  In Section VI subsidies to foreign
lenders and their contribution to capital flight are discussed.
Section VII concludes.


II.  Definition and Magnitude of Capital Flight

This section briefly reviews the method suggested by Dooley
[1986, 1988] for estimating capital flight and presents some
recent estimates based on this definition.  The problem is to
measure the accumulation of claims on nonresidents that are not
subject to taxation, regulation, or, in extreme circumstances,
confiscation by domestic governments.  This is done by
calculating the total stock of external claims, summing recorded
claims on nonresidents less direct investments abroad using
balance of payments data, cumulated errors and omissions from the
balance of payments accounts and an estimate of the unrecorded
stock of external claims.  The first part is calculated using
cumulated balance of payments data with the starting value
estimated by capitalizing investment income receipts for the
ir.itial year.  Errors and omissions are included because they are
often associated with accumulations of financial claims on
nonresidents that might include unrecorded capital flows along
with many other forms of assets.


The balance of payments data are known to seriously

underestimate the full stock of external debt using the World Bank data (among other sources). If these data are correct, then there must be some sort of balancing transactions that are also underestimated. These can include any type of foreign transaction, including imports of goods and services or purchases of financial claims on nonresidents financed by the accumulation of unrecorded external debt. Since the type of transaction cannot be discerned, it is assumed that all of the unrecorded debt increases are balanced by increases in private claims on nonresidents unreported in the balance of payments records.

Next, the stock of claims implied by investment income receipts and market interest rates are subtracted. This estimate of claims is excluded because it represents the portion that earns income reported in the balance of payments accounts, therefore not placed outside the control of domestic authorities. These can be considered to be the stock of external claims that results from normal portfolio diversification motives and not part of capital flight. Comparisons of the yield implied by reported investment income to the accumulated external claims from the balance of payments data and to the estimated total of external claims are first reported in Dooley [1986] for several major debtor countries. These estimates suggest that a significant share of the income earned from claims on nonresidents is not reported in the balance of payments system and therefore is attributable to the returns to flight capital. The difference between the estimate of total external claims by

nonresidents excluding direct investment abroad and the estimate of assets on which interest earnings are reported is the estimate of capital flight intended to measure claims on nonresidents placed outside the control of the home government. This procedure leads to larger estimates of capital flight than of unrecorded external debt accumulations plus errors and omissions.

Estimates of capital flight using the this definition have been updated in Claessens and Naude (1993) and are summarized in Figure 1. Also shown in Figure 1 is an estimate of capital flight sometimes utilized by the World Bank. The comparison of what Claessens and Naude call the "Dooley Measure", described above, and the "World Bank Residual Measure" is interesting in that the two measures are conceptually identical except for the subtraction of gross claims for which interest income is reported in the balance of payments in the "Dooley Measure."

It is clear that this distinction made little difference for the quantitative measure of capital flight for this aggregate of countries until 1990 and 1991. The dramatic reversal of capital flight in 1990 and 1991 according to the "Dooley Measure" helps explain the large recorded capital inflows that have dominated recent developments in emerging markets. While many authors have speculated that what appear to be purchases of emerging market assets by residents of industrial countries are in fact the return of flight capital this is as far as we know the only direct evidence that this is the case.

As Claessens and Naude point out the divergence between the

**Figure 1: World Bank Residual and Dooley Measure of Capital Flight (Annual Flows)**
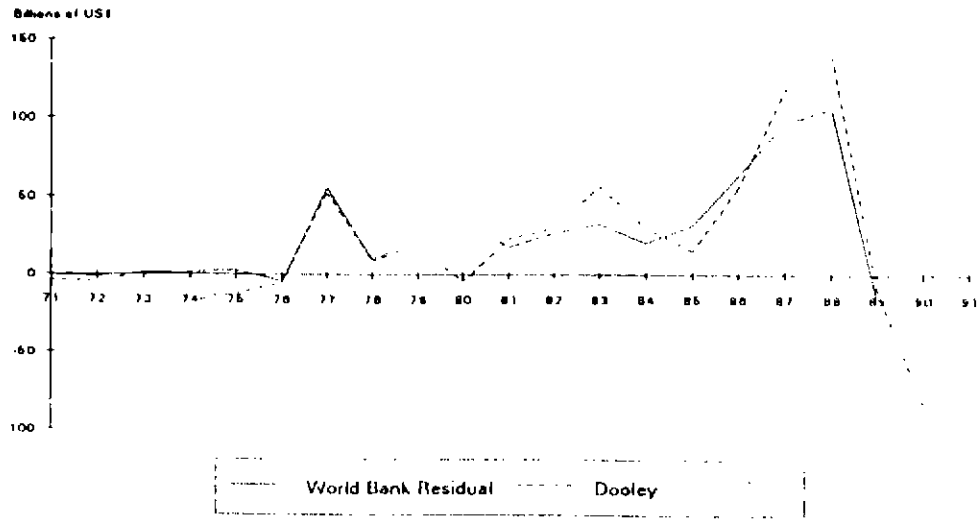


Source: Claessens and Naude (1993)

two measures reflects the fact that reported investment income about doubled in 1991 as compared to 1989 while interest rates on dollar denominated instruments fell by about thirty percent. Our interpretation of this data is that residents of developing countries have sold off their capital flight positions in order to purchase domestic-currency denominated assets in their home countries. This is incorrectly recorded as an increase in liabilities to nonresidents in the developing country's balance of payments. The correct entry would be a reduction of private resident's claims on nonresidents. About half of this inflow has been offset by official exchange market intervention or an increase in official claims on nonresidents. Since the interest income on official reserves is recorded in the balance of payments the "Dooley Measure" correctly captures the decline in the stock of private flight capital. Moreover, the magnitude of the reversal of capital flight in 1990-1991 is greater than OECD estimates of all private borrowing by non-OECD countries on international capital markets. While interesting in themselves these data tell us nothing about the motivation behind two way capital flows that have dominated international financial markets for the past twenty years. We turn to alternative models of international financial intermediation in the following sections.

Section III

The analytical framework for capital flight developed in

this section emphasizes the role of policies adopted by the domestic government and the opportunity of residents to avoid the impact of those policies on the net income from their asset holdings. The treatment of resident and of nonresident holders of claims on domestic assets is often different. As a consequence, capital flight and external capital inflows can be seen as an outcome of international arbitrage of domestic policies. The types of policies that can lead to capital flight include a large variety of taxes on and subsidies to domestic asset earnings, including outright confiscation, that vary by residence of the investor in practice. These can be explicit capital income taxes, restrictions on the menu of assets available to residents different from those available to nonresidents and subsidies, including contingent ones, to investment by nonresidents.

The effective taxation of capital income frequently varies both by its source and by the residence of its recipient. In many cases, the total tax burden on capital income faced by domestic investors exceeds that for foreign holders of domestic claims. When residents hold assets beyond the reach of their home government, they will tend to realize higher risk-adjusted post-tax returns for claims on nonresidents than for domestic assets. Under these circumstances, foreign creditors can have an incentive to invest in domestic assets when residents do not. Such differences in effective rates of taxation of asset income

will lead to gross capital outflows and inflows that are unrecorded in balance of payments data exceeding any net capital flow.

It is often much more difficult to avoid paying residence-based capital income taxes on income earned from domestic assets than from claims on nonresidents unreported to domestic fiscal authorities. Such taxes become both residence and source-based, de facto applying only to domestic capital income earned by residents. The taxes that can lead to differential burdens for residents and foreign holders of domestic claims may be anticipated rather than statutory. For example, in many cases residents are only able to hold deposits in the domestic banking system denominated in the domestic currency and subject to a reserve requirement, while foreign investors can acquire claims on domestic intermediaries denominated in foreign currency that do not require the holding of non-interest bearing reserves. Resident savers usually receive less than market interest on reserves and face potential inflation taxes on these deposits, so that nonresidents receive a higher anticipated post-tax rate of return for claims on domestic capital.

More generally, when residents do not have access to the same range of domestic financial instruments as do nonresidents, the contingent taxes imposed by and subsidies provided by domestic authorities differ for the two types of creditors. For

example, external debt may be denominated in foreign currency while domestic deposits may only be available denominated in local currency. Nonresidents can purchase an asset yielding a different distribution of returns than residents can. As a consequence, the risks and returns associated with domestic claims differ by the residence of the investor. This leads to international portfolio diversification, but not capital flight by itself. Capital flight arises when residents avoid anticipated taxation of domestic deposits (for example, through inflation) and of the gross earnings on reported foreign assets. Acquisition of assets abroad for both groups then represents international arbitrage of these tax rules or anticipated levies. The extent to which residents take advantage of such opportunities is estimated by a measurement of the claims on nonresidents that are unreported in the balance of payments records.

One concern over capital flight is that private external debts are socialized or the payments on these debts are subsidized by the government. These can lead to the accumulation of private claims on nonresidents by residents that do not provide foreign exchange earnings available to the public sector for debt interest payments. Such subsidies, that are often contingent liabilities for the government, provide benefits for foreign lenders and, possibly, private domestic investors.

These ideas can be addressed more formally in a stylized two-period model of a small open economy with a single composite good that can be used for private consumption, public consumption and investment.  In the first period, the country has an initial endowment of the good, and households choose a consumption and saving allocation.  Domestic saving can be allocated to investment in home capital or used to purchase claims on nonresident capital earnings.  External borrowing is also possible, allowing nonresidents to acquire claims on income produced by domestic capital.  In the second period, output and net income from investment abroad are allocated to private and public consumption.  The government provides public consumption goods and raises revenue using non-lump-sum taxes.  The instruments available to the fiscal authority include taxes on labor income, source-based taxes on domestic capital income and residence-based taxes on investment income.  Taxes can be levied at positive  or negative rates (subsidies).

Fiscal authorities face difficulties enforcing compliance with taxes on foreign source income.  We assume that domestic residents are able to invest in foreign claims providing income that is beyond the control of national authorities, therefore untaxable in practice.  The model also allows domestic capital income paid to foreign residents to be taxed at different rates than home source capital income paid to residents.

Production of output requires inputs of labor and capital using a standard concave technology, given in labor intensive form by $f(k)$. The household sector is represented by a single household with the utility function

(1) $U = u(c_1, c_2, 1) + v(g)$

where $c_1$, $c_2$, $1$ and $g$ are the first-period consumption, second-period consumption, leisure consumption and public goods consumption, respectively. The initial endowment of leisure is L. Household preferences are additively separable between public goods and private goods consumption for simplicity.

Domestic claims on nonresidents are denoted by B, and foreign claims on domestic capital are denoted $K^f$. The share of the domestic capital stock owned by residents is the difference between K and $K^f$. Note that foreign claims on residents and residents' claims on foreigners are gross. This model parallels that of Razin and Sadka [1989], but they do not allow nonresident claims on residents.

The household budget constraints in each period, respectively, are given by

(2) $c_1 + B + (K - K^f) = y$,

and

(3) $c_2 = B (1 + r^*(1 - z\, t_r)) + (K - K^f) (1 + r(1 - t_r)(1 - t_s)) + wl (1 - t_l)$

The tax rate on capital income by residence is given by $t_r$, the

tax rate on domestic source capital income is given by $t_s$, and the tax on labor income is given by $t_1$. The rate of compliance with residence-based capital income taxes for assets held abroad is measured by $z$ which takes values between zero and unity. If it is assumed that evasion of investment income taxes is not possible, then $z$ is unity. When $z$ is zero, domestic fiscal authorities are unable to tax any of the earnings from claims on nonresidents held by residents. The initial endowment of the composite good is $y$, the wage rate is $w$, the domestic (pre-tax) interest rate is $r$ and the foreign interest rate is $r^*$ (net of any foreign source-based taxes).

Suppose that international financial capital mobility is unrestricted and that this country is small relative to the rest of the world. Then foreign savings will always flow into the domestic economy if the post-tax rate of return to foreign capital is less than the rate of return to domestic capital after source-based taxes. In equilibrium, the post-tax rate of return to foreign capital, $r^*$, must be at least as great as the post-source-based-tax rate of return to domestic capital, $(1-t_s)r$. Therefore, foreign savers will only hold claims on domestic capital if these two net rates of return are equal. If $r^*$ exceeds $(1-t_s)r$, then domestic residents also earn a higher return to claims on foreign capital than on domestic capital after source-based and residence-based taxes are imposed, so that

the domestic capital stock would be zero[1]. Therefore, assuming that the Inada conditions[2] hold for $f(k)$, we have in equilibrium under perfect financial capital mobility that

(4) $\quad r^* = (1-t_s)r.$

If z is less than one, then we also have that

(5) $\quad r^* (1 - z\, t_r) > (1-t_s)(1 - t_r)\, r.$

Equilibrium demand for capital by the firm in the home country is determined by equality of the marginal product of capital and the pre-tax rate of interest:

(6) $\quad f'(k) = r.$

Household optimization yields consumption demands that depend upon the tax rates through their effects on the income and the relative price of second-period consumption.

III. Capital Flight and the Public Finance Problem

Suppose that domestic savers are unable to avoid residence-

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[1] This holds for any z between zero and one as long as $t_r$ is non-negative. It also holds for a residence-based subsidy ($t_r$ negative) when z is one. When a subsidy is paid, z should be one since rational savers would comply fully.

[2] These are that $f'(k)$ tends to infinity as k tends to zero and $f'(k)$ tends to zero as k tends to infinity. We also assume that $f(k)$ is strictly concave.

based capital income taxes by purchasing claims on nonresidents.
In this case, the optimum for a small country social planner
choosing to maximize the welfare of the representative household
is attained financing public goods spending using a combination
of a labor income tax and a residence-based capital income tax.
In the solution the rate of source-based capital income taxation
is zero, so that the first-order condition for an optimum

(7)   $f'(k) = f^{*\prime}(k^*)$

is satisfied.

The solution for the optimal tax and public goods supply
problem when there is no issue of tax compliance is well-known.
The rates of tax imposed on labor income and on interest income
of residents are chosen so that the disutility of the last unit
of revenue raised from each is equal when both taxes are
positive.  We skip elaborating this rule analytically.  It should
be noted that such an equilibrium plan is not Pareto efficient if
labor supply is not perfectly elastic since all taxes are
distortionary.

Now, suppose that both source-based and residence-based
taxes are available to domestic fiscal authorities but that
residents are able to avoid taxes on claims on foreign capital
earnings ($z = 0$).  In this case, any positive rate of residence-
based capital income tax implies that no domestic claims are held
by residents and all domestic capital income is paid to foreign

claimants. In the absence of controls on financial capital outflows, the government collects no revenue from residence-based capital income taxes and all public consumption spending must be financed by taxes on capital earnings that distort the international allocation of production activities and on labor income that distort goods consumption-leisure choices and labor supply. Source-based taxes are assumed to be enforceable, but these result in different marginal productivities of capital at home and abroad. Again, the optimal tax rule is found by straightforward maximization of representative household utility subject to the necessary conditions for private optimization by the household and firm and the constraint that residence-based taxes raise no revenue.

Social welfare is reduced by the possibility of capital flight in this model. This is because capital flight is a consequence of the ability of households to avoid capital income taxes levied on a residence basis. The effective marginal tax rate on capital that can be achieved on a residence-basis is zero. Reducing the residence-based capital income tax rate to zero can eliminate capital flight in this model (for arbitrarily small transactions costs associated with the acquisition of foreign assets) and results in no loss of tax revenue. The restriction in the set of distortionary fiscal instruments available to the government results in lower maximized social welfare. Capital flight is another consequence and the channel

through which residents escape the control of national fiscal
authorities.

It should be noted that both enforceable residence-based and
source-based capital income taxes affect the net external asset
position of the country. In general, an increase in a source-
based tax will lead to a net capital outflow, and an increase in
a residence-based tax will cause a net capital inflow. However,
with enforceable taxes of both types the net and gross capital
outflow will be equal. This is not the case when residents
cannot be effectively taxed on foreign asset earnings. In the
case of this model with no constraints on external financial
capital inflows, all domestic savings goes abroad if $t_r$ is
positive and all domestic capital income is owed to foreign
residents. The gross outflow is much larger than the net capital
outflow, which may be positive or negative. This is because
domestic authorities can only effectively tax domestic capital
income, although at different rates for nonresident and for
resident claimants.

Given that capital flight is possible, the social welfare
maximizing government would choose to impose controls on
financial capital outflows. Such restrictions can help to
resolve the public finance problem for the government by reducing
the ability of residents to acquire assets earning income that
cannot be taxed. Imposing a complete (assuming enforceability)

ban on the acquisition of all claims on nonresidents leads to a domestic marginal product of capital that is no greater than the foreign rate of interest:

(8)   $(1 - t_s) \ f'(k) = r^*$, if $K^f > 0$, and

$(1 - t_s) \ f'(k) < r^*$, if $K^f = 0$.

The equilibrium domestic interest rate can be below the foreign interest rate when no residence-based and source-based capital income taxes are imposed if domestic savings are adequate to finance all domestic capital.   In this case, an appropriate choice of the residence-based, or equivalently, source-based, capital income tax can be made so that the marginal productivity of capital is equal across borders.

This does not imply that if enforceable capital controls are feasible then the potential for capital flight does not pose a public finance problem.  The optimal policy for a government that maximizes the household's utility is to impose capital controls at some positive level and a residence-based capital income tax along with a positive rate of labor income tax in the general case for this model.  It will never be optimal to choose capital income taxes that lead to the inequality

(9)   $f'(k) < r^*$.

That is, such a government will not want to impose a source-based or residence-based tax (with the caveat that this only applies to residents' holdings of domestic financial assets) and level of capital control that results in a marginal productivity of

capital below the foreign marginal productivity of capital. If it did, it could relax the quantitative restraint on capital outflows and/or the rate of taxation of domestic capital income and tax rate on labor income to reduce the home capital stock and achieve a more efficient allocation of domestic saving and global production.

The optimal tax and quantitative restriction on capital outflows can lead to an equilibrium in which domestic saving and investment are equal and the marginal productivity of domestic capital is less than the foreign interest rate. The reason is simply that the optimal level of public goods spending and distortionary effect of a labor income tax with no capital outflow imply a higher rate of taxation on domestic capital than allowed by the restriction that $f'(k)$ equal $r^*$, when k equals equilibrium domestic saving per unit of labor. Capital controls are a second-best fiscal policy instrument to enforceable taxes on capital income from all sources for residents in such cases. When the optimum allows the equality

(7)  $f'(k) = f^{*'}(k^*)$

to be satisfied, then full tax compliance and perfect capital controls are substitutes.

IV.  Preferences of Intermediaries for Investing at Home or Abroad

In addition to the problem for efficient revenue collection to finance public spending programs, there can be other welfare costs associated with capital flight induced by domestic taxes. An important one of these may be due to preferences on the part of intermediaries to invest in projects in their home country. Reasons for such preferences include costly monitoring of investors actions and possible risks associated with enforcing contractual compliance in a foreign legal jurisdiction. It is reasonable to think that intermediaries face lower costs of acquiring information about a borrower's actions and appealing to the power of the state to ensure contractual compliance when they lend within their home country. When information is imperfect, so that monitoring is costly, intermediaries may not invest abroad even if the otherwise risk-adjusted expected rate of return is higher.

In the presence of such intermediation-bias, claims on nonresidents will tend to increase foreign capital stocks and reduce domestic capital stocks ceteris paribus. We take a simple model to illustrate. Suppose that foreign intermediaries require a premium for investment returns in the small country over the interest they are able to earn at home. In an equilibrium with positive external inflows of financial capital, we have

(11) $r^* + p = r,$

where p is this premium.

Consider a special case in which domestic saving and investment are equal and the rate of interest at home and abroad are equal in the absence of any capital income taxes in the home country. Suppose that the domestic government now imposes a residence-based capital income tax such that

(12) $r^* > (1 - t_r) (r^* + p)$,

and (11) holds. This implies that capital flight occurs according to the definition used in this paper. Imposition of the tax reduces the domestic capital stock per worker, raising $f'(k)$ from $r^*$ to $r^* + p$. If a tax rate low enough to reverse the inequality in (12) is imposed, then we have

(13) $r^* = (1 - t_r) r$,

in equilibrium, and there are no capital inflows although there is a net capital outflow as residents acquire claims on nonresidents.

The presence of financial market imperfections of this type imply that capital flight, again as a consequence of domestic policies and access to opportunities to avoid their impact on private net asset income, has welfare implications. It leads to an inefficient allocation of capital across countries and welfare losses for the home country. These welfare losses arise because domestic savers are induced to place their assets abroad to avoid taxation by the home country. Intermediaries abroad have different preferences over claims in the two countries than do domestic intermediaries. This means that the supply of capital

abroad rises with capital flight while the stock of capital at
home declines. This contrasts with the case of perfect
international capital mobility in which foreign lenders simply
took over the task of intermediating between domestic savers and
domestic investors.

One policy remedy when capital income taxation is desirable
is to impose capital controls as before. Again, in contrast with
the analysis of the previous section, imposition of a residence-
based capital income tax does not leave the domestic rate of
interest equal to the foreign rate of interest. Foreign
intermediaries will not purchase domestic claims until the
domestic pre-tax rate of interest has risen sufficiently to
overcome the additional costs of monitoring investments in
another country.

An interesting extension of this result is the case in which
domestic intermediaries do a very poor job of credit selection,
perhaps because of government controls on lending decisions. In
this case moving funds off shore might increase the effective
level of domestic investment assuming foreign intermediaries can
overcome information costs and make better investment decisions.

V. Subsidization of Foreign Lenders

Capital flight is often linked to the socialization of
private external debt or the subsidization of payments on these

debts. This issue was raised by Diaz Alejandro [1984], who argued that the foreign exchange earnings accruing to private assets placed abroad were unavailable to the government that is obliged to make interest payments to nonresidents. Private external debt appears to have financed the accumulation of claims on nonresidents that are placed outside the reach of domestic governments. When these debts are subsidized, the government bears a burden while foreign investors and the private domestic claimant receive the benefits.

Subsidies to foreign capital inflows often take the form of contingent subsidies, providing insurance to nonresidents that is unavailable to residents. Private intermediaries have frequently been able to borrow from abroad under explicit or implicit government guarantees of the debts to the foreign creditors. These guarantees can have adverse incentive effects for investment choices by the intermediaries leading to the standard arguments for public monitoring of investment actions by publicly-insured intermediaries. Domestic intermediaries have an incentive to invest in risky projects since they receive returns only in the upper tail of the distribution for returns. In the absence of adequate monitoring of the actions of domestic investors, domestic savers may anticipate that domestic external borrowing will lead to higher tax rates in the future because as domestic intermediaries maximize their expected returns by selecting risky projects, the value of the contingent liability

of the government rises. Anticipated future capital income taxes will induce capital flight if it is possible to place assets beyond the reach of domestic authorities. Eaton [1987] presents model based on these notions in which there are multiple equilibria, one of which involves no capital flight and private debt repayment and another in which there is capital flight and private default.

The role of subsidies to foreign investors for capital flight can be discussed in the model used to analyze the effects of taxes on capital income accruing to residents. Subsidies available to nonresident asset holders but not to resident investors under perfect international financial capital mobility will lead to an increase in the domestic capital stock and cause all domestic savings to be placed abroad since equilibrium requires that

(13) $r^* = (1 + s) \ f'(k)$,

where s is the subsidy rate. By itself, this does not sufficient to cause capital flight as defined here. Domestic residents only have an incentive to purchase claims on nonresidents but not to place these outside the control of the domestic government.

Subsidies differ from capital income taxes in that the limits on the magnitude of the gross flows are different. The gross capital outflow under perfect international capital mobility when a capital income tax is levied only on residents is

given by the total of domestic savings. The opportunity return on domestic assets held by residents is less than the return to flight capital, but the opportunity interest cost of borrowing externally is the same as the interest received by relending. If foreign borrowing is subsidized, then the limit on resources that might be available for investing abroad at a net gain is the extent to which the subsidy will be offered. That is, the extent to which the government will subsidize borrowing from abroad to purchase claims on nonresidents that it cannot tax. This might be called the "extent of the government's stupidity."

Policies that subsidize, perhaps through contingent liabilities for the government, nonresident holders of domestic assets lead to capital flight if the subsidies allow external debt to finance residents' purchases of claims on nonresidents that generate income untaxable by the government. In this case, the social cost of the subsidies is the utility reduction due to a loss of national income equal to the total subsidy paid to foreign lenders. There can also be domestic distributional effects that may be of concern to policymakers in a world with heterogeneous households (Alesina and Tabellini 1989). It should be noted that this process could also concern foreign investors. As the tax base for raising the revenue needed for repayment erodes and the likelihood that the government will realize large contingent liabilities rises, foreign holders of domestic claims enjoying public guarantees may anticipate renegotiation by the

government. That is, foreign investors may realize the ability and willingness of the government to honor these explicit or implicit contingent commitments. Anticipating the possibility of such capital levies, nonresidents should behave in a time consistent fashion.

The possibility that subsidies and gaurantees generated lending to developing countries that led up to the 1982 debt crisis suggests that recent large private capital inflows to developing countries might also be a caouae for concern. It seems likely to us that once again private capital inflows are being sustained not only by the more favorable investment climate but also by opportunities generated by the governments of developing countries. The form of the incentive is a little different as compared to the external debt-capital flight pattern that led up to the 1982 debt crisis.

But in one important respect the recent private capital inflows are similar in that they are sustained by a contingent claim on the government. The distinguishing feature this time is that recent private capital inflows to developing countries have taken the form of domestic-currency-denominated instruments including equities, corporate bonds, bank deposits and government securities[3]. This is certainly different from the dollar-denominated, government-guaranteed, syndicated credits that comprised the buildup in debt before 1982.

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[3] S. Gooptu, "Portfolio Investment Flows to Emerging Markets," World Bank Working Paper, March 1993.

In the current pattern of capital flows it is less obvious that the government of the borrowing country has provided a guarantee. However an implicit guarantee is provided by the increasingly popular use of the exchange rate as an anchor for inflationary expectations. In basing its credibility on the maintenance of a fixed or managed exchange rate the government, in effect, provides an exchange rate guarantee for the investor in domestic-currency-denominated instruments.

This, of course, seems to leave the investor with a credit risk. But in most emerging markets the government is very likely to provide a credit guarantee as well as the exchange rate guarantee. In cases where international investors buy government securities the guarantee is explicit. Commercial bank deposits are also guaranteed especially where the deposit is denominated in domestic currency.

Finally, even the liabilities of domestic nonfinancial corporations carry a strong government backup. This is because such firms are heavily indebted to the domestic banking system. If nonresident creditors want out these firms can be expected to ask for and receive credit from the domestic banks. To refuse to do so would depress the market value of the banks' existing claims on the domestic firms and call into question the solvency of the domestic banking system.

What limits this process? As long as the developing country central bank maintains domestic nominal interest rates at levels above those available on similar foreign assets there is, in

principle, no limit to the private capital inflows generated. Of course, in reality the government's resources are limited. At some point the market will begin to doubt the government's ability to maintain the exchange rate peg and the negative carry resulting from the low return earned on reserves relative to that paid on the domestic liabilities issued in sterilized exchange market intervention. But the scale of private capital inflows necessary to exhaust the central bank's expected net worth can be very large indeed.

## VI. Conclusion

We define flight capital as the accumulation of claims on nonresidents by residents that escape control of the domestic government. Capital flight by this definition is estimated by a calculation of gross external claims that generate income that is not reported in the balance of payments data.

Our approach emphasizes the importance of public policies and anticipated policies for the domestic government in the presence of international capital mobility and possible evasion of taxation or appropriation by the home government by domestic savers. Capital flight represents an arbitrage of the different treatment of resident and nonresident investors by domestic authorities.

The policies that give rise to capital flight are distortionary in the model presented here, but they are not

necessarily simply undesirable. In the case of optimal public goods supply without lump-sum taxes, a residence-based capital income tax is part of the efficient policy if tax compliance is perfect. The problem and social welfare losses arise because tax avoidance (or evasion) is possible. The second-best solution with capital controls includes residence-based taxes. Without feasible capital controls, the residence-based capital income tax is entirely ineffective for raising revenue under perfect international capital mobility. In this case, the social cost of capital flight is the welfare cost of losing a useful instrument of fiscal policy. Capital flight can also result from the adoption of distortionary policies that are not welfare-improving. In these instances, it can exacerbate the welfare losses.

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