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Capital movements and the political economy of trade policy

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Abstract

We develop a political economy model of trade policy using a sector specific factor model with international capital mobility, looking for the relationship between protection and the composition of foreign capital. As foreign direct investment is remunerated at the marginal productivity of capital, an increase of the tariff raises its remuneration, increasing also the transfer of resources abroad. This is an additional cost of the tariff in terms of welfare. As external debt is remunerated at a given international interest rate, the additional cost of protection in terms of welfare does not appear. Then the equilibrium tariff with external debt is higher than with foreign direct investment. We present evidence for a panel of developing countries observed between 1970 and 1998 giving support to the main implication of the model. We find a significant effect of the composition of foreign capital on trade policy, implying that countries which have relatively more foreign direct investment than external debt also have less protection.

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1 Introduction

This paper begins with a question: why do we observe in some developing countries significant reductions in the level of protection? The question has been addressed in issues of trade liberalization, but the level of protection can be endogenously determined in an economy and then we can ask why the groups interested in protection change their position. There is also another contemporary issue: capital flows.

Capital flows have had an important increase since the nineties, mainly in developing countries. Figure 1 shows the evolution of net private capital flows\(^1\) in these countries. At the same time, we also observe in the nineties an increase in openness of countries. More openness can be associated with less protection, or less tariffs\(^2\). For some developing countries, Figure 2 presents a comparison of import duties over imports for 1984-85 and 1994-95. Using this proxy for tariffs, a reduction of protection in the nineties appears clearly when compared to the eighties.

[Figure 1 and Figure 2 to insert here]

It seems there is an association between capital flows and protection. But Figure 1 shows that at the end of the seventies and beginning of the eighties, when protection were high, there was important flows of capitals to developing countries. Looking at the composition of these flows will give us more information. Figure 3 presents the composition of net capital flows in developing countries, in 1980-82 and in 1995-96. Each type of capital is presented as a percentage of net total capital flows. Two different patterns appear. The period 1980-82 shows the importance of Bank and trade-related lending, accounting for 78% of the total, followed by Foreign direct investment\(^3\), with 17%. Portfolio bonds accounted for 5% and Portfolio equity was inexpressive. The picture that appears in the period 1995-96 is very different. The most important type of capital is Foreign direct investment, with 49% of the total, followed by Portfolio bonds and Portfolio equity, accounting for 19% and 18% respectively. Bank and trade-related lending accounted for 14%.

\(^1\)We are using data from the World Development Indicators, World Bank (2001). Net private capital consist of: foreign direct investment; bank and trade related lending; portfolio bonds; portfolio equity. Foreign direct investment is net inflows to acquire a lasting interest (10% or more of voting stock) in enterprises operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital and short-term capital.

\(^2\)For a discussion of proxies of openness see Rodriguez and Rodrik (2001).

\(^3\)See the definition of foreign direct investment presented in the first note.
Taking into account these Figures, it seems there is an association between times of more or less protected economies and the type of capital flows. In fact, we could try to associate the eighties with more protection and the presence of relatively more important flows of external debt and the nineties with less protection and the presence of relatively more important flows of foreign direct investment.

We would like to analyze if there is any kind of relation between endogenous protection and the composition of foreign capital.

The medium and long term international flows of capital had different forms over time. As we have seen, the entry of capital in developing countries during the nineties is characterized by equities and foreign direct investment. In the seventies the capital flows assumed mainly the form of borrowing intermediated by private banks, originating high levels of external debt. For our purposes, we want to differentiate two kinds of capital flows. On the one hand, foreign resources which are remunerated by the rental rate of the capital (foreign direct investment and equities). On the other hand, foreign resources which are remunerated by the international interest rate or in relation with it, like external debt.

First we illustrate the main idea of the paper introducing a given amount of equities or foreign direct investment in the equilibrium tariff model developed by Grossman and Helpman (1994). There is a tariff on imports and capital is used in the protected sector. For a given amount of foreign direct investment, an increase of the tariff raises the rental rate of capital, but also augments the cost of the tariff in terms of welfare as it increases the transfer of resources abroad. This is an additional cost of welfare that we must consider with the distortions in consumption and production originated by the tariff. We can show that, for a given level of capital, the equilibrium tariff determined with the presence of a lobby is lower than in an economy without capital mobility.

Next, we use a two-stage model, comparing the optimal tariff with external debt and with foreign direct investment. In the first stage, the firms of a small open economy take as given international prices of goods and the international interest rate. These firms then decide on the level of investment, which corresponds to the inflows of foreign capital. It is assumed that the firms correctly anticipate the tariff, which will be set in the second stage following Grossman and Helpman (1994). In the second stage, the government takes the capital as given. Considering a dynamically consistent policy, we will demonstrate that the tariff will be higher with external debt than with foreign direct investment. The remuneration of foreign direct investment increases with the tariff and thus also leads to an increase of the transfer of resources abroad to remunerate foreign investment. Since the external debt is remunerated at a given international interest rate, we do not have this additional welfare cost in this case. It follows
that the welfare cost of the tariff is higher with foreign direct investment than with external debt, leading also to an equilibrium tariff higher with external debt than with foreign direct investment.

The paper also presents evidence supporting its main implication. Using a panel of 33 developing countries observed between 1970 and 1998 (in non-overlapping periods of five years and a final period of four years), we regress trade policy on the composition of foreign capital (stock of foreign direct investment over the stock of private external debt). The coefficient of interest appears significantly negative in the different specifications.

Trying to link protection and foreign capital, we will consider two literatures: the literature on the political economy of trade policy\(^4\) and the literature on trade in goods and factors. On the one hand, and following Helpman (1997), we can represent the political side by the majority voting approach, as in Mayer (1984), or by the influence-driven contributions approach, as in Grossman and Helpman (1994). As referred to above, will use this last model to take into account the presence of a lobby in the economy. Considering only one organized interest group, the implications of the contributions approach are close to those of the political support function approach developed in Hillman (1989).

On the other hand, we use a specific factor model with two sectors and international capital mobility. Examples of this model are Brecher and Findlay (1983) and Srinivasan (1983). Unlike the Heckscher-Ohlin model developed in Mundell (1957) and also discussed in Brecher and Diaz-Alejandro (1977), we have trade in both goods and factors in equilibrium.

Grossman and Helpman (1996) introduce multinational firms in their political economy model of trade policy, but they are analyzing the decision by the multinational firm of exporting to a country or installing a new firm in this same country. Based on the Grossman and Helpman (1994) model, Olarreaga (1999) analyzes foreign direct investment and its effects on protection. This author also introduces a lobby for foreign direct investment\(^5\). Notwithstanding, these papers do not consider the presence of different kinds of foreign capital and its effects on protection as does our paper.

The structure of the paper is as follows. Section 2 describes the elements of the model and gives an illustration of the main mechanism of the model, for an exogenous level of foreign direct investment. In Section 3, we present the two-stage model with endogenous capital flows. We show how the tariff with external debt is higher than with foreign direct investment. We also introduce a foreign capital lobby in the analysis and we discuss the composition of foreign capital.

\(^4\)See the surveys by Helpman (1997), Hillman (1989) and Rodrik (1995).

\(^5\)Another line of research has been analyzing the effects of a foreign lobby on protection. For the study of the presence of a lobby by foreign exporters see Gawande, Krishna and Robbins (2004) and Kee, Olarreaga and Silva (2005).
Section 4 develops an empirical analysis of the main implication of the model. Finally, in Section 5 we present some conclusions.

2 Basic model

2.1 Consumption

Each consumer has a quasi-linear utility function \( U = x_X + u_M(x_M) \), where \( x_X \) represents consumption of the exportable good and \( x_M \) represents consumption of the importable good. There is a continuum of consumers, and the size of the population equals one. We assume a small open economy, which faces prices \( p_X^* = p_M^* = 1 \). The relative price of importables over exportables is \( p \) and the domestic price of importables is \( p_M = 1 + \tau \). We assume \( \tau \) is an ad valorem tariff rate. We are restricting our attention only to the case of tariffs, given their importance in developing countries. With this structure and a given income \( E \), the demand functions are given by \( x_M = x_M(p) \) and \( x_X = x_X(p, E) \), for importables and exportables respectively. If we substitute these demand functions into the quasi linear utility function, the expression for the indirect utility function is given by

\[
V(p, E) = E + [u_M(x_M(p)) - px_M(p)] = E + S_M(p). \]

\( S_M(p) \) is the consumer surplus from the importable good. This function also corresponds to the aggregate indirect utility function, since the size of the population equals one.

2.2 Production

The production side is characterized by a sector specific factor model and by an incompletely specialized production. One sector produces the exportable good, \( X \), only with labor, \( L_X \), and using a production function with constant returns to scale: \( Y_X = L_X \). The other sector produces the importable good, with a production function with constant returns to scale: \( Y_M = Y_M(L_M, K) \). Its specific factor is capital, \( K \), and \( L_M \) is the demand of labor in this sector. The demand for labor of each sector equals the fixed supply of labor: \( L = L_X + L_M \).

From the conditions of profit maximization, we have: \( w = \frac{\partial Y_X}{\partial L_X} = \frac{\partial Y_M}{\partial L_M} = 1 \) and \( R = p \frac{\partial Y_M}{\partial K} \). These expressions represent, respectively: the equalization of wage in units of the exportable good, \( w \), to the marginal productivity of labor in the exportable sector, \( \frac{\partial Y_X}{\partial L_X} \), and to the marginal productivity of labor in the importable sector valued in units of the exportable good, \( \frac{\partial Y_M}{\partial L_M} \). The second equality represents the equalization of the rental rate of capital, \( R \), to the marginal productivity of capital valued in units of the exportable good, \( p \frac{\partial Y_M}{\partial K} \).

We will consider the case where the small open economy is importing the named importable good, which uses capital as a specific factor. In the context of a developing country needing capital and when allowing for capital mobility, this is an economy that will also be importing capital. The possibility of having
imports of both goods and factors is a distinct feature of the sector specific factor model. Sector specific factor models for a small open economy are also used by Brecher and Findlay (1983), Neary and Ruane (1988) and Srinivasan (1983). Notwithstanding, these assumptions are feasible in a two-country model of international trade and capital mobility, as in Neary (1995), implying international factor price equalization.

In a Heckscher-Ohlin model, there is substitution between trade in goods and trade in factors, as in the classical analysis of Mundell (1957). Capital mobility in the presence of a tariff leads to the elimination of trade in goods. Then capital continues to flow in until equalization of factor returns, leading also to price equalization. That substitution between trade in goods and in factors also appears in our model, but not in this extreme form.

We are implicitly assuming that there is a given amount of foreign capital. This assumption can be related to the presence of a quota for imports of capital or to the presence of capital controls. Note that we are also assuming that capital is flowing in the country, because the remuneration of capital in the country without the presence of foreign capital is higher than the international interest rate. In the next section, the inflows of capital will be endogenous.

2.3 The objective function of the government and the lobby

Following Grossman and Helpman (1994), we assume that the government has the following welfare function:

\[ G = C(p) + aW(p). \]  

It weighs the aggregate welfare, \( W(p) \), and the contributions of the lobby, \( C(p) \), when fixing the tariff rate. The larger \( a \) is, the greater the weight given to aggregate welfare, compared to the contributions of the lobby. Then \( a \) represents the marginal rate of substitution between aggregate welfare and contributions.

The lobby is formed by the owners of the capital in the importable sector, which uses capital as a specific factor. There is also a tariff in this sector. By assumption, the national and foreign owners of the capital are participating in the lobby\(^6\).

Then the lobby will be represented by the reward to this specific capital: \( \Pi(p) \), which is a restricted profit function. The objective of the lobby is to maximize the expression \( \Pi(p) - C(p) \)\(^7\).

\(^6\)In Grossman and Helpman (1996) only national owners of capital are participating in the lobby. We will not analyze the issue of lobbying by labor, addressed in Grossman and Helpman (1996) and Rama and Tabellini (1998).

\(^7\)We are assuming that the owners of the capital are a small fraction of the population, so that \( \alpha_i = 0 \) in a more general expression of the welfare of the lobby: \( \Pi + \alpha_i [(p - 1)M + SM] \).
The lobby chooses its contribution schedule for the tariff. In doing so the lobby knows that if it gives no contributions, the government will obtain:

$$\bar{W} = \max W(p).$$  (2)

It follows that the contributions must at least compensate the government for the costs in terms of welfare caused by the tariff:

$$C(p) \geq a\bar{W} - aW(p).$$  (3)

Taking into account these conditions, the lobby is implicitly maximizing its objective function subject to a constraint given by equation (3), taken with equality.

The optimal tariff will be given by the maximization of the following equation:

$$P(p) = \Pi(p) + aW(p).$$  (4)

Equation (4) looks like the Political Support Function as in Hillman (1982).8

2.3.1 The welfare effects of a tariff on the different groups in the economy

We obtain the optimal tariff by differentiating equation (4) and setting it equal to zero: $P_p(p) = 0$. $\Pi_p(p)$ and $W_p(p)$ give the welfare effects for each group.

The welfare effect of a tariff for the lobby is given by

$$\Pi_p(p) = Y_M,$$  (5)

$$\Pi_p(p) > 0.$$

As we referred to above, we assume in this section that $D$ is given, resulting from the imposition of a quota on the imports of capital or from capital controls that prevent free capital mobility.

The term on the right-hand side of equation (5) is given by the properties of the restricted profit function’s derivatives.

The lobby gains with an increase of the tariff rate. Note that $\Pi(p) = pY_M - wL_M = RK$. It follows that equation (5) can be replaced by

$$\Pi_p(p) = R_pK > 0.$$  (5')

The rate of return to capital increases with the tariff rate, $R_p > 0$, following the assumption that the protected sector uses capital as an input.

8See Helpman (1997) for a unified analysis of the different approaches to endogenous protection. For instance, the political support function, the majority voting approach of Mayer (1984) and the influence-driven contributions approach of Grossman and Helpman (1994).
The expression for the aggregate welfare effects of a tariff increase is given by

\[ W_p(p) = (p - 1)M_p - R_pD, \quad (6) \]

\[ W_p(p) < 0. \]

Equation (6) has two terms. The first term gives the consumption and supply effects of a positive tariff and is negative. It is known that \( M_p < 0 \), where \( M \) represents imports and \( M = x_M - y_M \). These effects are associated with the reduction in the consumer surplus and the lost of efficiency for using more resources in the importable sector, respectively. These are the costs that would appear without capital mobility. The second term is specific to our analysis: given a fixed amount of foreign capital, \( D \), an increase of the tariff rate raises the amount of resources used for payment of this capital, as the rate of return to capital increases with the tariff rate, \( R_p > 0 \).

Globally, the presence of foreign capital increases the negative effects of the tariff rate on aggregate welfare.

### 2.4 The equilibrium tariff

As referred to above, the equilibrium tariff rate is given by the maximization of equation (4):

\[ (p - 1) = \frac{\frac{1}{a}y_M - R_pD}{-M_p}. \quad (7) \]

The additional negative effect on aggregate welfare, represented by \( R_pD \), leads to a reduction of the equilibrium tariff rate, when comparing with the expression of Grossman and Helpman (1994). In fact, if there is no foreign capital, \( D = 0 \), and we return to the known formula of the equilibrium tariff rate.

Note that taking into account equation \((5')\), we can write equation (7) as

\[ (p - 1) = \frac{R_p}{a} \frac{(K - aD)}{-M_p}. \quad (7') \]

Under the assumption that \( K - aD > 0 \), it follows that the equilibrium tariff will always be positive.

**Proposition 1** For a given amount of capital in the economy, if a part of that capital takes the form of equities or foreign direct investment, then the equilibrium tariff rate decreases.

Depending on the values of the parameter \( a \), we can have an equilibrium tariff rate equal to zero. In this case, the presence of equities or foreign direct investment leads the economy to free trade in goods. The greater the value of \( a \)

\(^9\)See the derivation of equation (6) in the Appendix.
is, the greater the weight on aggregate welfare and the greater the possibility of reaching this result is.

We are now ready to analyze and compare the equilibrium tariff in two different situations. First foreign capital will take the form of external debt. Next, foreign capital will take the form of foreign direct investment.

3 The equilibrium tariff in the presence of external debt or foreign direct investment

With a two-stage model, we will analyze foreign capital as endogenous inflows, for a given international interest rate. For the sake of simplicity, in subsections 3.2 and 3.3 we suppose that only one type of foreign capital is available in international markets for the developing small open economy. On the one hand, we will consider foreign capital as external debt. On the other hand, equity or foreign direct investment will be analyzed too. The conclusions on the equilibrium tariff with each kind of capital flows will not be the same. Finally, in subsection 3.4 we will discuss the case with both types of foreign capital.

As in the previous section, we assume that national and foreign owners of the capital are lobbying. Knowing that the capital, $K$, will be installed in stage $t = 2$ and so taken as given, we can have a problem of dynamic inconsistency with the decision of the optimal tariff. We assume that capitalists correctly anticipate the relative price in stage two when making their decisions in stage one on how much to invest. It follows that we will look for dynamically consistent solutions of the equilibrium tariff in the case where there is external debt and where there is equity or foreign direct investment\textsuperscript{10}. Notwithstanding, we assume in our analysis that there is no default on the principal (external debt, equity or foreign direct investment) and its remuneration\textsuperscript{11}.

3.1 Decisions in each stage

The decisions in each stage are specified as follows\textsuperscript{12}.

Decision at $t = 1$.

In the first stage, $t = 1$, there is a given amount of capital $K_0$, small enough for the country to be always a capital importer, whatever the tariff. Investment is represented by $I$. Capital in the second stage corresponds to $K = K_0 + I$.

\textsuperscript{10}For a two-period model in a closed economy, see Fischer (1980). This paper is related to Kydland and Prescott (1977). For a political economy model, see Saint-Paul and Verdier (1997).

\textsuperscript{11}For a discussion of the issues of default on external debt see Obstfeld and Rogoff (1996).

\textsuperscript{12}For an analysis with the same assumptions for timing see Maggi and Rodriguez-Clare (1998) and Tirole (2003).
Investment will be related to foreign capital. Depreciation is assumed to be equal to one, $\delta = 1$, and takes place at the end of the second stage. There is no initial external debt, $D_0 = 0$. Assuming that there is consumption only in the second stage, the decision in the first stage is concerned with the level of investment:

$$I = (K - K_0) = D.$$  \hspace{1cm} (8)

Given the assumptions, firms in the importable sector decide on the level of investment. Maximization of the present value of profits of firms is given by:

$$\max_{K, L_M} \left[ - (K - K_0) + \frac{\Pi(p, K) - cK}{1 + r^*} \right].$$  \hspace{1cm} (9)

In equation (9), $\Pi(p, K)$ is a restricted profit function. As in Section 2, the production functions for exportables and importables are given by $Y_X = L_X$ and $Y_M = F(L_M, K)$, and $w = 1$.

The international interest rate is represented by $r^*$. The contributions paid per unit of capital are equal to $c = \frac{C(p, K)}{K}$. These contributions are given for the small firms and then they behave nonstrategically.

The decision on investment will depend on the expectation of the contributions, $c$, which depends on the expectation of the relative price, $p$. Thus the decision on investment depends on how the tariff is determined in the second stage, for a given level of capital.

The first order condition for capital results in the optimal investment rule:

$$\frac{pF_K}{R} - c = 1 + r^*,$$  \hspace{1cm} (10)

where $F_K$ represents the marginal productivity of capital. Capital flows to the country until the equality of equation (10) is obtained, that is until all profitable opportunities of investment are exhausted.

Decision at $t = 2$.

In the second stage, $t = 2$, the relative price, $p = 1 + \tau$, depends on an endogenously determined tariff. There is a lobby process in the second stage, as in the previous section. As the economy ends at stage 2, foreign capital must be paid and there will be no more capital as we assumed full depreciation. For the case of external debt, the budget constraint that appears in the second stage is given by:

$$x_X + px_M = Y_X + pY_M - (1 + r^*)D + (p - 1)M.$$  

The government sets the optimal tariff in the second stage taking into account that capital, $K$, is given. Using the influence-driven contributions approach of Grossman and Helpman (1994), the optimal tariff comes from $\max_p \Pi(p) + aW(p)$.  

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Note that we now have, in the expression of welfare, interest plus principal associated with foreign capital, \((1 + r^*)D\), as the economy ends on stage two. This expression with the international interest rate corresponds to the case of external debt, as we will discuss below.

### 3.2 Equilibrium tariff and external debt

External debt is remunerated at a given international interest rate, \(r^*\), not depending on the marginal productivity of capital as is the case for foreign direct investment. Then the remuneration of external debt does not depend on the tariff.

In stage two, \(t = 2\), the government chooses the tariff, knowing that capital, \(K\), is given and that the international interest rate, \(r^*\), does not depend on the tariff. The optimal tariff comes from:

\[
\max_p \Pi(p) + aW(p) \tag{11}
\]

where

\[
\Pi(p) = pY_M - wL_M, \tag{12}
\]

\[
W(p) = [Y_X + pY_M - (1 + r^*)D + (p - 1)M] + S_M(p). \tag{13}
\]

The expression for the equilibrium tariff for each given level of capital, \(K\), is now:

\[
(p - 1) = \frac{\frac{1}{a}Y_M}{-M_p}. \tag{14}
\]

We can understand this expression more clearly by going back to equation (7), as now \(R_p = r_p^* = 0\). The effects of the tariff on aggregate welfare are similar to the case where there is no capital mobility. In this last case, the maximization of aggregate welfare would lead to free trade. When taking the lobby into account, there will always be a positive tariff. Note that equation (14) gives a relationship between the tariff and the amount of capital in the economy.

In stage one, \(t = 1\), the decision of firms about the level of investment depends on the expectations of the relative price \(p\), as stated in equation (10). Then firms correctly anticipate the relative price and the contribution paid per unit of capital in stage two, when making their decisions on how much to invest in stage one.

We can solve the system of equations (10) and (14) for the equilibrium tariff and for the equilibrium capital level. We will assume that an interior solution holds for this problem. Acknowledging the equilibrium tariff, the equilibrium

\[\text{Given the focus of our analysis, we rule out the possibility of arising multiplicity of equilibria with external debt. Equation (14) is an increasing function of capital, as in Grossman and Helpman (1994). The no arbitrage condition, equation (10), also has a positive relationship between the tariff and the capital level. Grossman and Helpman (1996) and Maggi and Rodriguez-Clare (1998) analyze situations of multiplicity of equilibria in political economy models of trade policy.}\]
level of external debt will be found in equation (10).

3.3 Equilibrium tariff, foreign direct investment and foreign capital lobby

In this subsection, we analyze the equilibrium tariff in the presence of foreign direct investment, without and with a specific lobby for foreign direct investment.

3.3.1 Equilibrium tariff and foreign direct investment

As stated previously, foreign direct investment is assumed to be remunerated at the marginal productivity of capital and then its remuneration depends on the tariff chosen by the government. For each level of capital, the optimal tariff comes from:

\[
\max_p \Pi(p) + aW(p)
\]  

(15)

where

\[
\Pi(p) = pY_M - wL_M, \\
W(p) = [Y_X + pY_M - RD + (p - 1)M] + S_M(p).
\]  

(16)

(17)

The government and capitalists know that the remuneration of capital can change with the tariff, for a given amount of capital. Notwithstanding, with a dynamically consistent policy the amount of capital in the economy and the chosen tariff lead to \( R - c = 1 + r^* \), as stated in equation (10).

Given the remuneration of equity or foreign direct investment, in the expression for aggregate welfare in stage two we have now \( RD \) instead of \( (1 + r^*)D \). This last expression appeared in the case with external debt.

In stage two, \( t = 2 \), the government chooses the tariff, knowing that capital, \( K \), is given and that the remuneration of foreign direct investment depends on the tariff. The expression for the equilibrium tariff for each given level of capital, \( K \), is

\[
(p - 1) = \frac{1}{a} \frac{Y_M - R_D}{M_p}.
\]  

(18)

This is like equation (7), where there was a given amount of equity owned by foreigners or foreign direct investment. The new term is the same as before: as the remuneration of foreign direct investment depends positively on the tariff, there is another welfare cost associated with the tariff, not related to the distortion in production and consumption. Maximizing the aggregate welfare would lead to a negative tariff. Taking into account the interest of the lobby, the expression for the equilibrium tariff gives, for each level of capital, a smaller tariff than in the case of external debt. Remembering equation (7), there is a positive tariff using the restriction \( K - aD > 0 \).
In stage one, \( t = 1 \), when firms decide on how much to invest following equation (10), they will correctly anticipate the optimum tariff that the government will choose in stage two.

We assume that an interior solution holds. The equilibrium tariff with foreign direct investment is given by the solution to equations (10) and (18).

Comparing now the two cases for each level of capital, the tariff will be higher in equation (14) than in equation (18). It follows that the tariff will be higher in the case of external debt than in the case of foreign direct investment\(^{14}\).

As the equilibrium tariff also depends on the no arbitrage condition, it is not clear that the equilibrium tariff with foreign direct investment will be smaller than with external debt. For the case of foreign direct investment, it will be of interest to know under what conditions the tariff will be decreasing as capital increases, because in this case the equilibrium tariff will always be smaller than with external debt.

Under the conditions of the analysis, where \( w = 1 \) and then \( R \) appears only as a function of \( p \), it follows that:

\[
\frac{dp}{dK} = \frac{1}{-P_{pp}} \left[ \left( \frac{1}{a} - 1 \right) R_p + (p - 1) M_{pK} \right]
\]

From equation (4), we know that \( P_p = 0 \) and that \( P_{pp} < 0 \), as we are looking for a maximum. Notice that writing \( P_p dp + P_{pK} dK = 0 \), we obtain \( \frac{dp}{dK} = \frac{P_{pK}}{P_{pp}} \). The expression in square brackets of equation (19) corresponds to \( P_{pK} \). As \( M_{pK} = -Y_{pK} < 0 \), it follows that the sign of equation (19) only depends on the sign of \( \left( \frac{1}{a} - 1 \right) \).

**Proposition 2** With foreign direct investment, the tariff will be decreasing with capital if \( a > 1 \). Then, the equilibrium tariff is higher with external debt than with foreign direct investment.

We would now like to make some comments on the size of \( a \) and on the sign of equation (19). On the one hand, empirical studies of Grossman and Helpman (1994) model tried to estimate the parameter \( a \) and found values near a hundred, as Goldberg and Maggi (1999) and Gawande et al. (2004). The former only consider domestic lobbies, while the latter also consider a foreign lobby. Trying to deal more directly with this issue and taking into account a foreign lobby, Kee et al. (2005) arrive at values between two and six. On the other hand, it is possible to establish technological conditions under which equation (19) is

\(^{14}\)With a specification of the model with capital and lobby in the export sector, instead of a tariff one would have an export subsidy. This subsidy would be higher with external debt than with foreign direct investment. In this case, our results about openness might be sensible to the specification of the model. Notwithstanding, the presence of tariffs are important for developing countries.
decreasing on capital. Using a sector specific factor model, Olarreaga (1999) shows that equation (19) has a negative sign if the elasticity of substitution between labour and capital in the import-competing sector is smaller than the share of labour payments in total revenue of the same sector.

3.3.2 Equilibrium tariff and foreign capital lobby

Instead of considering that all capital is participating in a lobby, as developed above, now we introduce a lobby for foreign direct investment. Notice that a part of foreign direct investment may take the form of greenfield investment, as opposed to an equity participation of more than 10% of the capital of national firms, following the definition of the International Monetary Fund. With this form of foreign capital, it seems relevant to consider a specific lobby for foreign capital. We analyze the new objective function of the government and its implications for the equilibrium tariff.

The objective function of the government is now:

\[ C^N + a^F C^F + a [Y_X + pY_M - RD + (p - 1)M + S_M(p)] \]

where \( C^i \) represents the contributions of the lobby \( i \) (national capital, \( N \), and foreign capital, \( F \)) and \( a^F \) gives the weight of contributions of foreign capital relative to contributions of national capital. The objective function of the lobbies is \( V^i = \Pi^i - C^i \), one for national capital and another for foreign capital. Following Grossman and Helpman (1994), the lobbies face the government with "truthful" contribution functions: \( \Pi^i_p = C^i_p \) in the neighborhood of the equilibrium. From equation (5'), \( \Pi^i_p = R_p K_i^i \). Taking into account the contribution functions and that the equilibrium tariff is also maximizing the objective function of the government, we have:

\[ R_p K^N + a^F R_p K^F + a [(p - 1)M_p - R_p K^F] = 0. \]

Taking into account equations (5) and (5'), \( R_p K = Y_M \), the expression for the equilibrium tariff with a lobby for foreign capital and a given \( K = K^N + K^F \) is now

\[ (p - 1) = \frac{1}{a} Y_M - \left( \frac{a+1-a^F}{a} \right) R_p D \]

where \( D \) is equal to \( K^F \).

The effect of foreign capital on the tariff depends on \( a^F \), when comparing with external debt or foreign direct investment that does not have a specific lobby for foreign capital.

If \( a^F = 1 \), the expression of the equilibrium tariff is equal to equation (18). Both lobbies have the same weight, as in Grossman and Helpman (1994). This is like one lobby for all capital, because the lobby technology is the same.
If $a^F = 1 + a$, the expression of the equilibrium tariff is equal to equation (14). A lobby of foreign capital leads to a tariff level that is equal to the case of external debt and higher than the case of foreign direct investment without a specific lobby.

Only if $a^F > 1 + a$, the equilibrium tariff will be higher than the tariff with external debt. That is, the lobby of foreign capital needs to have an weight higher than the sum of weights of national contributions and welfare, $1 + a$.

Finally, if $a^F < 1$, the equilibrium tariff will be smaller than the tariff resulting from equation (18).

In the end, the weight given to the contributions of a foreign capital lobby and its effect on the equilibrium tariff will be an empirical issue.

### 3.4 On the composition of foreign capital

We have been considering two extreme situations. On the one hand, there was only availability of external debt in foreign markets. On the other hand, only equity or foreign direct investment were available. This way of presentation was chosen for clarity of the mechanisms at work in the two different situations. But we know that in reality there is always a composition of both types of foreign capital. Our model can accommodate this composition. In the following, we take into account together external debt and equity or foreign direct investment, for a given composition of both kinds of foreign capitals. There will only be one lobby.

Suppose $\gamma = \frac{FDI}{DEBT+FDI}$ and $D = DEBT + FDI$. If there is only equity or foreign direct investment, $\gamma = 1$. We have $\gamma = 0$ if there is only external debt.

Aggregate welfare appears as:

$$ W = W(p) = Y_X + pY_M - [\gamma RD + (1 - \gamma)(1 + r^r)D] + (p - 1)M + S_M(p). $$

The effect of a tariff change on aggregate welfare is now: $(p - 1)M - \gamma R_p D$.

The equilibrium tariff for a given amount of capital and a given composition of foreign capital is represented by:

$$(p - 1) = \frac{\frac{1}{2}Y_M - \gamma R_p D}{-M_p}. $$

This equation corresponds to equation (18), if there is only equity or foreign direct investment and thus $\gamma = 1$. Increasing the presence of external debt in the composition of foreign capital (decreasing $\gamma$) leads to an increase in protection:

$$ \frac{dp}{d\gamma} < 0. \quad (20) $$

One arrives at the result expressed in equation (20) taking also into account the details associated with equation (19). Writing $P_{pp}dp + P_{p\gamma}d\gamma = 0$, we obtain
\[
\frac{dp}{d\gamma} = -\frac{p_{\gamma}}{p_{\gamma}}. \text{ Knowing that } P_{\gamma} = -aR_pD < 0, \text{ it follows that the effect of } \gamma \text{ on the tariff rate is negative.}
\]

This expression shows that a change in the international availability of the type of foreign capital may change the equilibrium tariff, for each level of capital and foreign capital. Given the optimal investment rule, the optimal tariff will change in the same way. This is another way of saying that relatively more foreign direct investment leads to less protection; and that relatively more external debt leads to more protection.

The main implication of the model, which we want to analyze empirically in the next Section, is related to Proposition 2 and equation (20). That is, countries which have relatively more foreign direct investment than external debt will also have less protection. Notice that we will need to rely on the exogenous component of the composition of foreign capital, as there can be endogeneity between this composition of foreign capital and protection\(^{15}\).

In the next section, we will confront the main prediction of the model with data from a panel of developing countries.

4 Composition of foreign capital and trade policy: evidence

In this section we develop an empirical analysis of the main prediction of the model. After describing the data, we present results from panel regressions of trade policy on the composition of foreign capital. These regressions provide evidence for the theoretical prediction that countries which have relatively more foreign direct investment than external debt will also have less protection.

4.1 Data

In the empirical analysis we use data for 33 developing countries\(^{16}\) during the period 1970-1998\(^{17}\). For each country there is at most five non-overlapping five year average periods (1970 to 1974, ..., and 1990 to 1994) and a four year average period (1995 to 1998). In the following, we describe the measure of

\(^{15}\)We would like to point out that an important issue is how the composition of foreign capital is determined in an economy. As referred to above, in this paper we assume it as given. The choice of the composition of foreign capital appears as an avenue for future research.

\(^{16}\)The countries in the sample are: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, Egypt, El Salvador, Guatemala, India, Indonesia, Ivory Coast, Jamaica, Jordan, Korea, Malaysia, Mauritius, Mexico, Morocco, Pakistan, Paraguay, Peru, Philippines, Sri Lanka, Thailand, Trinidad and Tobago, Tunisia, Turkey, Uruguay, Venezuela, Zimbabwe.

\(^{17}\)The number of countries depends on the proxies used for the composition of foreign capital and trade policy.
trade policy and of the composition of foreign capital used in the regressions, as well as control variables. Table 1 and Table 2 present descriptive statistics and correlations between all variables. The variables are in logarithms, as they appear in this form in the regressions. Notice that the variable remoteness is in logarithmic form by construction, as specified below in its definition.

[Table 1 and Table 2 to insert here]

**Dependent variable** As a measure of trade policy we use duty imports, which is defined as import duties over imports, available during the period considered with gaps. The source of our measure is the World Development Indicators, World Bank. The data we use are available from Rose (2004)\(^{18}\). Since highly taxed imports tend not to be imported, this is a downward-biased measure of tariff rates. Another weakness of this measure appears when tariff and nontariff barriers are substitutes. A critical review of this as well as other proxies of trade policy is provided by Rodriguez and Rodrik (2001). Nevertheless, we believe that duty imports is the best proxy available for tariffs, as it is more in line with the model and also because of its availability over time.

**Composition of foreign capital** Our definition of composition of foreign capital is given by the stock of foreign direct investment (FDI) over the stock of private external debt (DEBT).

For FDI, we use the data set of Lane and Milesi-Ferretti (2001)\(^{19}\). This paper bases the construction of stocks adjusted for valuation issues on data of foreign direct investment flows\(^{20}\) and equity flows from the IMF, International Financial Statistics, and on data of initial FDI from the OECD. They use the definition of foreign direct investment referred to above and correct the data for exchange rate variations.

Lane and Milesi-Ferretti (2001) have data for the stock of total external debt of developing countries from the IMF and the OECD. The former is based on a debtor-reporting system, while the later is based on a creditor-reporting system. These data consider total external debt, including short, long, private and public debt. The presence of public debt may not have a direct relationship with trade policy, at least taking into account the model presented above. It seems more appropriate to look for data on private external debt. The World Development Indicators, World Bank (2001), provides data on private external debt for some

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\(^{18}\)See http://faculty.haas.berkeley.edu/arose

\(^{19}\)See http://www.tcd.ie/iiis/plane/data.html

\(^{20}\)The definition of inflow of FDI in a country used by the IMF considers greenfield investment, reinvested earnings and equity participation in firms of more than 10%.
developing countries. Notice that this variable is not available for developed countries. Then, the measure of composition of foreign capital is given by

\[ FD = \frac{FDI}{DEBT}. \]

**Control variables** In the regressions, we use the following control variables, which may be related to the proxy of trade policy\(^{21}\). One expects that GDP per capita will have a negative association with duty imports, as more developed countries rely less on tariffs because they may have a more developed tax structure. This relationship is discussed in Rodrik (1995), who also presents cross-section evidence on this topic. The total population of countries has a negative association with openness throughout many studies, that is their size has a negative association with openness. In principle, this relationship may also appears with population and trade policy. For both variables, we use the initial year corresponding to each period.

Following the empirical literature of gravity equations, we also use as a control variable the remoteness of a country. Remoteness represents distance from a country to output in the rest of the world, defined for a country \(i\) as the inverse of the mean of log real GDP for country \(j\) divided by the log of distance between \(i\) and \(j\)\(^{22}\). For remoteness, we also use the initial year corresponding to each period.

### 4.2 Econometric model

Based on Proposition 2 and equation (20), we estimate the following regression:

\[
\log TAR_{i,t} = \alpha \log FD_{i,t} + \beta C_{i,t} + \mu_i + \lambda_t + \varepsilon_{i,t} \tag{21}
\]

where \(\log TAR_{i,t}\) is a measure of trade policy (logarithm of the ratio import duties over imports) in country \(i\) at time \(t\), \(\log FD_{i,t}\) is a measure of the composition of foreign capital (logarithm of the ratio FDI over DEBT), \(C_{i,t}\) represents control variables (logarithm of GDP per capita, logarithm of population, and remoteness), \(\beta\) is the vector of coefficients of control variables to be estimated, \(\mu_i\) is a country effect, \(\lambda_t\) is a time effect, and \(\varepsilon_{i,t}\) is an error term.

The coefficient of interest is \(\alpha\). Following the model, we expect \(\alpha < 0\). That is, we expect protection decreasing as the ratio stock of foreign direct investment over stock of private external debt increases.

We present regressions using OLS and fixed effects (FE), with robust standards errors. In the regressions using FE, one takes into account an unobserved fixed effect for each country. While OLS regressions take principally into account

\(^{21}\)These variables, GDP per capita and population, come from the Penn World Table mark 6. They are available from Rose (2004).

\(^{22}\)See Rose (2004).
the cross-section variation of the data, the FE regressions consider the variation over time for each country.

To address the possibility of endogeneity and omission of variables, we also estimate equation (21) using the generalized-methods-of-moments estimator proposed by Arellano and Bover (1995) and developed by Blundell and Bond (1998) (GMM-SYS), which is a system of regressions in differences and in level\(^{23}\). First, and following Arellano and Bond (1991), they propose to use the first-difference of equation (21), to eliminate the country effect. In this case, lagged levels of the regressors are used as instruments to address endogeneity issues. Notice that these instruments may be weak when variables are persistent over time, which is the case, for example, of GDP per capita. Second, the regressions in level use lagged difference of the regressors as instrument. The regressions are robust and they also take into account the finite-sample correction for two-step covariance-matrix, following Windmeijer (2005). All variables will be considered as endogenous. In the construction of instruments for first-difference equations, only the lagged level dated \(t - 2\) of each variable will be considered. The objective of limiting the lags used is to limit the number of instruments, given the reduced number of countries in our sample. In level equations, only lagged difference dated \(t - 1\) of each variable will be used as instrument.

There are two tests to check the validity of the assumptions and the consistency of the estimator. The first one tests the validity of the instruments used. It is the Hansen test of over-identifying restrictions. The null hypothesis is that the instruments used are not correlated with the residuals. The second one is the Arellano-Bond test for autocorrelation. It tests for second-order serial correlation of the differenced errors terms, and the null hypothesis is that the errors in the first difference regression exhibit no second-order serial correlation. Failure to reject the null hypotheses of these tests gives support to the model.

4.3 The results

Table 3 presents our results for equation (21) using duty imports as a measure of trade policy. The coefficient on \(\log FD\) is negative and significantly different from zero at the 5%-significance level, and at the 10%-significance level only in two regressions. Taking into account the specifications using the GMM-SYS estimator, the estimated elasticity of the trade policy with respect to the composition of foreign capital implies that a 10% increase in \(FD\) decreases the TAR by around 1%. Notice also that the estimated coefficients with OLS and FE are smaller than those with GMM-SYS, as would be expected taking into account the endogeneity issue, but the difference is not very important.

The initial level of GDP per capita carries significant coefficient of the expected sign. In general, the other control variables are not significant with the

\(^{23}\)We use the command xtabond2 available for Stata 8.
exception of remoteness in OLS.

Moreover, in the regressions using the GMM-SYS estimator, the Hansen test and the serial-correlation test give support to the hypothesis of a correct specification at conventional levels.

The results provide support for the main prediction of the model.

[Table 3 to insert here]

Robustness test  Now we present a robustness test for our results. Considering the OLS regression with time dummies, there appears an observation with a standardized residual higher than 3. This observation of Turkey for the period 1995-1998 seems to be an outlier. Table 4 presents the same regressions as in Table 3, but without the possible outlier. The results are similar to those presented above and thus also provide support for the main prediction of the model. The coefficient of interest increases in all specifications (but one where the coefficient is equal) and is negative and significantly different from zero at least at the 5%-significance level. The regressions using the GMM-SYS estimator also pass the specification tests at conventional levels.

[Table 4 to insert here]

One needs to be careful when interpreting these regressions, given the proxies we are using and the size of the sample. Having in mind these caveats, the evidence presented above provides support for the main prediction of the model.

5 Conclusions

We developed a political economy model of trade policy using a sector specific factor model with capital mobility. We were looking for a possible relationship between the composition of foreign capital and its effects on trade policy, an issue especially interesting for developing countries.

Analyzing a dynamically consistent policy in a two-stage model, where foreign capital is determined endogenously, we have claimed that the tariff would be higher with external debt than with foreign direct investment. This result is related to the additional welfare cost of the tariff that appears in the case of foreign direct investment: as it is remunerated at the marginal productivity of capital, its remuneration increases with the tariff.
The main implication of the model was tested by regressing trade policy on the composition of foreign capital. As predicted, the coefficient of this term is negative and significant. In this empirical analysis, we accounted for the exogenous variation in the composition of foreign capital relying on instrumental variables created by an estimator developed for dynamic panel models.

Following this new relation between composition of foreign capital and protection, another issue appears: what can explain the different compositions of foreign capital among countries? A deeper analysis of the choice between external debt and foreign direct investment is an important avenue for future research. Taking into account the new relation presented in the paper, this analysis could go in the direction of a political economy theory of the composition of foreign capital. This task can be conducted not only at a theoretical level, but also at an empirical level.
Appendix

In this Appendix we provide derivations for equation (6) in Section 2.

The country’s disposable income is given by \( E = g(p, K, \overline{L}) + b \). The expression 
\[ g(p, K, \overline{L}) = Y_X + p Y_M \] 
gives the value of gross domestic product\(^{24}\) when the relative price is \( p \), the level of capital is given by \( K \), and the level of labor is given by \( \overline{L} \). Using the properties of the gross domestic product function’s derivatives, we have \( g_p = Y_M \) and \( g_K = R \), with \( R \) equal to the rental rate of capital.

We also have the following expression: \( b = (p - 1)M - RD \). The first term on the right-hand side represents the tariff revenue, where \( M \) represents imports and \( M = x_M - Y_M \). The second term on the right-hand side represents the remuneration of foreign capital, given by \( D \). Like the gross domestic product function, the rental rate is given by a function \( R(p, K, \overline{L}) \). This remuneration is associated with the marginal productivity of capital and then we are assuming that these inflows take the form of equity or foreign direct investment.

Then, the indirect utility function can be represented by

\[
W(p, K, \overline{L}, b) = \max_{x_X, x_M} \{ U : x_X + px_M \leq g(p, K, \overline{L}) + b \}
\]

and we have, using the properties of its derivatives, \( W_p = \frac{\partial W}{\partial p} + \frac{\partial W}{\partial b} \frac{\partial b}{\partial p} \). Where \( \frac{\partial W}{\partial p} = Y_M - x_M(p) \); \( \frac{\partial W}{\partial b} = \lambda = 1 \); and \( \frac{\partial b}{\partial p} = M + (p - 1)M_p - R_pD \).

It follows that \( W_p = (p - 1)M_p - R_pD \). This is equation (6) in the text.

\(^{24}\)For an exposition of this function see Wong (1995).
References


Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>N. Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>logTAR</td>
<td>2.445</td>
<td>0.621</td>
<td>0.758</td>
<td>3.877</td>
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<tr>
<td>logFD</td>
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<td>1.616</td>
<td>10.347</td>
<td>142</td>
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<td>logGDP_{pc}</td>
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<td>0.517</td>
<td>7.018</td>
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<td>142</td>
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<td>13.742</td>
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<tr>
<td>remoteness</td>
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<td>0.014</td>
<td>0.454</td>
<td>0.519</td>
<td>142</td>
</tr>
</tbody>
</table>

Observations are non-overlapping five-year average periods over 1970-1994 and a four-year average over 1995-1998, for 33 developing countries. logTAR: logarithm of the ratio import duties over imports. logFD: logarithm of the composition of foreign capital, which is defined as the ratio of stock of foreign direct investment over the stock of private external debt. logGDP_{pc}: logarithm of income per capita, in the initial year of each period. logPOP: logarithm of total population, in the initial year of each period. remoteness: distance from a country to output in the rest of the world, in the initial year of each period. See Section 4 for details on data sources and the countries in the sample.

Table 2: Correlation matrix

<table>
<thead>
<tr>
<th></th>
<th>logTAR</th>
<th>logFD</th>
<th>logGDP_{pc}</th>
<th>logPOP</th>
<th>remoteness</th>
</tr>
</thead>
<tbody>
<tr>
<td>logTAR</td>
<td>1</td>
<td>-0.0742</td>
<td>-0.48</td>
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<td>-0.229</td>
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<td>-0.226</td>
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<td>-0.04</td>
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<td></td>
<td>1</td>
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</table>

Number of observations: 142. See notes to Table 1 for the description of the variables.
Table 3: Effects of the composition of foreign capital on protection

<table>
<thead>
<tr>
<th>Dep. var.: logTAR</th>
<th>(i) OLS</th>
<th>(ii) OLS</th>
<th>(iii) FE</th>
<th>(iv) FE</th>
<th>(v) GMM-SYS</th>
<th>(vi) GMM-SYS</th>
</tr>
</thead>
<tbody>
<tr>
<td>logFD</td>
<td>-0.086</td>
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<td></td>
<td>(2.9)</td>
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<td>(2.21)</td>
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<td>logGDP_{pc}</td>
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<td></td>
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<td>(2.11)</td>
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<td>(0.99)</td>
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<td>(0.14)</td>
<td>(0.4)</td>
<td>(0.3)</td>
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<td>year effects</td>
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<td>yes</td>
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<td>AR(2) test (p-value)</td>
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<td>0.937</td>
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<td>N. countries</td>
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<td>N. obs.</td>
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<td>142</td>
<td>142</td>
<td>142</td>
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<td>142</td>
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</tbody>
</table>

All regressions with robust standard errors. t statistics are in parenthesis. GMM-SYS uses the finite-sample correction for two-step covariance-matrix developed by Windmeijer (2005). The Hansen test and AR(2) test are specification tests for GMM-SYS. In GMM-SYS, all variables are considered as endogenous. In first-difference equations, only lagged level dated t-2 is used as instrument (in level equations, only lagged difference dated t-1 is used as instrument). See notes to Table 1, for the description of the variables.
Table 4: Effects of the composition of foreign capital on protection: Robusteness to an outlier

<table>
<thead>
<tr>
<th>Dep. var.: logTAR</th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
<th>(iv)</th>
<th>(v)</th>
<th>(vi)</th>
</tr>
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<tr>
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<td>(3.13)</td>
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<td>(0.05)</td>
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<td>-5.459</td>
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<td>(4.79)</td>
<td>(0.44)</td>
<td>(0.02)</td>
<td>(5.42)</td>
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<td>yes</td>
<td>no</td>
<td>yes</td>
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</tr>
<tr>
<td>year effects</td>
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<td>no</td>
<td>no</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
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<tr>
<td>R&lt;sup&gt;2&lt;/sup&gt;</td>
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<td>0.34</td>
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<td>Hansen test (p-value)</td>
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<td>AR(2) test (p-value)</td>
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Outlier based on OLS regression with time effects and presented in Table 3: Turkey, four-year average period 1995-1998. All regressions with robust standard errors. t statistics are in parenthesis. GMM-SYS uses the finite-sample correction for two-step covariance-matrix developed by Windmeijer (2005). The Hansen test and AR(2) test are specification tests for GMM-SYS. In GMM-SYS, all variables are considered as endogenous. In first-difference equations, only lagged level dated t-2 is used as instrument (in level equations, only lagged difference dated t-1 is used as instrument). See notes to Table 1, for the description of the variables.
Figure 1: Private Capital Flows in Developing Countries, 1970-98
(net inflows, in current dollars)

Note: LENDING is Bank and trade related lending. FDI is Foreign direct investment, net inflows. EQUITY is Portfolio investment, equity. BONDS is Portfolio investment, bonds. Source: World Development Indicators, World Bank (2001).
Figure 2: Import Duties for some Developing Countries, 1984-85 and 1994-95

Figure 3: Composition of Private Capital Flows in Developing Countries, 1981 and 1997

Note: LENDING is Bank and trade related lending. FDI is Foreign direct investment, net inflows. EQUITY is Portfolio investment, equity. BONDS is Portfolio investment, bonds. Source: World Development Indicators, World Bank (2001).