

Partisanship, Sectoral Allocation of Foreign Capital, and Imperfect Capital Mobility*

Pablo M. Pinto[†] and Santiago M. Pinto[‡]

November 10, 2008

PRELIMINARY AND INCOMPLETE DRAFT - PLEASE DO NOT CIRCULATE

Abstract

We extend our earlier work on the political economy of foreign direct investment (Pinto and Pinto 2007, 2008) by modeling in a dynamic setting the interaction between an incumbent with partisan motivations, and a foreign investor who aims at obtaining the most favorable investment conditions while minimizing the probability of opportunistic behavior by the host government. This setting leads to a well-known problem in the literature on capital taxation: the incentive to tax capital more heavily once investment decisions have been made, given that the elasticity becomes zero. The extant literature points to institutional constraints as the solution to this commitment problem: ex-ante promises are more likely to be honored when the hands of the incumbent are tied (North & Thomas 1973; North & Weingast 1989; Henisz 2000). Yet, it is widely acknowledged in the literature on capital taxation that capital tax rates are in general not set at confiscatory levels, even in the absence of institutional constraints (Chari & Kehoe 1990; Klein & Rios Rull 1999). To account for this empirical regularity we develop a dynamic model where the host government only has access to partial commitment technologies. From this model, we derive the conditions under which the incumbent's allegiance to workers or capital owners, and the expected distributive pressure exerted by inflows and outflows of internationally mobile capital on labor and capital, could either aggravate or mitigate the commitment problem that arises in the dynamic setup. The implications of this model are in line with the predictions from our earlier work on the existence of partisan cycles in the regulation of direct investment in the long run. While distributive motivations resulting from the technological relationship between foreign investment and domestic factors of productions are likely to drive the adoption of different regimes aimed at promoting or preventing the inflow of foreign investment, higher costs of redeployment mitigate these partisan effects. Our modeling strategy allows us to place the predictions from traditional arguments on the political economy of foreign investment under a common framework. We are able to identify the conditions under which rules and discretion matter in the regulation of foreign investment.

JEL Classification: F21, F23, D72, D78

Keywords: foreign direct investment, partisan governments, capital mobility

*Paper prepared for the Annual Meeting of the International Political Economy Society, University of Pennsylvania, Philadelphia, PA, November 14-15, 2008. An earlier version was presented at the 2008 Annual Meeting of the American Political Science Association, August 28-31, 2008. The authors are grateful to Peter Rosendorff and two anonymous reviewers at Economics & Politics for encouraging us to write this paper.

[†]Department of Political Science, Columbia University. Address: 420 West 118th Street, 1331 IAB, MC 3347, New York, NY 10027; phone: 212-854-3351; e-mail: pp2162@columbia.edu

[‡]College of Business and Economics, West Virginia University. Address: 412 Business and Economics Bldg., PO Box 6025, Morgantown, WV 26506-6025; phone: 304-293-7871; e-mail: smpinto@mail.wvu.edu

1 Introduction

This paper extends our earlier work on partisan cycles in the regulation of foreign direct investment, and in investment performance. We argue that the incumbent's partisanship -i.e.: its allegiance to labor or capital- affect foreign investors' decision to enter a host country, investors' choice of form of entry, and the consequences of the endogenously determined investment flows (Pinto 2004; Pinto and Pinto 2007; Pinto and Pinto 2008). Pro-labor governments encourage investment inflows that complement labor in production, hence increasing labor demand. Right-leaning governments, on the other hand, would internalize the interests of domestic businesses encouraging investment inflows that are more likely to complement domestic capital in production, generating positive spillovers effects on domestic businesses, and/or introduce labor saving technologies. Moreover, we argued that domestic business interests would strictly prefer technology transfer agreements to investment capital inflows, especially if those flows create competitive pressure in product or factor markets. Hence, run we should expect FDI to covary with partisanship in the long run. In Pinto and Pinto (2008) we found a systematic relationship between the host government's ideology -its placement in the left-right dimension- and the pattern of direct investment performance across countries and over time.¹ We also found that the differential pattern of FDI inflows under left-leaning governments are associated with higher wages, but not under other orientations of the incumbent, findings that are consistent with and supportive of the predictions from our model.

The static setting from our earlier model allowed us to identify long term equilibria. Here we model the interaction between the incumbent and foreign investors in a dynamic setting to capture investment decisions that are staggered over time. Adding this dynamic element leads to a well-known problem in the literature on capital taxation: governments have an incentive to tax capital more heavily once investment decisions have been made, given that their elasticity to taxes becomes zero. In other words, as bargains become obsolete it is ex-post optimal to choose the highest possible tax rates on capital, even for

¹Yet our findings are far from conclusive since we could not identify the degree of complementarity or substitutability between labor and foreign capital in the different sectors. We were not able to test these hypotheses directly, since we could not assess whether foreign and domestic capital were complements or substitutes in production due to lack of reliable data for the countries and sectors in the sample. See Pinto and Pinto (2008) for a discussion on the constraints we faced in designing a direct test of our model.

governments that promise to maintain tax rates at their ex-ante optimal levels (Kindleberger 1969; Vernon 1971). Investors who face an exit cost will anticipate the government's behavior, and will likely decide not to enter, resulting in missed investment opportunities and suboptimal policy. The extant literature has pointed to institutional constraints as the solution to this commitment problem: when the hands of incumbent are tied or when the incumbent's ability to move the status quo is subject to delays by institutions constraints, promises made ex- ante are more likely to be honored (North & Thomas 1973; North & Weingast 1989; Henisz 2000). Yet, tying government's hands is equivalent to adopting an inflexible policy; and inflexible policy is a departure from the first-best/optimal practices, i.e., the policies that would have been chosen in a complete contract environment, or adopted by a welfare maximizing social planner (Spiller & Tommasi 2003).

Moreover, it is widely recognized in the literature on capital taxation that capital tax rates are in general not set at confiscatory levels, even in the absence of institutional constraints (Chari and Kehoe 1990; Klein and Rios Rull 1999). In order to account for this empirical regularity in section 3, we develop a dynamic model where the host government only has access to partial commitment technologies. From this model, we derive the conditions under which the host government's partisanship -i.e., its allegiance to domestic owners of labor or capital- will result in qualitatively different tax schedules offered to foreign investors and the incentives faced by the incumbent to opportunistically tax foreign investors. The incentives faced by the incumbent to tax foreign investors more or less heavily depend on the distributive consequences created by foreign investment, which we model as a function of the technological relationship that determines the degree of complementarity and substitutability in production between foreign capital and domestic factors of production, and on the costs of redeployment of that investment. The expected distributive pressure exerted by inflows and outflows of internationally mobile capital on the incumbents core constituents are likely to mitigate or aggravate the commitment problem.

The implications of this dynamic model are in line with the predictions from our earlier model that predicted the existence of partisan cycles in the regulation of internationally mobile capital driven by the expected distributive consequences of inward investment. Recall that we argued that those distributive motivations result from a technological re-

relationship that determines how foreign investment affects differentially the demand for labor or capital in the host country. These distributive motivations lead the incumbent to adopt different regimes aimed at promoting or preventing the inflow of foreign investment depending on its type. While pro-labor incumbents are more likely to adopt regimes that promote the inflow of foreign investment that increase labor demand, pro-business incumbents are more likely to restrict the former and promote the latter. Higher costs of redeployment -i.e.: the ease to move investment and production to different sectors and different locations- on the other hand, are likely to mitigate those distributive motivations. Our modeling strategy allows us to capture under a unifying framework the scope conditions for different predictions from the political economy of foreign investment literature, including those in the obsolescing bargain tradition, with those from the literature on capital taxation in macroeconomics. Moreover, our model allows us to derive the conditions under which rules and discretion are more likely to affect the ability of governments to attract different types of mobile capital.

2 Partisanship and Investment in a Dynamic Setting

In Pinto and Pinto (2008), we developed a model that predicts that governments have an incentive to discriminate in favor of internationally mobile investment that complements the factor of production owned by their core constituents. Investment in general, and direct foreign investment in particular, is likely to generate returns throughout several periods, possibly even beyond multiple elections and incumbents' tenure. Hence, it would be reasonable to assume that when making investment decisions investors consider not only the current government partisanship, but also the potential orientation of future governments. Modeling the interaction between foreign investors and host governments in a dynamic setting allows us to capture these calculations.

The design of the tax system in the economy is also driven by efficiency considerations which dictate that tax rates should be set at levels that minimize the distortions generated by the tax structure. Hence, more inelastic tax bases should be taxed more heavily. In the case of capital taxation, as in foreign direct investment, there is an incen-

tive to tax capital more heavily once investment decisions have been made, given that the elasticity becomes zero. In other words, it is optimal ex-post to choose the highest possible capital tax rates, even when governments promise to maintain tax rates at their ex-ante optimal levels. Investors will anticipate this behavior, and decide not to enter into the host country resulting in missed investment opportunities and suboptimal policy. This problem is rooted in the time-inconsistency property of sequential policy.² Governments are unable to commit credibly to policies that will have an effect in the future. In the case of capital taxation, given that tax rates can be changed at any time, governments have an incentive to act opportunistically. However, we observe that in general tax rates on capital are not set at confiscatory levels, as would be predicted by these propositions. In order to account for the exceptionality of confiscatory tax rates, the literature in macroeconomics has formulated different explanations, including the existence of partial commitment technologies, institutional constraints and repeated interactions.

Klein and Rios Rull (1999), for example, consider a dynamic setup where governments can only commit to tax rates one period in advance due to exogenous restrictions which prevent incumbents from immediately revising the status quo. Owners of internationally mobile capital understand these constraints and make their investment decisions accordingly. By preventing or delaying policy changes, political institutions act as one such commitment device. The institutional environment, namely the rules of the political game, acts as a solution to the commitment problem that incumbents face in their interaction with foreign investors.³

Chari and Kehoe (1990), on the other hand, claim that reputation may substitute for other forms of commitment mechanisms: ex-ante optimal tax rates can be sustained in equilibrium when there is a repeated interaction between governments and capital owners. This idea of commitment by reputation can be linked to the predictions on the role of partisanship in our earlier model. The logic is straightforward: Suppose that foreign capital owners form expectations as follows. Initially foreign investors assume that partisan governments will tax capital at the ex-ante optimal tax rates $\{t^{1*}, t^{2*}\}$, i.e., the tax rates

²On time consistency see the pioneering work of Kydland and Prescott (1977), and Calvo (1978); see also Drazen (2000).

³See, among others, North and Thomas (1973), North and Weingast (1989), and Henisz (2000). Stasavage (2003), Haber, Maurer and Razo (2002, 2003), introduce alternative commitment mechanisms.

that solve the maximization problem introduced in our earlier work (Pinto and Pinto 2008, pp. 225). As soon as capital owners realize that the host government has deviated by choosing $\tilde{t}^i \neq t^{i*}$ (for $i = 1, 2$), they expect that this government will implement confiscatory tax rates \hat{t}^i in the future. Hence, investors' expectations significantly change once governments deviate from t^{i*} . Let $\Omega(t^1, t^2)$ denote the government's weighted welfare function evaluated at $\{t^1, t^2\}$. Then the solution to this problem requires tax rates that satisfy $\Omega(\tilde{t}^1, \tilde{t}^2) > \Omega(t^{1*}, t^{2*}) > \Omega(\hat{t}^1, \hat{t}^2)$. Under these conditions, governments may only benefit in the short-run from an opportunistic behavior by choosing \tilde{t}^i . Given that confiscatory tax rates \hat{t}^i are expected by capital owners thereafter and capital will consequently not enter in the future, partisan governments will face a lower stream of future payoffs relative to those that can be obtained by sticking to the ex-ante optimal policy. Suppose that ρ is the partisan government's discount factor. Then $\{t^{1*}, t^{2*}\}$ can be sustained as an equilibrium of the repeated game if ρ is sufficiently large.

The predictions from Pinto and Pinto (2008) would also hold in a dynamic framework if we assumed that foreign investment adjusts perfectly to the new desired level once governments change capital tax rates, or, alternatively, if foreign capital completely depreciates before tax rates are changed. Specifically, suppose that there is no foreign capital in the economy. At the beginning of time period the government would face the same problem as the one faced in time period τ . In every period, the equilibrium tax rates would be those derived from our earlier model, i.e., they would differ as incumbents of different orientation alternate in power. However, investors' reaction to changes in the host government's behavior may take some time.⁴ Whether the reaction is immediate or not depends on capital adjustment costs. In this paper we explore how the dynamic solution to the capital taxation problem differs from the long-run solution at different levels of adjustment costs.

The model presented in the ensuing sections allows us to derive several propositions on the role of partisanship, production technology available to investors, and adjustment costs, in the political economy of foreign direct investment performance and the regulation

⁴As discussed in the previous section several papers analyze the determination of capital tax rates in dynamic settings under different degrees of capital mobility. See Wildasin (2003), among others. These models consider that capital stocks can react to changes in capital taxation

of FDI. First, higher costs of redeployment affect the incentives to tax foreign investment more heavily, holding constant the technological relationship that allows for different ways of combining foreign investment with labor and capital in the host. This creates the typical hold-out problem on which the predictions from the obsolescing bargain literature are based. Second, we show that holding costs of adjustment constant governments have an incentive to tax more heavily foreign capital that is substitute in production to the incumbents' core constituents. The model also allows us to identify the conditions under which the incumbent will offer lower taxes in the second period to foreign investment that complements in production the factor owned by the governments' constituents. The size of the tax breaks offered depends on the opportunity costs faced by investors -i.e.: the returns they could get abroad- and the relative weight placed by domestic actors on government transfers financed with the revenue obtained from taxing capital -i.e.: the tradeoff between direct income effects and indirect income effects through government transfers, which was also central to the predictions in Pinto and Pinto (2008). Our modeling exercise also shows that the orientation of the incumbent is likely to magnify or mitigate the hold-out problems associated with increasing adjustment costs. These predictions are consistent with our findings on the differential sectoral allocation of FDI in OECD countries as the orientation of the incumbent changed, and the positive effect of FDI on wages under the left (see Pinto and Pinto 2008).

3 The Model

In this section, we describe the dynamic model employed in the present analysis. The model is basically an extension of the one in Pinto and Pinto (2008).

3.1 Production

Consider a dynamic three-factor, two-sector, small-open economy. Decisions are made at two consecutive time periods. Throughout the analysis, unprimed variables denote current values and primed variables refer to future values. Production of good i requires labor, domestic capital, and foreign capital. Production in sector i is given by $q_i = f_i(K_i, k_i, L_i)$,

where K_i denotes domestic capital, k_i foreign capital, and L_i labor in sector $i = 1, 2$. The production function f_i exhibits constant returns to scale. The price of each good i is internationally given and assumed to be equal to one. Domestic capital is sector specific and constant over time. The amount of domestic capital in each sector is normalized to one.⁵ Total domestic labor is assumed fixed in supply in both periods, i.e., $\bar{L} = L_1 + L_2 = L'_1 + L'_2$, mobile across sectors within the country, but internationally immobile. Factors of production are paid their respective marginal productivity. Free mobility of labor across sectors assures that the wages are equalized across sectors for every time period, i.e., $w = w_1 = w_2$ and $w' = w'_1 = w'_2$.

Foreign capital is available in perfectly elastic supply and can be rented at an exogenous rate r in every period.⁶ However, foreign investors' reaction to changes in the host government's behavior may take some time.⁷ Whether the reaction is immediate or not depends on a capital adjustment-cost function. With perfect capital mobility, the adjustment of foreign capital stock is immediate. When it is costly to change the stock of capital, only partial adjustment would take place. In other words, these costs would affect the speed at which foreign capital stocks levels reach the new desired levels. Specifically, consider the following adjustment cost function faced by foreign capital owners:

$$C_i(k_i, k'_i) \equiv \frac{\phi_i}{2} \left(\frac{k'_i - k_i}{k_i} \right)^2 k_i. \quad (1)$$

Note that

$$C_i(k'_i, k'_i) = 0, \quad C_{k'_i, i} = \phi_i \frac{(k'_i - k_i)}{k_i}, \quad C_{k'k', i} = \frac{\phi_i}{k_i} > 0. \quad (2)$$

⁵For notational simplicity, we exclude K_i as an argument of the production function.

⁶Our stylized model intends to capture the following conditions. First, different types of foreign capital are available in infinite supply and ready to enter the country as either a complement or substitute of labor (or domestic capital). The amount of domestic capital is, on the other hand, limited. Second, we emphasize the idea that, within the country, the cost of moving across sectors is higher for domestic capital than for labor. The assumptions we make here are somewhat extreme. The predictions from our model would be substantively similar if domestic capital is assumed mobile while labor is sector specific. When both labor and domestic capital are perfectly mobile across sectors, governments would not be able to implement sector-specific policies. Essentially, for the conclusions of our model to hold we require one of the domestic factors to be relatively more specific than the other.

⁷Several papers analyze the determination of capital tax rates in dynamic settings under different degrees of capital mobility (see, for example, Wildasin 2003). These models consider that capital stocks can react to changes in capital taxation.

A convex adjustment cost function implies that the capital stock does not jump immediately to its new level when the tax rate on capital is changed (see, for example, Barro and Sala-i-Martin (1995)). When ϕ_i tends to infinity, it means that foreign capital stocks become fixed. The extreme case of immediate adjustment results when $\phi_i = 0$. Under these conditions, foreign capital adjusts perfectly to the new desired level and partisan governments face every time period t the same exact problem as in our earlier paper.⁸

3.2 Economic agents

We assume that there are only two types of factor owners: workers (who only own labor), denoted with a \mathcal{L} , and domestic capitalists (who only own domestic capital), denoted with a \mathcal{K} . Thus, \bar{L} is the number of workers and \bar{K} the number of capitalists in the economy. Since the amount of domestic capital in each sector is normalized to one, $\bar{K} = 2$.⁹ Each period, consumers derive utility from income and from an in-kind transfer they receive from the government. Specifically, the utility of individual h in the current period is $U^h = y^h + v(g^h)$, for $h = \mathcal{L}, \mathcal{K}$, where y^h is the income of a representative agent in group h , g^h is the transfer that each member of group h receives from the government, and $v_g > 0, v_{gg} \leq 0$. Income of labor is given by the wage w , and income of domestic capitalists is denoted \bar{r}_i . A similar specification holds in the next period.

3.3 Partisan government

The government collects each period a tax on internationally mobile capital and the receipts are distributed across the population through government in-kind transfers, as explained above.¹⁰ We assume that the government can impose different tax rates on foreign capital allocated in different sectors in each period.¹¹ Additionally, it can only commit to these

⁸Note that we assume that the adjustment cost is symmetric around k_i .

⁹Equivalently, we can also think that $f_i(1, k_i, L_i)$ represents production in its intensive form.

¹⁰For simplicity the model assumes that the host government controls only one tax instrument: a tax rate levied on internationally mobile capital. To simplify the analysis we also assume that domestic capital is inelastic to taxes and that the tax is only raised on foreign investment. Implicitly we assume that the host government can discriminate between different types of capital according to their ability to move across national borders, and label these forms of capital as domestic and foreign.

¹¹This tax could be interpreted as the summation of the numerous policy instruments that governments resort to attract or deter the inflow of foreign investment, such as screening and approval procedures, limits on the share that non-residents are allowed to hold, differential tax schedules, regulatory regimes on sectoral activity and market structure, trade policy, local procurement rules, differential exchange rate regimes. All

tax rates for the period under which that particular government is in power. We denote with τ_i the capital tax rate on foreign capital entering sector i .

Governments are characterized by their political orientation. For simplicity, we assume that governments can either be pro-domestic labor or pro-domestic capital. A government decides the optimal values of $\{\tau_1, \tau_2, g^{\mathcal{L}}, g^{\mathcal{K}}\}$ for the period it will be in power; the choice driven by the incumbent's political orientations. In this way, the partisan government's objective function is:

$$\Omega = I^{\mathcal{L}}(L_1 U_1^{\mathcal{L}} + L_2 U_2^{\mathcal{L}}) + (1 - I^{\mathcal{L}})(U_1^{\mathcal{K}} + U_2^{\mathcal{K}}), \quad (3)$$

subject to budget constraint

$$I^{\mathcal{L}}\bar{L}g^{\mathcal{L}} + (1 - I^{\mathcal{L}})\bar{K}g^{\mathcal{K}} = T, \quad (4)$$

where $U_i^{\mathcal{L}} = w_i + v(g^{\mathcal{L}})$, $U_i^{\mathcal{K}} = \bar{r}_i + v(g^{\mathcal{K}})$, for $i = 1, 2$, $T = \tau_1 k_1 + \tau_2 k_2$, and $I^{\mathcal{L}}$ is an indicator function which is equal to 1 if the government is pro-labor, and 0 if it is pro-capital. Hence, we assume that a pro-labor (pro-capital) government maximizes the utility of domestic workers (domestic capitalists), and not simply their income. The budget constraint (4) simply assures that the government's tax revenue is enough to finance the in-kind transfers.¹²

At the beginning of the current period, a partisan government chooses taxes and transfers $\{\tau_1, \tau_2, g^{\mathcal{L}}, g^{\mathcal{K}}\}$ for the period that it will be in power. In the next period, a government with a different political orientation could be in power. This government chooses, at the beginning of that period, the values of $\{\tau'_1, \tau'_2, g^{\mathcal{L}'}, g^{\mathcal{K}'}\}$ that maximize Ω' conditional on the incumbent's type. When agents take decisions in the first period, they only know that with probability β' a pro-labor government will be in power in the next

these instruments and regulations either affect the cost of doing business or the price that firms can charge for their goods and services, and are hence reflected in the firms' bottom line. For simplicity we assume that all restrictions on mobile investment that the government resorts to would result in revenue that could be used to supply the government output g^h (an in-cash transfer financed with the receipts from taxing foreign investment), thus forcing actors to trade off the utility they derive from this transfer for the income (y^h) received from their participation in the market.

¹²The maximization problem stated in the paper is similar to the problem of optimal indirect taxation when the government has redistributive considerations.

period, and with probability $(1 - \beta')$ the government will be pro-capital.

3.4 Timing of events

The model assumes that, at each time period, decisions are taken sequentially as follows:

(i) At the beginning of the first period, a partisan government chooses the tax rates in sectors 1 and 2. (ii) After observing tax rates, domestic labor and foreign capitalists decide in which sectors to operate. (iii) In the next period, nature chooses a pro-labor government with probability β' and a pro-capital government with probability $(1 - \beta')$. (iv) Once the state of nature is realized, each government chooses tax rates according to its partisan orientation, and later domestic labor and foreign capitalists adjust to the new environment as in stages (1) and (2). We find the sub-game perfect Nash Equilibrium of the game.

4 Second Period

We begin solving the second period problem for a government with a given partisan orientation. Later, we consider the specific problem faced by each type of government.

4.1 The Firm's Problem

At the end of the second period, the sectoral allocation of the factors of production is simultaneously determined. Both the political orientation of the partisan government and the levels of the policy variables chosen by this government are known at this stage. Thus, for a given partisan government, the allocation $\{k'_1, k'_2, L'_1, L'_2\}$ is implicitly determined by

$$f_{k,1}(k'_1, L'_1) - \tau'_1 - r - \phi_1(k'_1 - k_1)/k_1 = 0, \quad (5)$$

$$f_{k,2}(k'_2, L'_2) - \tau'_2 - r - \phi_2(k'_2 - k_2)/k_2 = 0, \quad (6)$$

$$f_{L,1}(k'_1, L'_1) - f_{L,2}(k'_2, L'_2) = 0, \quad (7)$$

where $L'_1 = \bar{L} - L'_2$. The solutions $L'_1(\tau'_1, \tau'_2, k_1, k_2)$, $k'_1(\tau'_1, \tau'_2, k_1, k_2)$, and $k'_2(\tau'_1, \tau'_2, k_1, k_2)$ are functions of the predetermined variables $\tau'_1, \tau'_2, k_1, k_2$, and other exogenous variables such as ϕ_1 and ϕ_2 . Equations (5) and (6) state that, given an initial level of k'_i , capital

flows into (or out of) sector i in the second period until the net return on capital (given by $f'_{k,i} - \tau'_i$) and the marginal cost, represented by the sum of the opportunity cost (r) and the marginal adjustment cost of capital (given by $\phi_i(k'_i - k_i)/k_i$), are equalized.

The following comparative static results are obtained by implicitly differentiating the previous system of equations:

$$\frac{\partial k'_i}{\partial \tau'_i} = \frac{k_i \left[(k_j f'_{kk,j} - \phi_j)(f'_{LL,i} + f'_{LL,j}) - k_j (f'_{kL,j})^2 \right]}{J'} < 0, \quad (8)$$

$$\frac{\partial k'_j}{\partial \tau'_i} = -\frac{k_i k_j f'_{Lk,i} f'_{kL,j}}{J'}, \quad (9)$$

$$\frac{\partial L'_1}{\partial \tau'_1} = -\frac{k_1 f'_{Lk,1} (k_2 f'_{kk,2} - \phi_2)}{J'}, \quad \frac{\partial L'_1}{\partial \tau'_2} = \frac{k_2 f'_{Lk,2} (k_1 f'_{kk,1} - \phi_1)}{J'}, \quad (10)$$

where

$$J' = (k_1 f'_{kk,1} - \phi_1)(k_2 f'_{kk,2} - \phi_2)(f'_{LL,1} + f'_{LL,2}) - (k_2 f'_{kk,2} - \phi_2)k_1 (f'_{kL,1})^2 - (k_1 f'_{kk,1} - \phi_1)k_2 (f'_{kL,2})^2$$

Since the production functions are concave in k and L (i.e., for fixed values of K_i , $f'_{kk,i} < 0$, $f'_{LL,i} < 0$, and $f'_{kk,i} f'_{LL,i} - (f'_{kL,i})^2 > 0$, $i = 1, 2$), then $J' < 0$. Except for the sign of $\partial k'_i / \partial \tau'_i$, the results depend on the specific technological relationship between the factors of production k and L in each sector. For instance, suppose that k and L are complements in both sectors, i.e., $f'_{kL,i} > 0$, $i = 1, 2$. Then, $\partial k'_2 / \partial \tau'_1 > 0$ and $\partial L'_1 / \partial \tau'_1 < 0$. The intuition behind these results is straightforward. An increase in τ'_1 reduces the amount of foreign capital in sector 1. Given that k_1 and L_1 are complements, the marginal productivity of labor in sector 1 declines. Consequently, labor shifts to sector 2. As k_2 and L_2 are also complements, the marginal productivity of foreign capital increases in that sector, attracting foreign capital to sector 2. Similar conclusions apply for changes in τ'_2 and for different technological relationships between inputs.

By differentiating $w' \equiv f_{L,i}(k'_i, L'_i)$ with respect to τ'_i , we can derive the effect of a change in τ_i on wages:

$$\frac{\partial w'}{\partial \tau'_i} \frac{1}{f'_{Lk,i}} = \frac{k_i \left[(k_j f'_{kk,j} - \phi_j) f'_{LL,j} - k_j (f'_{kL,j})^2 \right]}{J'} < 0. \quad (11)$$

Expression (11) shows that the effect of τ'_i on w' only depends on the technological relationship between labor and foreign capital in sector i , represented by $f'_{Lk,i}$. In fact, $\partial w'/\partial \tau'_i$ and $f'_{Lk,i}$ have opposite signs. The result can be explained as follows: a higher level of τ'_i lowers the amount of foreign capital entering sector i (shown by (8)). Hence, if labor and foreign capital are substitutes (i.e., $f'_{Lk,i} < 0$), labor productivity is higher, so wages should increase. If they are complements (i.e., $f'_{Lk,i} > 0$), a smaller amount of k'_i lowers labor productivity in the sector, so wages should decrease.

Next, we examine how tax rates affect income received by domestic capitalists in each sector. Due to the assumption of CRS, the return to domestic capital in sector i is

$$\bar{r}'_i = q'_i - w' L'_i - f'_{k,i} k'_i, \quad i = 1, 2. \quad (12)$$

From the previous expression, it is straightforward to derive the following results:

$$\begin{aligned} \frac{\partial \bar{r}'_i}{\partial \tau'_i} &= - \left[\frac{\partial w'}{\partial \tau'_i} L'_i + \left(1 + \frac{\phi_i}{k_i} \frac{\partial k'_i}{\partial \tau'_i} \right) k'_i \right], \\ \frac{\partial \bar{r}'_j}{\partial \tau'_i} &= - \left[\frac{\partial w'}{\partial \tau'_i} L'_j + \frac{\phi_j}{k_j} \frac{\partial k'_j}{\partial \tau'_i} k'_j \right], \\ \frac{\partial(\bar{r}'_i + \bar{r}'_j)}{\partial \tau'_i} &= - \left[\frac{\partial w'}{\partial \tau'_i} \bar{L} + k'_i + \frac{\phi_i}{k_i} \frac{\partial k'_i}{\partial \tau'_i} k'_i + \frac{\phi_j}{k_j} \frac{\partial k'_j}{\partial \tau'_i} k'_j \right]. \end{aligned} \quad (13)$$

Changes in tax rates affect domestic capital owners in sectors 1 and 2 differently. Consider first the case of perfect capital mobility, i.e., $\phi_1 = \phi_2 = 0$. Suppose that L_i and k_i are substitutes. Then, both \bar{r}'_i and \bar{r}'_j decrease with τ'_i . The latter also means that total income received by domestic capitalists (i.e., $\bar{r}'_1 + \bar{r}'_2$) also decreases with τ'_i . If L_i and k_i are complements, then \bar{r}'_j increases with τ'_i , but the effect on \bar{r}'_i is ambiguous. Only when L'_i and k'_i are complements and $|\partial w'/\partial \tau'_i| \bar{L} > k'_i$ will the total income received by domestic capital increase with τ'_i .

When $\phi_i \neq 0$, the signs of the previous expressions cannot, in general, be unambiguously determined.¹³ Both the technological relationship between the factors of production and the mobility cost of capital in both sectors affect these signs. If it is costly to adjust foreign capital to the new desired level, decisions taken in the first period will have an

¹³For instance, if the foreign investment and labor are substitutes in both sectors, then $\partial \bar{r}'_j/\partial \tau'_i < 0$.

impact in the second period. It will later become important for our purposes to determine the effect of different levels of foreign capital in the first period, k_i , for $i = 1, 2$, on k and L in the second period. The following comparative static results

$$\frac{\partial k'_i}{\partial k_i} = -\frac{\phi_i k'_i \left[(k'_j f'_{kk,j} - \phi_j)(f'_{LL,i} + f'_{LL,j}) - k'_j (f'_{kL,j})^2 \right]}{k_i J'} = -\frac{\phi_i k'_i}{(k_i)^2} \frac{\partial k'_i}{\partial \tau'_i} > 0, \quad (14)$$

$$\frac{\partial k'_j}{\partial k_i} = \frac{\phi_i k'_i k_j f'_{kL,i} f'_{kL,j}}{k_i J'} = -\frac{\phi_i k'_i}{(k_i)^2} \frac{\partial k'_j}{\partial \tau'_i}, \quad (15)$$

$$\frac{\partial L'_1}{\partial k_1} = \frac{\phi_1 k'_1 f'_{kL,1} (k_2 f'_{kk,2} - \phi_2)}{k_1 J'} = -\frac{\phi_1 k'_1}{(k_1)^2} \frac{\partial L'_1}{\partial \tau'_1}, \quad (16)$$

$$\frac{\partial L'_1}{\partial k_2} = -\frac{\phi_2 k'_2 f'_{kL,2} (k_i f'_{kk,1} - \phi_i)}{k_2 J'} = -\frac{\phi_2 k'_2}{(k_2)^2} \frac{\partial L'_1}{\partial \tau'_2}. \quad (17)$$

Finally, higher capital adjustment costs, represented by higher levels of ϕ_i , will also affect the allocation of factors of production. The following comparative static results show the relationship between ϕ_i and $\{k'_1, k'_2, L'_1\}$:

$$\begin{aligned} \frac{\partial k'_i}{\partial \phi_i} &= \frac{(k'_i - k_i) \left[(k'_j f'_{kk,j} - \phi_j)(f'_{LL,i} + f'_{LL,j}) - k_j (f'_{kL,j})^2 \right]}{J'} = \frac{(k'_i - k_i)}{k_i} \frac{\partial k'_i}{\partial \tau'_i}, \\ \frac{\partial k'_j}{\partial \phi_i} &= -\frac{(k'_i - k_i) k'_j f'_{kL,i} f'_{kL,j}}{J'} = \frac{(k'_i - k_i)}{k_i} \frac{\partial k'_j}{\partial \tau'_i}, \\ \frac{\partial L'_1}{\partial \phi_1} &= -\frac{(k'_1 - k_1) f'_{kL,1} (f'_{kk,2} k'_2 - \phi_2)}{J'} = \frac{(k'_1 - k_1)}{k_1} \frac{\partial L'_1}{\partial \tau'_1}, \\ \frac{\partial L'_1}{\partial \phi_2} &= \frac{(k'_2 - k_2) f'_{kL,2} (f'_{kk,1} k'_1 - \phi_1)}{J'} = \frac{(k'_2 - k_2)}{k_2} \frac{\partial L'_1}{\partial \tau'_2}. \end{aligned}$$

The first two results $\frac{\partial k'_i}{\partial \phi_i}$ and $\frac{\partial k'_j}{\partial \phi_i}$ show that the basic predictions from the obsolescing bargain literature can be captured by our more general model. Yet we also show that increasing adjustment costs are also likely to affect the allocation of labor across sectors, and result in different distributive consequences depending on the relationship between foreign investment and domestic factors of production.

4.2 The Government's Problem

At the beginning of the second period, a partisan government (pro-labor or pro-capital) decides the optimal values of $\{\tau'_1, \tau'_2, g^{\mathcal{L}'}, g^{\mathcal{K}'}\}$ anticipating the behavior of labor and foreign

capital owners, i.e., considering their responses represented by the functions $L'_1(\tau'_1, \tau'_2, k_1, k_2)$ and $k'_i(\tau'_1, \tau'_2, k_1, k_2)$, for $i = 1, 2$. Specifically, the government maximizes:

$$\Omega' = I^{\mathcal{L}'}(L'_1 U_1^{\mathcal{L}'} + L'_2 U_2^{\mathcal{L}'}) + (1 - I^{\mathcal{L}'})(U_1^{\mathcal{K}'} + U_2^{\mathcal{K}'}), \quad (18)$$

with respect to $\{\tau'_1, \tau'_2, g^{\mathcal{L}'}, g^{\mathcal{K}'}\}$, subject to budget constraint $I^{\mathcal{L}'} \bar{L} g^{\mathcal{L}'} + (1 - I^{\mathcal{L}'}) \bar{K} g^{\mathcal{K}'} = T'$, with $T' \equiv \tau'_1 k'_1 + \tau'_2 k'_2$, and $I^{\mathcal{L}'} = 1$ if the government is pro-labor and $I^{\mathcal{L}'} = 0$ if pro-capital. Additionally, as explained in the previous section, in equilibrium $w'_1 = w'_2 = w'$ because labor is mobile across sectors, but \bar{r}'_1 and \bar{r}'_2 are not necessarily equalized given that K_1 and K_2 are fixed factors.¹⁴ Denoting with λ' the Lagrange multiplier associated with the budget constraint, the first-order conditions are:

$$\tau'_1 : \quad I^{\mathcal{L}'} \frac{\partial w'}{\partial \tau'_1} \bar{L} + (1 - I^{\mathcal{L}'}) \left(\frac{\partial \bar{r}'_1}{\partial \tau'_1} + \frac{\partial \bar{r}'_2}{\partial \tau'_1} \right) + \lambda' \frac{\partial T'}{\partial \tau'_1} = 0, \quad (19)$$

$$\tau'_2 : \quad I^{\mathcal{L}'} \frac{\partial w'}{\partial \tau'_2} \bar{L} + (1 - I^{\mathcal{L}'}) \left(\frac{\partial \bar{r}'_1}{\partial \tau'_2} + \frac{\partial \bar{r}'_2}{\partial \tau'_2} \right) + \lambda' \frac{\partial T'}{\partial \tau'_2} = 0, \quad (20)$$

$$g^{\mathcal{L}'} : \quad v'(g^{\mathcal{L}'}) - \lambda' = 0, \quad \text{if } I^{\mathcal{L}'} = 1, \quad (21)$$

$$g^{\mathcal{K}'} : \quad \bar{K} v'(g^{\mathcal{K}'}) - \lambda' = 0, \quad \text{if } I^{\mathcal{L}'} = 0, \quad (22)$$

$$\lambda' : \quad T' - I^{\mathcal{L}'} \bar{L} g^{\mathcal{L}'} - (1 - I^{\mathcal{L}'}) \bar{K} g^{\mathcal{K}'} = 0, \quad (23)$$

where

$$\frac{\partial T'}{\partial \tau'_i} = k'_i + \tau'_i \frac{\partial k'_i}{\partial \tau'_i} + \tau'_j \frac{\partial k'_j}{\partial \tau'_i} \quad (24)$$

is the change in tax revenue due to a change in τ'_i .¹⁵ The system of equations (19) - (23) determine the optimal values $\{\tau_1'^*, \tau_2'^*, g^{\mathcal{L}'*}, g^{\mathcal{K}'*}, \lambda'^*\}$ as a function of the exogenous parameters, specifically, k_1, k_2 , and $I^{\mathcal{L}'}$. As a result, the equilibrium allocation of factors of production $L_1'^*$ and $k_i'^*, i = 1, 2$ ultimately depends on $k_1, k_2, \tau_1'^*$, and $\tau_2'^*$.

¹⁴We do not restrict tax rates to be non-negative. However, it is clear that they cannot be negative or zero in both sectors at the same time.

¹⁵We assume that the welfare weights attached to \mathcal{L} and \mathcal{K} are the same across sectors. It can also be assumed that governments are identified with workers or domestic capitalists operating in specific sectors, which would require using different welfare weights for each group in each sector. As labor is mobile and wages are equalized across sectors, the latter is irrelevant for \mathcal{L} . It would still seem reasonable, though, to consider different weights for the fixed factors K_1 and K_2 . For simplicity, we assume that domestic capitalists are treated identically regardless of the sector where they operate.

Equations (21) and (22) simply establish the level of the in-kind transfer targeted to the corresponding political group: $g^{\mathcal{L}'}$ (or $g^{\mathcal{K}'}$) is such that $v_g(g^{\mathcal{L}'}) = \lambda'$ (or $\bar{K}v_g(g^{\mathcal{K}'}) = \lambda'$).¹⁶

Consider, in first place, a pro-labor government, i.e. $I^{\mathcal{L}'} = 1$, and suppose that T' is strictly concave in τ'_i .¹⁷ In this case,

$$\frac{\partial w'}{\partial \tau'_i} \bar{L} = -\lambda' \frac{\partial T'}{\partial \tau'_i}. \quad (25)$$

Hence, since $\lambda' > 0$, the expressions $\partial w'/\partial \tau'_i$ and $\partial T'/\partial \tau'_i$ have opposite signs. In this way, when domestic labor and foreign capital are substitutes, i.e. $\partial w'/\partial \tau'_i > 0$, then τ'_i is set at an excessively high level. In other words, the level of τ'_i chosen by a pro-labor government under the previous conditions is higher than the level of τ'_i that would maximize T' (or the in-kind transfer received by the government). When foreign investment and labor are complements in production, i.e. $\partial w'/\partial \tau'_i < 0$, then $\partial T'/\partial \tau'_i > 0$. In this situation, a decline in τ'_i increases the wages received by labor, but, at the same time, it decreases the in-kind transfer received by this group. Thus, a pro-labor government chooses the level of τ'_i that balances these two effects.¹⁸

When a pro-capital government is in power in the second period, i.e. $I^{\mathcal{L}'} = 0$, then

$$\frac{(\bar{r}'_1 + \bar{r}'_2)}{\partial \tau'_i} = -\lambda' \frac{\partial T'}{\partial \tau'_i}. \quad (26)$$

Since the expression on the LHS of (26) cannot be unambiguously signed, then it is not possible, without making further assumptions, to establish definite conclusions in terms of the level of τ'_i chosen by a pro-capital government. We will later explore this effect in more detail in a numerical example where we add more structure to the production and utility functions.

Additionally, tax rates determined in the second period also depend on the amount

¹⁶It should be clear that the Lagrange multipliers are not necessarily equal in the two cases.

¹⁷In other words, $\partial T'/\partial \tau'_i$ is positive for low values of τ'_i and negative for large values of τ'_i . The latter is always true in the cases that we consider later in our numerical examples.

¹⁸If we assume that the transfer received by the political group is an in-cash transfer and that τ'_i can also be negative, then a pro-labor government may even end up subsidizing foreign capital under the conditions established before.

of foreign capital operating in each sector in the previous period, which, in turn, depend on the tax rates decided by the partisan government at the beginning of that period. The next section addresses this issue.

4.3 First Period

Economic agents take decisions in the first period assuming that a pro-labor (pro-capital) government will be in power with probability β' ($1 - \beta'$) next period, and that this government, when determining the level of the policy variables, will maximize the utility of their constituents, as studied earlier.

4.3.1 The Firm's Problem

At the end of the first period (i.e., after observing the tax rates decided by a partisan government and anticipating -in expected terms- the tax policy of the second period), the allocation of factors of production $\{k_1, k_2, L_1, L_2\}$ is determined. The following system of equations define the equilibrium values of these variables:

$$f_{k,1}(k_1, L_1) - \tau_1 - r + \delta E [f_{k,1}(k_1^*, L_1^*) - \tau_1^*] = 0, \quad (27)$$

$$f_{k,2}(k_2, L_2) - \tau_2 - r + \delta E [f_{k,2}(k_2^*, L_2^*) - \tau_2^*] = 0, \quad (28)$$

$$f_{L,1}(k_1, L_1) - f_{L,2}(k_2, L_2) = 0, \quad (29)$$

where δ is the discount factor, $L_2 = \bar{L} - L_1$, and

$$\begin{aligned} E[f_{k,i}(k_i^*, L_i^*) - \tau_i^*] &\equiv \beta' [f_{k,i}(k_i^*, L_i^*) - \tau_i^*]_{I\mathcal{L}'=1} \\ &+ (1 - \beta') [f_{k,i}(k_i^*, L_i^*) - \tau_i^*]_{I\mathcal{L}'=0}. \end{aligned} \quad (30)$$

Foreign capital in each sector will enter the country in sector i until the sum of the first-period net return of capital and the discounted second-period net return is equalized to the opportunity cost, given by r . Since domestic labor is completely mobile across sectors, wages should also be equalized in equilibrium, as studied earlier.

4.4 First Period: The Government's Problem

At the beginning of the first period, a partisan government characterized by β decides the optimal policy for that period, considering that $\{k_1, k_2, L_1\}$ are determined by the system (27)-(29). Note that even though governments are only concerned about the current well-being of their political base, their decisions will definitely have implications for future governments.

5 Numerical Example

To illustrate the implications of the theoretical model introduced earlier, we compute several examples using specific functional forms for production and utility functions. In particular, our objective is to examine how tax rates on foreign capital across sectors chosen by pro-labor governments differ from those imposed by pro-capital governments and how these choices depend on adjustment/capital mobility costs. In doing so, we also examine the role played by the degree of substitutability between domestic labor and foreign capital.

5.1 Description of the numerical example

In the examples, we use the following functional specifications. First, the utility function is defined by $U_h = y_h + b \ln(g_h)$, for $h = \mathcal{L}, \mathcal{K}$, with $b > 0$. Second, the production technology is represented by the following production function:¹⁹

$$q = AK^\alpha [L^\sigma + ak^\sigma]^{(1-\alpha)/\sigma}, \quad (31)$$

where $\alpha \in (0, 1)$, $\sigma \in (-\infty, 1)$, and $a > 0$. The production function has the following characteristics. The parameter a is the effectiveness of foreign capital relative to domestic labor. The production function is a CRS Cobb-Douglas function in the inputs K and the composite term $[L^\sigma + ak^\sigma]^{1/\sigma}$. The function allows for different substitution possibilities across factors, determined by the parameter σ . In fact, the elasticity of substitution

¹⁹We use a similar specification as the one employed by Katz and Murphy (1992), Krussel et al (2000), and Ciccone and Peri (2003). The functional form is the same for each sector, but the parameters may differ. In fact, the numerical examples will consider the effect on the policy variables when σ differs across sectors.

between domestic labor and foreign capital is $1/(1 - \sigma)$.²⁰ In section (4), we define complementarity and substitutability between domestic labor and foreign capital in terms of the sign of f_{Lk} : if $f_{Lk} > 0$, they are complements, and if $f_{Lk} < 0$, they are substitutes. When the production function is specified as in (31), the following relationship between σ , α and f_{Lk} holds:

$$f_{Lk} = \frac{(1 - \alpha - \sigma) f_L f_k}{(1 - \alpha) q}. \quad (32)$$

The latter implies that when $\sigma < (1 - \alpha)$, then k and L are necessarily complements, while when $\sigma > (1 - \alpha)$, they are substitutes.

In the numerical example, we adopt the following approach. In the first period, a government characterized by a value of $\beta = 0.5$ decides the policy that maximizes the welfare of their constituents. In the next period, we consider three alternatives: (i) the political orientation of the government deciding the policy in the second period is the same as the one in the first period, i.e., $\beta' = 0.5$; (ii) the government in the second period is relatively more pro-capital, i.e., $\beta' = 0.4$; and (iii) the government in the second period is relatively more pro-labor, i.e., $\beta' = 0.6$.

5.2 Results

Tables 1, 2, and 3 summarize the results obtained in different numerical simulations for different assumptions regarding the technological relationship between factors of production and mobility costs.²¹ Each table also considers a wide range of domestic political conditions: a pro-labor ($I^{\mathcal{L}} = 1$) or a pro-capital ($I^{\mathcal{L}} = 0$) partisan government in the first period, and different probabilities that a pro-labor government is in power in the second period

²⁰ σ also indirectly affects the elasticities of substitution between domestic capital and labor and between domestic capital and foreign capital. These elasticities are not constant and are given, respectively, by

$$\varepsilon_{KL} = \frac{\alpha L^\sigma + ak^\sigma}{\alpha L^\sigma(1 - \sigma) + ak^\sigma} \quad \text{and} \quad \varepsilon_{Kk} = \frac{L^\sigma + \alpha ak^\sigma}{L^\sigma + \alpha ak^\sigma(1 - \sigma)}.$$

²¹The cases considered in the numerical example correspond to those analyzed in Pinto and Pinto (2008).

$(\beta' \in [0, 1])$.²² Initially, we assume that sectors 1 and 2 are completely identical.²³ The parameter values are listed at the bottom of the tables. The following conclusions can be derived from the numerical exercise.

First, Table 1 shows the results when domestic labor and foreign capital are substitutes. When $\phi_1 = \phi_2 = 0$, foreign capital adjusts to its desired level at each stage. In other words, the decisions made at each stage are independent of one another. As capital is perfectly mobile, higher tax rates affect wages and the return to domestic capital in opposite directions, in particular, $\partial w' / \partial \tau'_i > 0$ and $\partial \bar{r}' / \partial \tau'_i < 0$. Thus, the table shows that a pro-labor government tends to choose higher tax rates, while a pro-capital government chooses lower tax rates. Assuming, as in the obsolescing bargain literature, that it is costly to change the level of capital, specifically, if $\phi_1 = \phi_2 = 0.025$, then decisions made in period one affect the equilibrium values of the variables in the second period. The following conclusions can be obtained from that table: In the first place, tax rates are systematically higher in the second period regardless of the government's political orientation. The latter is consistent with the idea that in the presence of capital adjustment costs, capital becomes more inelastic in the second period and, consequently, it is taxed more. This is a typical hold-out problem identified in the literature. In the second place, consider a pro-labor government deciding the levels of tax rates in the first period. As β' declines, or in other words, as it is more likely to observe a pro-capital government in the second period, both the first and second period tax rates chosen by a pro-labor government declines. The opposite effect is observed when a pro-capital government is in power in the first period and β' increases.

Second, Tables 2 and 3 present two cases where foreign capital and labor are complements in production. Table 2 shows that when capital mobility costs are zero, tax rates are lower when a pro-labor government is in power than when the government is pro-capital. Note that if $\phi_1 = \phi_2 = 0$, as tax rates increase wages unambiguously decline, but $\partial \bar{r}' / \partial \tau'_i$ can be positive or negative. Table 2 precisely describes a situation where the return to domestic capitalists rises with higher levels of τ_i . In the presence of positive capital mo-

²²Due to space limitations, the tables only include the equilibrium values of the variables chosen in the second period by a government of the same type as the one taking decisions in the first period. For instance, $I^L = 1$ and $I^{L'} = 1$.

²³We will later consider cases where sectors are asymmetric.

bility costs, tax rates are lower in the first period than those implemented when there are no costs of adjustment, i.e., $\phi_1 = \phi_2 = 0$. Also, if the government is pro-labor and capital adjustment costs are positive, tax rates in both periods are higher when β' decreases (i.e., when the probability of observing a pro-capital government in the next period increases). The opposite effect takes place when a pro-capital government decides tax rates in the first period and β' increases. This suggests that the incentives to act opportunistically are different for incumbents of different orientation. These incentives can be augmented or mitigated depending on the distributive consequences of foreign investment. This is, we believe, a novel result.

Table 3 shows a situation where $\partial\bar{r}'/\partial\tau'_i < 0$ when $\phi_1 = \phi_2 = 0$, which in turn implies that a pro-capital government will choose lower tax rates. Tax rates are also smaller when capital mobility costs are positive. The difference with the previous table is that now tax rates increase when β' increases.

6 Conclusions

Recent work on the political determinants of FDI has found preliminary evidence that, controlling for the determinants of capital flows identified in the literature, aggregate FDI inflows tend to be larger to governments that cater to labor (Pinto 2004, 2005). Those models were motivated by the assumption that foreign capital is more likely to increase labor demand. Yet we have reason to believe that this assumption depends on the technology associated with capital inflows, which could either complement or substitute for labor and capital in the host, leading to starkly different distributive consequences.

In Pinto and Pinto (2008), we argued that different forms of FDI react differently to political incentives, and hence predicted the existence of partisan cycles in the flow of foreign direct investment to different industries. In host countries governed by the left, FDI will flow to sectors where it is a complement of labor, such as manufacturing. Moreover we expected that capital will be attracted to those sectors where foreign capital is a complement of capital, hence substituting for labor, when the right/pro-business party is

in power.²⁴ In that paper we modeled the interaction between governments and investors as a static game aimed at capturing the long-term equilibrium allocation of investment when costs of relocation tend to zero. We have, hence, abstracted from adjustment costs and time consistency problems faced by investors and governments respectively in their strategic interaction.

In the present work we extend the model by adding this dynamic element to analyze the effect of partisanship on the regulation of FDI. Our modeling strategy allows us to identify the conditions under which higher costs of redeployment will affect the incentives to tax foreign investment more heavily, rendering the predictions from the obsolescing bargain literature as a sub-case in the broader framework that we defined as the politics of investment. We can also show irrespective of the costs of adjustment that investors face the incumbents have an incentive to tax more heavily foreign capital that is substitute in production to the incumbents' core constituents, i.e.: the pro-labor government will, for instance, tax more heavily foreign capital that is associated with the introduction of labor saving technologies, as predicted by our earlier work. We are also able to identify conditions under which in the second period the pro-labor will offer better investment conditions -in the form of lower taxes in our stylized model- to investment that raises labor demand, and hence wages. How much those taxes are reduced depends on the the marginal rate of substitution of direct income through higher wages, and the utility derived by labor from government transfers.

We can also predict that as the probability that the incumbent will be replaced in the the second period increases the rate of return offered to foreign investors in the first stage should compensate them for their cost of redeployment. As discussed earlier, the rate of return offered by the pro-labor government should high enough to sustain profitability during its tenure when redeployment costs are sufficiently high. In the second period the pro-labor government that succeeds a pro-capital one should offer investors that complement labor in production an even lower tax rate than it would have offered in the first period, to lure that investor in. The predictions are consistent with our findings on the differential sectoral allocation of FDI in OECD countries as the orientation of the

²⁴In Pinto and Pinto (2007), we analyze the consequences of adding employment effects to the analysis of the political economy of FDI when the incumbent has partisan motivations.

incumbent changed, and the positive effect of FDI on wages under the left (see Pinto and Pinto 2008).²⁵ In future research we intend to explore the effect of allowing investors to adjust technology to changing political conditions to maximize rate of return conditional on the orientation of the incumbent.

²⁵The proposition that higher capital mobility, and hence lower adjustment costs, is also consistent with the findings by Gourevitch et al. on the positive correlation between the left and international market capitalization.

Table 1: Substitutes.

<i>Pro – Labor</i> ($I^{\mathcal{L}} = 1, I^{\mathcal{L}'} = 1$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.1471	0.1471	0.6319	0.6319	0.1859	0.1471	0.1471	0.6320	0.6320	0.1859
0.025	0.1	0.0949	0.0949	1.5319	1.5319	0.2908	0.1553	0.1553	0.6621	0.6621	0.2057
0.025	0.3	0.0965	0.0965	1.4720	1.4720	0.2841	0.1569	0.1569	0.6526	0.6526	0.2048
0.025	0.5	0.0982	0.0982	1.4133	1.4133	0.2776	0.1585	0.1585	0.6431	0.6431	0.2038
0.025	0.7	0.0999	0.0999	1.3575	1.3575	0.2712	0.1601	0.1601	0.6337	0.6337	0.2029
0.025	0.9	0.1017	0.1017	1.3029	1.3029	0.2650	0.1617	0.1617	0.6241	0.6241	0.2019
<i>Pro – Capital</i> ($I^{\mathcal{L}} = 0, I^{\mathcal{L}'} = 0$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.0452	0.0452	1.8474	1.8474	0.1670	0.0452	0.0452	1.8478	1.8478	0.1670
0.025	0.1	0.0231	0.0231	5.2959	5.2959	0.2447	0.0455	0.0455	2.3110	2.3110	0.2101
0.025	0.3	0.0234	0.0234	5.1140	5.1140	0.2393	0.0460	0.0460	2.2791	2.2791	0.2098
0.025	0.5	0.0238	0.0238	4.9251	4.9251	0.2344	0.0467	0.0467	2.2450	2.2450	0.2095
0.025	0.7	0.0242	0.0242	4.7428	4.7428	0.2296	0.0473	0.0473	2.2110	2.2110	0.2091
0.025	0.9	0.0246	0.0246	4.5671	4.5671	0.2247	0.0479	0.0479	2.1773	2.1773	0.2087

Parameter values:

$$r = 0.06; A_1 = A_2 = 1; \alpha_1 = \alpha_2 = 0.80; \sigma_1 = \sigma_2 = 0.50; \delta = 0.80; b = 0.30.$$

Table 2: Complements: Case I.

<i>Pro – Labor</i> ($I^{\mathcal{L}} = 1, I^{\mathcal{L}'} = 1$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.1239	0.1239	0.3472	0.3472	0.0860	0.1239	0.1239	0.3473	0.3473	0.0860
0.02	0.1	0.0659	0.0659	0.7324	0.7324	0.0965	0.1260	0.1260	0.3646	0.3646	0.0919
0.02	0.3	0.0657	0.0657	0.7359	0.7359	0.0967	0.1259	0.1259	0.3650	0.3650	0.0919
0.02	0.5	0.0655	0.0655	0.7394	0.7394	0.0969	0.1257	0.1257	0.3654	0.3654	0.0919
0.02	0.7	0.0653	0.0653	0.7428	0.7428	0.0970	0.1256	0.1256	0.3658	0.3658	0.0919
0.02	0.9	0.0651	0.0651	0.7464	0.7464	0.0972	0.1254	0.1254	0.3663	0.3663	0.0919
<i>Pro – Capital</i> ($I^{\mathcal{L}} = 0, I^{\mathcal{L}'} = 0$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.1631	0.1631	0.2797	0.2797	0.0912	0.1631	0.1631	0.2796	0.2796	0.0912
0.02	0.1	0.0985	0.0985	0.5385	0.5385	0.1061	0.1701	0.1701	0.2831	0.2831	0.0964
0.02	0.3	0.0982	0.0982	0.5410	0.5410	0.1063	0.1700	0.1700	0.2835	0.2835	0.0964
0.02	0.5	0.0979	0.0979	0.5436	0.5436	0.1064	0.1698	0.1698	0.2838	0.2838	0.0964
0.02	0.7	0.0976	0.0976	0.5463	0.5463	0.1066	0.1696	0.1696	0.2841	0.2841	0.0964
0.02	0.9	0.0974	0.0974	0.5484	0.5484	0.1068	0.1695	0.1695	0.2844	0.2844	0.0964

Parameter values:

$$r = 0.06; A_1 = A_2 = 1; \alpha_1 = \alpha_2 = 0.505; \sigma_1 = \sigma_2 = -0.35; \delta = 0.70; b = 0.15.$$

Table 3: Complements: Case II.

<i>Pro – Labor</i> ($I^{\mathcal{L}} = 1, I^{\mathcal{L}'} = 1$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.3428	0.3428	0.8408	0.8408	0.5764	0.3428	0.3428	0.8407	0.8407	0.5765
0.07	0.1	0.1440	0.1440	3.0924	3.0924	0.8906	0.3136	0.3136	1.0253	1.0253	0.6431
0.07	0.3	0.1449	0.1449	3.0235	3.0235	0.8762	0.3152	0.3152	1.0196	1.0196	0.6428
0.07	0.5	0.1457	0.1457	2.9574	2.9574	0.8618	0.3168	0.3168	1.0139	1.0139	0.6424
0.07	0.7	0.1467	0.1467	2.8891	2.8891	0.8477	0.3185	0.3185	1.0079	1.0079	0.6421
0.07	0.9	0.1477	0.1477	2.8222	2.8222	0.8337	0.3202	0.3202	1.0019	1.0019	0.6417
<i>Pro – Capital</i> ($I^{\mathcal{L}} = 0, I^{\mathcal{L}'} = 0$)											
ϕ_i	β'	τ_1	τ_2	k_1	k_2	T	τ'_1	τ'_2	k'_1	k'_2	T'
0		0.0984	0.0984	1.8365	1.8365	0.3614	0.0984	0.0984	1.8364	1.8364	0.3614
0.07	0.1	0.0346	0.0346	6.8599	6.8599	0.4747	0.0873	0.0873	2.4042	2.4042	0.4199
0.07	0.3	0.0348	0.0348	6.7222	6.7222	0.4679	0.0878	0.0878	2.3932	2.3932	0.4203
0.07	0.5	0.0350	0.0350	6.5857	6.5857	0.4610	0.0883	0.0883	2.3820	2.3820	0.4207
0.07	0.7	0.0352	0.0352	6.4504	6.4504	0.4541	0.0888	0.0888	2.3706	2.3706	0.4211
0.07	0.9	0.0354	0.0354	6.3164	6.3164	0.4472	0.0893	0.0893	2.3590	2.3590	0.4215

Parameter values:

$$r = 0.22; A_1 = A_2 = 1; \alpha_1 = \alpha_2 = 0.67; \sigma_1 = \sigma_2 = 0.20; \delta = 0.76; b = 0.29.$$

References

- Alesina, Alberto, 1987, Macroeconomic Policy in a Two-Party System as a Repeated Game. *The Quarterly Journal of Economics* 102, 651-678.
- Alesina, Alberto, 1988, Macroeconomics and politics. *National Bureau of Economic Research Macroeconomics Annual* 3, 13-36.
- Alesina, Alberto, and Howard Rosenthal, 1995, *Partisan politics, divided government, and the economy* (Cambridge University Press, New York).
- Alvarez, R. M., Geoffrey Garrett, and Peter Lange, 1991, Government Partisanship, Labor Organization, and Macroeconomic Performance. *American Political Science Review* 85, 539-556.
- Barro, Robert J., and Xavier Sala-i-Martin, 2003, *Economic Growth*, 2nd ed. (MIT Press, Cambridge, MA).
- Beck, Nathaniel, Jonathan N. Katz, R. M. Alvarez, Geoffrey Garrett, and Peter Lange, 1993, Government Partisanship, Labor Organization, and Macroeconomic Performance - A Corrigendum. *American Political Science Review* 87, 945-954.
- Boix, Carles, 1998, *Political parties, growth and equality: conservative and social democratic economic strategies in the world economy* (Cambridge University Press, New York).
- Boix, Carles, 2003, *Democracy and redistribution*, Cambridge studies in comparative politics. Cambridge, UK; New York: Cambridge University Press.
- Calvo, Guillermo A., 1978, On the Time Consistency of Optimal Policy in a Monetary Economy. *Econometrica: Journal of the Econometric Society* 46, 1411-1428.
- Caves, Richard E., 1996, *Multinational enterprise and economic analysis*, 2nd ed. (Cambridge University Press, NY).
- Chari, Varadarajan V., and Patrick J. Kehoe, 1990, Sustainable Plans. *Journal of Political Economy* 98, 784-802.
- Ciccone, A., and G. Peri, 2003, Technological Progress and Skills' Substitutability: U.S. States 1950-1990. CESifo Working Paper Series CESifo Working Paper No. 1024.

- Conyon, M. J., S. Girma, S. Thompson, and P. W. Wright, 2002, The productivity and wage effects of foreign acquisition in the United Kingdom. *Journal of Industrial Economics* 50, 85-102.
- Cox, Gary W., and Mathew D. McCubbins, 1993, *Legislative leviathan: party government in the House* (University of California Press, Berkeley).
- Drazen, Allan, 2000, *Political economy in macroeconomics* (Princeton University Press, Princeton).
- Dunning, J. H., 1981, *International Production and Multinational Enterprise* (George Allen and Unwin, London)
- Dutt, Pushan, and Devashish Mitra, 2005, Political Ideology and Endogenous Trade Policy: An Empirical Investigation. *The Review of Economics and Statistics* 87, 59 - 72.
- Feldstein, Martin S., James R. Hines, and R. Glenn Hubbard, 1995, *Taxing multinational corporations* (University of Chicago Press, Chicago)
- Feliciano, Z. and R. Lipsey, 1999, Foreign Ownership and Wages in the United States, 1987-1992. NBER Working Paper No. w6923.
- Franzese, Robert J., 2002, Electoral and Partisan Cycles in Economic Policies and Outcomes. *Annual Review of Political Science* 5, 369 - 421.
- Garrett, Geoffrey, 1998, *Partisan politics in the global economy* (Cambridge University Press, New York).
- Golub, Stephen, 2003, Measures of Restrictions on Inward Foreign Direct Investment for OECD Countries. *OECD Economic Studies* 36, 85-116.
- Gourevitch, Peter, Pablo M. Pinto and Stephen Weymouth, 2008. "The Politics of Stock Market Development." Paper presented at the Annual Conference of the International Studies Association, San Francisco, CA, March 26, 2008.
- Haber, Stephen, Noel Maurer, and Armando Razo, 2002, Sustaining Economic Performance under Political Instability: Political Integration in Revolutionary Mexico, in Stephen Haber, ed., *Crony capitalism and economic growth in Latin America: theory and evidence* (Hoover Institution Press, Stanford, CA).

- Haber, Stephen, Armando Razo and Noel Maurer, 2003, The politics of property rights: political instability, credible commitments, and economic growth in Mexico, 1876-1929. New York, NY: Cambridge University Press.
- Haggard, Stephan, 1990, *Pathways from the periphery: the politics of growth in the newly industrializing countries* (Cornell University Press, Ithaca, NY).
- Hanson, Gordon H., Raymond J. Mataloni, Jr., and Matthew J. Slaughter, 2001, Expansion Strategies of U.S. Multinational Firms. *Brookings Trade Forum*, 245 - 282.
- Henisz, Witold J., 2000, The Institutional Environment for Multinational Investment. *Journal of Law, Economics, and Organization* 16, 334-364.
- Henisz, Witold J., 2002, The institutional environment for infrastructure investment. *Industrial and Corporate Change* 11, 355 - 389.
- Henisz, Witold J., and John G. Williamson, 1999, Comparative Economic Organization: within and between countries. *Business and Politics* 1, 261-276.
- Henisz, Witold J., and Bennet A. Zelner, 2001, The Institutional Environment for Telecommunications Investment. *Journal of Economics and Management Strategy* 10, 123.
- Heston, Alan, Robert Summers and Bettina Aten, 2002, Penn World Table Version 6.1. Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.
- Hibbs, Douglas A., Jr., 1977, Political Parties and Macroeconomic Policy. *The American Political Science Review* 71, 1467-1487.
- Hibbs, Jr Douglas A., 1992, Partisan theory after fifteen years. *European Journal of Political Economy* 8, 361.
- Hines, James R., 2001, *International taxation and multinational activity* (University of Chicago Press, Chicago).
- Hymer, Stephen, 1976, *The international operations of national firms: a study direct foreign investment* (MIT Press, Cambridge, MA).
- Iversen, Torben, 1999, *Contested economic institutions: the politics of macroeconomics and wage bargaining in advanced democracies* (Cambridge University Press, New York).

- Janeba, Eckhard, 2001, Global corporations and local politics: a theory of voter backlash. NBER Working Paper No. w8254.
- Jensen, Nathan M., 2003, Democratic Governance and Multinational Corporations: Political Regimes and Inflows of Foreign Direct Investment. *International Organization* 57, 587-616.
- Jensen, Nathan M., 2006, *Nation-States and the Multinational Corporation: Political Economy of Foreign Direct Investment* (Princeton University Press, Princeton).
- Katz, L., and K. Murphy, 2000, Change in Relative Wages 1963-1987: Supply and Demand Factors. *Quarterly Journal of Economics* 107, 35-78.
- Klein, Paul and Jose-Victor Rios-Rull, 2003, Time-Consistent Optimal Fiscal Policy. *International Economic Review* 44, 1217-1245.
- Krusell P., L. Ohanian, V. Rios-Rull, and G. Violante, 2000, Capital-Skill Complementarity and Inequality: A Macroeconomic Analysis. *Econometrica* 68, 1029-53.
- Kydland, Finn E., and Edward C. Prescott, 1977, Rules Rather than Discretion: The Inconsistency of Optimal Plans. *The Journal of Political Economy* 85, 473 - 492.
- Levy, Brian, and Pablo T. Spiller, 1994, The Institutional Foundations of Regulatory Commitment: A Comparative Analysis of Telecommunications Regulation. *Journal of Law, Economics, and Organization* 10, 201 - 246.
- Li, Quan and Adam Resnick, 2003, Reversal of Fortunes: Democracy, Property Rights and Foreign Direct Investment in Developing Countries. *International Organization* 57, 1-37.
- Lipsey, Robert E. 2001. Foreign direct investment and the operations of multinational firms: concepts, history, and data. NBER Working Paper No. w8665.
- Mardon, Russell, 1990, The State and the Effective Control of Foreign-Capital - The Case of South-Korea. *World Politics* 43, 111-138.
- Markusen, James R.. 1998a. Contracts, Intellectual Property Rights and Multinational Investment in Developing Countries. NBER Working Paper No. w.6448.
- Markusen, James R., 1998b, Multinational Firms, Location and Trade. *World Economy*

21, 733-756.

Markusen, James R. and Keith E. Maskus, 1999a, Multinational firms: reconciling theory and evidence. NBER Working Paper No. w.7163.

Markusen, James R. and Keith E. Maskus, 1999b, Discriminating among alternative theories of the multinational enterprise. NBER Working Paper No. w7164.

Mataloni, Raymond J., Jr. 1995. A guide to BEA statistics on U.S. multinational companies. *Survey of Current Business* 75, 38-55.

Milner, Helen V., and Benjamin Judkins, 2004, Partisanship, Trade Policy, and Globalization: Is There a Left-Right Divide on Trade Policy? *International Studies Quarterly* 48, 95-120.

Moran, Theodore H., 1974, *Multinational corporations and the politics of dependence: copper in Chile* (Princeton University Press, Princeton, N.J.)

Nicolas, Françoise, 2001, A case of government-led integration into the world economy, in Frédérique Sachwald, ed., *Going multinational: the Korean experience of direct investment. Studies in global competition* (Routledge, London).

Nicolas, Françoise, 2003, FDI as a factor of economic restructuring: the case of South Korea, in A. Bende-Nabende, ed., *International trade, capital flows, and economic development in East Asia: the challenge in the 21st century* (Ashgate, Aldershot, Hampshire).

North, Douglass C., and Robert P. Thomas, 1973, *The Rise of the Western World: A New Economic History* (Cambridge University Press, Cambridge).

North, Douglass C., and Barry Weingast, 1989, Constitutions and Credible Commitments. *Journal of Economic History* 49, 802-32.

OECD, 2005, STAN Structural Analysis Database (online resource, accessed on: 07/04/05).
OECD-Organisation for Economic Co-operation and Development.

OECD, 2005, International Direct Investment Statistics. International Direct Investment by Industrial Sector Vol 2001 release 02 (online resource, accessed on: 07/06/05). OECD-Organisation for Economic Co-operation and Development.

ONeal, John R., 1994, The affinity of foreign investors for authoritarian regimes. *Political*

- Research Quarterly* 47, 565-588.
- Persson, Torsten, and Guido Enrico Tabellini, 2000, *Political economics: explaining economic policy* (MIT Press, Cambridge, MA).
- Pinto, Pablo Martin, 2004, Domestic Coalitions and the Political Economy of Foreign Direct Investment. Ph.D. dissertation, Political Science, University of California, San Diego, La Jolla, CA.
- Pinto, Pablo M. and Santiago M. Pinto, 2008, The Politics of Investment. Forthcoming in *Economics and Politics*.
- Rodrik, Dani, 1999, Democracies Pay Higher Wages. *The Quarterly Journal of Economics* 114, 707-738.
- Sachwald, Frédérique, ed., 2001, *Going multinational: the Korean experience of direct investment. Studies in global competition* (Routledge, London).
- Sachwald, Frédérique, 2003, FDI and the Economic Status of Korea: The Hub Strategy in Perspective. Korea Economic Institute of America Washington, D.C..
- Spiller, P. T., and M. Tommasi, 2003, The institutional foundations of public policy: A transactions approach with application to Argentina. *Journal of Law Economics and Organization* 19, 281-306.
- Stasavage, David, 2003, *Public debt and the birth of the democratic state: France and Great Britain, 1688-1789* (Cambridge University Press, New York, NY).
- Stolper, Wolfgang F., and Paul A. Samuelson, 1941, Protection and Real Wages. *The Review of Economic Studies* 9, 58-73.
- Tufte, Edward R., 1978, *Political control of the economy. Princeton* (Princeton University Press, NJ).
- Tybout, J., 2000, Manufacturing Firms in Developing Countries: How Well Do They Do, and Why? *Journal of Economic Literature* 38, 11-44.
- Vernon, Raymond, 1971, *Sovereignty at bay; the multinational spread of U.S. enterprises* (Basic Books, New York).
- Whiting, Van R., 1992, *The political economy of foreign investment in Mexico: nationalism,*

- liberalism, and constraints on choice* (Johns Hopkins University Press, Baltimore).
- Wildasin, David E., 2003, Fiscal Competition in Space and Time. *Journal of Public Economics* 87, 2571-2588.
- Williamson, Oliver E., 1985, *The economic institutions of capitalism: firms, markets, relational contracting* (Free Press, New York).
- Wilson, John D., 1999, Theories of Tax Competition. *National Tax Journal* 52, 269-304.
- Yun, Mikyung, 2003, FDI and corporate restructuring in post-crisis Korea, in S. Haggard, W. Lim and E. Kim, eds., *Economic crisis and corporate restructuring in Korea: reforming the chaebol* (Cambridge University Press, Cambridge, UK).