Punishment Schedules for Capital Flight

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1. INTRODUCTION

What are appropriate penalties to discourage capital flight? Economic punishments can serve as effective deterrents for economic crimes but the penalties themselves are often costly to impose and enforce. Good public policy must take these costs into account in addition to the effectiveness of punishment schemes. In order to construct a deterrent to economically motivated behaviour, the environment that generates this motivation must be well understood. We show that the incentives for capital flight can differ in predictable ways. This difference in incentives implies that, even though standard risk aversion analyses might suggest the opposite, it will often be better to penalise larger transactions in a higher proportion than smaller ones.

A common definition of capital flight is the growth in the stock of one country’s claims on non-residents that generates income beyond the control of the domestic authorities (see, for example, Dooley 1988; Rojas-Suarez, 1990; or Razin and Sadka, 1989). This notion is useful because it distinguishes between portfolio motivations for international capital allocation (which are desirable on grounds of economic efficiency) and movements of capital which are motivated by a desire to evade tax liabilities. The latter type of capital movements imposes costs both in terms of lost government revenues and potential distortions in investment decisions. We focus, therefore, on capital movements which are motivated by the (illegal) desire to shelter investment income from domestic taxation.

An understanding of capital flight requires a careful and consistent description of the economic environment that generates the motivations for this phenomenon. For the remainder of this paper, the following assumptions are maintained in order to match as closely as possible conditions that must hold for capital flight to exist:

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1. ‘The Residence Principle’: Worldwide taxation policies follow the principle of taxing capital income earned by residents who cannot change their residence easily.

2. Income earned on foreign capital is less subject to taxation by the Russian authorities than income earned on domestically invested capital.

3. The domestic tax system works relatively effectively.

4. The taxation system is progressive.

5. There exist lump-sum transaction costs on foreign investment.

6. Higher penalties are more costly to impose than smaller penalties.

7. The cost of monitoring is high enough that capital flight can never be detected optimally with probability one.

Although simplifications in some cases, these assumptions are features of most modern economies and are important in creating a realistic picture of the problem of capital flight. The first assumption is an implication of a well-known principle of optimal capital taxation. In a world with perfect capital mobility, a constrained optimal tax system involves the ‘residence principle’ — governments should tax the investment income of residents but place zero taxes on non-resident investment income. Frenkel et al. (1991, p. 24) claim that the residence principle is the basis for individual capital taxation in most western countries.

Another optimal taxation principle implies that as long as foreign and domestic investment opportunities are perfect substitutes, the tax rates on residents’ income from foreign and domestic investments should be equal. However, the application of these principles assumes that the foreign sourced income of resident investors can be monitored and taxed appropriately. In many countries, including Russia, the absence of bilateral tax agreements and efficient information systems makes this assumption questionable. Assumption (3) simply reflects the advantage that tax authorities have in monitoring economic activity within their own borders. Thus (1) in conjunction with (2) and (3) suggests the possibility that some tax liabilities can be evaded by investing abroad.

The progressive tax assumption (4) is a characteristic of many modern economies (although it may not apply to certain types of capital income — in the US for example, capital gains are taxed at a flat rate). Assumption (5) is also a bow to realism. Foreign investment requires the expenditure of brokerage fees, some foreign asset management fees, perhaps research into risk and return possibilities, and perhaps even physical presence, all of which are typically independent of the size of the investment. Assumptions (7) and (8) reflect the technology of detecting and punishing the practice of sheltering investment income abroad. For political reasons, there are typically limits on the severity of the punishment that can be meted out. Furthermore, since the assets themselves

1 For a discussion of this principle, see Frenkel et al. (1991) and Razin and Sadka (1989).

2 Razin and Sadka (1989).
may be abroad, it may be that only domestically held assets can be seized. Although constant vigilance can decrease the incidence of capital flight, it requires the expenditure of real resources and also comes at a cost to the free flow of legitimate capital.

These assumptions yield important implications for the construction of an optimal penalty scheme for capital flight. In this paper, we argue that penalty schemes should punish agents who transfer larger amounts proportionately more severely than those who transfer smaller amounts. Although this suggestion may seem obvious, the argument is more complicated than first meets the eye. Two common reasons for a progressive punishment scheme become less persuasive upon closer examination. One argument rests on the observation that investments of all forms, and most particularly foreign investments, suffer from distortions caused by incomplete information. (See, for example, Chen and Khan, 1997; or Razin and Sadka, 1996). It is further argued that because foreign direct investment (FDI) involves closer control of investment and management than either foreign portfolio equity investment (FPEI) or foreign portfolio debt investment (FPDI), FDI is less subject to the costs imposed by the moral hazard or adverse selection that would otherwise result. One might then conclude that FDI will generate a higher return than either of these other forms of investment and that since FDI requires larger sums (since by definition, it requires the purchase of a larger share of a firm’s equity) then there is a greater incentive to invest larger amounts. In equilibrium, however, as long as these investments are otherwise perfect substitutes, large investors will invest completely in FDI either until the available supply is exhausted (an implausible outcome) or until the net rate of returns for all three types of investments, FDI, FPEI and FPDI are equalised.

A second argument for a progressive penalty system may lie in the notion that because absolute risk aversion is likely decreasing in wealth, investors who can afford larger transactions are also more willing to bear the risk of loss brought on by discovery of the activity. Although this intuition is correct, it does not imply that wealthier investors are proportionately more willing to bear risk of loss as their utility functions may reflect increasing relative risk aversion (see below).

Despite these counter arguments, we maintain that in the presence of assumptions listed above, there remain good reasons to establish a progressive punishment scheme for capital flight. The remainder of this paper investigates these reasons.

2. LONG HORIZONS

The combination of assumptions (1) through (3) suggests that the attractiveness of capital flight increases with the time horizon of the investment.
To see why this is so, note that the relative effectiveness of the tax authorities’
domestic activities implies that even if no taxes are paid on foreign capital
income while it is abroad, investors should expect to pay taxes on this income
when (and if) it is repatriated. Of course, an investor might decide never to
repatriate his earnings; however, the only way the earnings can be utilised then
would be for the investor to emigrate. Underlying the notion of the ‘residence
principle’ is the presumption that changing residencies is costly if not impossible.
If it were not, then residents could change their location immediately to the
regime with the lowest tax obligations and domestic tax authorities would not be
able to claim taxes even from domestically held capital.

A consequence of this fact is the result that foreign investment can, at most,
defer tax obligations and not eliminate them entirely. The immediate implication
is that the value of this deferral is strictly increasing in the length of time it takes
place. A simple example suffices to show this fact. If an investor repatriated his
earnings on a year by year basis, then he would simply pay his domestic tax
obligations on these earnings each year. That is, he would enjoy no tax advantage
from investing abroad. On the other hand, if he were never to repatriate his
earnings, he would never pay any tax obligations. Obviously, this latter
alternative is never optimal; however, for investors with time preferences that
involve longer investment horizons, the attractiveness of deferring tax obligations
rises monotonically. Computations illustrate at a 10 per cent annual return and a
30 per cent marginal tax rate, that after ten years, the advantage of capital flight
over domestic investment is only about 5 per cent while the advantage rises to 26
per cent after 20 years.

Since the motivation for capital flight is to avoid tax obligations, if capital
income is subject to a progressive tax schedule, the relative advantages of
avoiding domestic taxes are greater for higher income investors. This relative
preference persists even if tax obligations are only deferred and not avoided
toically.

3. LARGER INVESTMENTS YIELD HIGHER RETURNS

The assumption that foreign capital transactions force the investor to incur
fixed investment costs implies that the rate of return on larger sum investments is
greater than the rate of return on smaller investments. A consequence is that the
relative preference of higher income investors is reinforced by the greater ability
they have to spread the fixed investment costs over a larger investment.

A second source of return advantage that is available for large investors may
lie in the difference in the portfolios available to them. Although we argued that
market equilibrium will equate the returns of FDI, FPEI and FPDI if they are
perfect substitutes, there may be reasons to doubt the substitutability of these
investment instruments. Recent literature has illustrated the important qualitative difference between portfolio investment (either equity or debt) and foreign direct investment which involves significantly greater corporate control (see Razin and Sadka, 1996; or Chen and Khan, 1997). FDI may not be a perfect substitute for FPI since management control may also lead to a qualitatively different distribution of returns. An investor seeking to diversify his portfolio may wish to include some FDI in order to take advantage of this difference in return behaviour. By its very definition, though, FDI requires large quantities of investments. Investors with large portfolios have a greater capacity to buy controlling interests in a larger number of firms and therefore can acquire a better basket of investment alternatives.

4. BROKERAGE FEES

In this section we discuss the implications of the existence of brokerage fees on people’s willingness to evade tax payments. We show that under some relatively weak assumptions, the existence of brokerage fees implies that the relative penalty should be an increasing function of the amount on which tax was not paid. Our analysis does not depend on the assumption that preferences are expected utility, nor will we assume that individuals are risk averse. Rather, we assume that they satisfy the following diversification assumption:

Let $X$ and $Y$ be two different random variables, and assume that the decision maker is indifferent between them. Then he strictly prefers $\frac{1}{2}X + \frac{1}{2}Y$ to both.

Risk aversion (in the sense of aversion to mean preserving increases in risk) does not imply diversification. That is, there are preferences that are risk averse but do not satisfy this assumption (see Dekel, 1989). However, if preferences are expected utility then risk aversion implies diversification.

Consider a decision maker with wealth level $w$ who is willing to invest a certain amount of money $A$ abroad, $0 \leq A \leq w$. He is facing two possible states of the world.

- $E$: The authorities find out about his foreign investments. In this case he pays a penalty $\pi(A)$. Assume that the authorities find out about capital flight before it is invested abroad.
- $\neg E$ (‘not $E$’): The authorities do not find out about it.

Assume that the rate of return on foreign investments is $r$, and brokerage fees are $k$. For simplicity, we assume that the local rate of return is 0. Therefore, if event $\neg E$ happens, his final wealth level is $w$ if $A = 0$ (no foreign investment), or,

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3 In general, quasi concave over distribution functions.
if \( A > 0 \), his final wealth level is:
\[
    w - A - k + A(1 + r) = w - k + Ar.
\]

On the other hand, if event \( E \) happens, his final wealth level is:
\[
    w = \pi(A).
\]

If the probability of \( E \) is \( p_E \), then the decision maker is facing the lottery:
\[
    (w - \pi(A), p_E; w - k + Ar, 1 - p_E).
\]

This opportunity set is depicted in Figure 1. We assume here that the penalty function is of the form:
\[
\pi(A) = \begin{cases} 
\alpha_1 A & A \leq A^* \\
\alpha_2 A & A > A^* 
\end{cases} \tag{1}
\]

where \( \alpha_1 < \alpha_2 \). According to this schedule, large transactions are liable to higher proportional penalties than small transactions.\(^4\) Indifference curves in this picture are quasi concave because of the diversification aversion assumption. In fact, this assumption can be simply stated as quasi concavity of preferences over random variables.

Let \( w_h \) and \( w_l \) represent high and low income levels, respectively. Point \( a \) in Figure 1 represents the high wealth level without foreign investment. The size of the chord \( ab \) is \( k \), the brokerage fees. The line \( bf \) represents the budget line with the low penalty rate \( \alpha_1 \), while the line \( be \) represents the budget line with the high penalty rate \( \alpha_2 \). The lines \( abcde \) represent the actual budget line for the high income person. In this picture, he is indifferent between \( a \) and \( c \), therefore \( c \) represents the highest transaction level for which the low penalty \( \alpha_1 \) should still apply. (Formally, the horizontal difference between \( b \) and \( c \) is \( A^* \)). It is clear from this picture that with only the low penalty level \( \alpha_1 \) the high-income (\( w_h \)) decision maker will prefer to invest abroad. His optimal point then will be on the line \( cf \) above the indifference curve through \( c \). However, this penalty rate is sufficient to deter the low income person (whose initial wealth level without foreign investment, \( w_l \), is depicted by point \( g \)). The combined schedule of equation (1) above will prevent foreign investments by the high income person as well.

The intuition behind this result is clear. Like fixed costs in the theory of firms, brokerage fees will first eliminate small investors (or small firms) from the market. Bigger investors, who are not deterred by the brokerage fees, need a higher rate of penalty to be deterred.

\(^4\) We can also assume that \( \alpha_2 \) applies only to the marginal beyond \( A^* \).

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5. ORDERS OF RISK AVERSION

In this section we consider another possible justification for harsher proportional penalties on large transactions than on small ones. The argument is based on some recent developments in the theory of decision making under uncertainty. Some of the alternatives to expected utility theory permit different definitions of risk aversion, one of which will be employed below.

Suppose that the decision maker is facing the choice set of lotteries:

$$\{(w - \alpha A, p; w + rA, 1 - p)\}.$$  

We assume that the wealth level $w$, the penalty rate $\alpha$, the interest rate (or rate of return on foreign investments) $r$, and the probability $p$ of detection are given to the decision maker, and that his decision variable is the amount of foreign investment $A$, which is bound to be non-negative (we assume here that brokerage fees are zero). If the decision maker were an expected utility maximizer, then he would solve:

$$\max_A pu(w - \alpha A) + (1 - p)u(w + rA).$$

It is easy to verify that if the utility function $u$ is concave (that is, the decision maker is risk averse), then the optimal level of $A$ is the one that solves the equation:
\[
\frac{\alpha u'(w - \alpha A)}{ru'(w + rA)} = \frac{1 - p}{p}
\]

provided \(\alpha/r < (1 - p)/p\). But if:

\[
\frac{\alpha}{r} \geq \frac{1 - p}{p}
\]

then the optimal level of \(A\) is zero (that is, no investment). The government has thus two ways in which it can control the level of foreign investment:

1. The penalty rate \(\alpha\).
2. The probability of finding out about these investments, \(p\).

Since the condition in equation (2) is independent of the wealth level, it is clear that the same combination of \(p\) and \(\alpha\) will prevent capital flight for poor and for rich people.  

This analysis holds only under the assumption that the government wants to reduce capital flight to zero. As argued above, for political and efficiency reasons, this is probably not the case. However, if these parameters are set so that \(\alpha/r < (1 - p)/p\), then under the standard assumption that absolute risk aversion is decreasing with wealth we will get that \(A_h > A_i\). Here \(A_i\) is the foreign investment of a decision maker with wealth level \(w_i\), \(i = h, 1\). If we assume in addition that relative risk aversion is increasing with wealth, then \(A_h/w_h < A_i/w_i\). In other words, a rich decision maker will invest abroad more than a poor one, but proportionally less.

This analysis is valid under the assumption of risk aversion. Although there is plenty of evidence that almost everyone is risk averse with respect to small risks (small in terms of possible gains and losses), it is less clear that people are as (or even more) risk averse with respect to large lotteries. For example, many decision makers would like to buy full insurance even at the presence of marginal loading. That is, they would be willing to insure the last dollar at risk at a price that is higher than its expected loss. At the same time, these people also buy lottery tickets, or are willing to let some large risks, like earthquakes, remain uninsured. Such preferences are inconsistent with the expected utility hypothesis, as in this theory, risk aversion for small lotteries implies risk aversion for large lotteries, as the first implies concave utility functions. Things may be different if non expected utility is used.

One of the most useful of the recent alternatives to expected utility is known as the rank dependent model (RD) (see for example Weymark, 1981; or Quiggin,
1982). According to this theory, the value of the lottery $L$ with the cumulative distribution function $F$ is:

$$V(L) = \int u(x) \, dg(F(x))$$

for some increasing utility function $u$, and a probability transformation function $g : [0, 1] \rightarrow [0, 1]$ that is strictly increasing, continuous, and onto. For two outcome lotteries of the form $(x, p; y, 1 - p)$, equation (3) is reduced to:

$$V(x, p; y, 1 - p) = \begin{cases} 
  u(x)g(p) + u(y)[1 - g(p)] & x \leq y \\
  u(x)[1 - g(1 - p)] + u(y)g(1 - p) & x \geq y
\end{cases}$$

In this theory, a necessary and sufficient condition for risk aversion (in the sense of aversion to mean preserving spreads) is that both $u$ and $g$ are concave functions (see Chew, Karni and Safra, 1987). If $g$ is strictly concave, then preferences are risk averse with respect to small risks, regardless of the shape of the utility function $u$ (see Segal and Spivak, 1990). The effect of the concavity or convexity of $u$ appears in the shapes of indifference curves in the two areas above and below the certainty line (where the order of the outcomes is fixed). Figure 2 depicts the case where $g$ is concave and $u$ is convex.

**FIGURE 2**

Rank Dependent Preferences with Convex $u$ and Concave $g
If both the high and low income decision makers face the same penalty rate (and the same rate of return on foreign investments), then high income investors will move from point \( a \) to \( b \), while low income people will remain at point \( f \). However, if the penalty is higher for large transactions than for small transactions, then following Figure 1, the budget line for the high income person will be \( acde \). His best point now is \( a \), that is, no foreign investment.

To be sure, this analysis (and the one of the previous section) does not require higher relative penalties for large transactions, as the Government can impose the same high penalties at all levels of transactions. However, if it is indeed the case that higher penalties are also more costly, then the efficient solution is to impose the lowest possible penalties that will achieve our social aim.

REFERENCES


