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POLITICAL PRESSURES AND EXCHANGE RATE STABILITY IN EMERGING MARKET ECONOMIES

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This paper presents a political economy model of exchange rate policy. The theory is based on a common agency approach with rational expectations. Financial and exporter lobbies exert political pressures to influence the government's choice of exchange rate policy, before shocks to the economy are realized. The model shows that political pressures affect exchange rate policy and create an over-commitment to exchange rate stability. This helps to rationalize the empirical evidence on fear of large currency swings that characterizes exchange rate policy of many emerging market economies. Moreover, the model suggests that the effects of political pressures on the exchange rate are lower if the quality of institutions is higher. Empirical evidence for a large sample of emerging market economies is consistent with these findings.

JEL classification codes: F3, D7
Key words: exporters and financial lobbies, exchange rate stability

I. Introduction

Nominal exchange rates show little variation in most emerging market economies. In a seminal article Calvo and Reinhart (2002) estimate that the probability that the monthly variation of the nominal exchange rate is in a narrow band of plus/minus

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2.5% is over 79% for countries which claim to have *freely floating* exchange rate regime, most of which are emerging market economies.[1] For emerging economies under *managed floating* regimes and with *limited flexibility* arrangements this probability is respectively 87% and 92%. These numbers are surprisingly high: the same probability for pure floaters such as the United States and Japan is respectively of 59% and 61%. This is even more remarkable considering that emerging market economies generally experience larger and more frequent shocks.[2] Furthermore, Calvo and Reinhart (2002) show that interest rate and reserve variability are significantly higher in emerging market economies than in G3 economies, attesting to active policies to smooth exchange rate fluctuations.

One theoretical milestone in providing an explanation of exchange rate policy for emerging market economies has been set by the models that explore the hypothesis of liability dollarization and currency mismatch as major deterrents for exchange rate fluctuations. From an empirical point of view a recent prolific literature has shown the importance of both liability dollarization and political and institutional factors as main determinants of exchange rate policy (a brief survey is reported in Section II).

Our goal is to go beyond the existing literature in providing a simple model that conjugates economic and political determinants –i.e., such as liability dollarization and lobbying activity– and show how these elements interact to influence exchange rate policy in emerging market economies. More precisely the model shows that the reluctance to let the currency float is associated with pressures exerted by interest groups representing the financial and the production sectors. This happens even when exchange rate movements could be beneficial from a social perspective.

The stylized economic model is a one period small open economy with two groups of individuals characterized by conflicting interests toward exchange rate policy. The first group, which we label *producers*, produces a tradable good and seeks for a loan in domestic currency in order to cover the costs of production.

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[1] Calvo and Reinhart (2002) refer to this phenomenon -the deviation from the announced floating regime- as *fear of floating*.

[2] For instance, volatility of real output is between two and two and half times larger in emerging markets than in the G7 economies.

The services of this loan are chosen at the beginning of the period by the financial sector. Since producers' revenues depend on the exchange rate while loan services are determined in domestic currency, ex-post producers profit from exchange rate depreciations. The second group of agents, which we label *bankers*, are producers of an intermediation service. They are specialized in obtaining funds from the world market, pooling resources and supplying loans to producers in domestic currency. The balance sheet of a typical bank is characterized by a currency mismatch since liabilities are in foreign currency while assets are in domestic currency, therefore bankers profit from currency appreciation. As it stands, lobbies clearly have ex-ante diverging interests concerning the direction of exchange rate movements –e.g., appreciation for bankers and depreciation for producers–, however and despite this they both dislike ex-post excessive volatility in the exchange rate. The reason for this lies in the fact that foreign investors supply funds to intermediary by charging a premium on external finance.[3] Such premium, which is adversely affected by exchange rate volatility, increases both the cost of liabilities for bankers and the loan services to producers. Hence the larger are the expected movements in the exchange rate the higher are the interest rates on domestic and foreign loans and the lower is welfare for both producers and bankers.

The political game assumes that the two sectors are politically organized –i.e., have their interest represented by lobbies. More specifically, interest groups exert political pressures to influence the decisions of the government in relation to the exchange rate policy. We follow Dixit and Jensen (2003) and model this situation as a common agency game with rational expectations.[4] However and contrary to their model, we assume that the interest groups' payoffs are (adversely) affected by the ex-ante volatility (rather than by the expected level) of the government's ex-post policy choice of the exchange rate. Political pressures take the form of incentive schemes offered to the government at the beginning of the period –i.e., before a shock to technology is realized. The government chooses the exchange rate policy after the shock is observed and political pressures are exerted so as to trade-off conflicting interests in society.

The equilibrium policy of this game is given by a weighted average of the two

[3] It is plausible to assume that foreign investors bear the risk of facing informational asymmetries and cover this cost by charging a premium for external finance.

[4] Dixit and Jensen (2003) extend the theory of common agency à la Bernheim and Whinston (1986) to the situation where the principals' payoffs are affected by their ex-ante expectation of the agent's ex-post choice. They show that the usual truthful schedule must be modified to account for the rational expectation constraint.

groups preferred policies (as in the standard common agency game à la Bernheim and Whinston 1986) and by a distortion associated with the effect on the groups' welfare of the ex-post exchange rate volatility. This distortion results from the attempts of organized groups to solve, in a non-cooperative way, the commitment problem of the government and it has the effect of limiting exchange rate movements, thus providing a political rational for the little variation of nominal exchange rates in emerging market economies. Each interest group attempts to influence the government to enact the policy it prefers –depreciation for producers, appreciation for bankers– but, at the same time, offers incentives to reduce expected exchange rate volatility. Interestingly, in the political equilibrium the exchange rate does not fluctuate much even when society as a whole would find it beneficial. In other words, lobbying activity works as an *over-commitment* device to exchange rate stability: since the political pressures exerted by the two lobbies are not coordinated they create strong incentives for the government to stabilize the exchange rate.

The model also predicts that the exchange rate fluctuates more in countries with better institutions (e.g. higher accountability and government effectiveness, more control of corruption, etc.) since governments are less responsive to special interests' political pressures.

We use ordered logit techniques to test these results for a large sample of emerging market economies. Our measure of exchange rate stability is the de facto exchange rate classification of Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005). Empirical evidence for our sample of countries supports the idea that the political influence of the production sector and of the financial sector exposed in foreign currency is associated with more stable exchange rates, but the less so the higher the quality of institutions.

The rest of the paper is divided as follows. Section II overviews the related literature. Section III presents the political model. In section IV we study the political economy of exchange rate policy. Section V contains the empirical evidence. Concluding remarks follow.

II. Relation with previous literature

The recent literature has put forward several explanations for the actual behavior of exchange rate policy in emerging markets. Liability dollarization may induce countries to tolerate less variation in their exchange rates (see Hausmann, Panizza and Stein 2001). Calvo and Reinhart (2002) argue that, in presence of high exchange rate pass-through, countries that adopt inflation targeting reduce exchange rate

volatility to maintain the commitment to the target. In Lahiri and Vegh (2001), exchange rate stability arises because there is an output cost associated to exchange rate fluctuations. Alesina and Wagner (2005) suggest that fear of floating might be used to signal high institutional quality because larger currency swings are generally associated with fragile and weak institutions.[5]

Our story does not exclude some of the previous arguments but enriches them with an important political economy dimension. First, in our model exchange rate stability is the (equilibrium) result of a political process (i.e., lobbying activity). Therefore, differently from some of the previous works on this topic, the reluctance to tolerate much variation in the exchange rate is not necessarily associated with the social optimum.[6] Second, we believe that previous work entails a contradictory argument: if flexible exchange rates are associated with additional welfare costs - due to balance sheet effects, output costs and/or credibility losses - a benevolent social planner would not want to announce more flexibility than what it is willing to deliver. In our framework the government can announce policies which are consistent with the social optimum, but then it deviates ex-post from the announcements since it receives political pressures.

Political economy factors have entered economic analysis long ago to answer questions related to the allocation of public expenditure, the management of public debt, the determination of tariffs and subsidies, etc. Few attempts have been done in the international finance literature to account for political determinants of exchange rate policy from the theoretical point of view.[7] A few exceptions are Drazen and Eslava (2005) and Bonomo and Terra (2006), which offer theoretical models on the political economy of exchange rate policy.

From an empirical point of view several analysis have been conducted to explore the importance of political factors as opposed to other economic determinants. Levy-Yeyati, Sturzenegger and Reggio (2002) conduct an empirical analysis on the determination of exchange rates accounting for several economic and political variables. By using a dataset for 183 countries they find that regime choices as well

[5] This is in apparent contradiction with our evidence. We will come back on this point in Section V.

[6] Chang and Velasco (2005) also rationalize the fear of floating as an equilibrium different from the social optimum. They do this in a model in which foreign denominated liabilities and exchange rate policy are determined simultaneously.

[7] Frieden and Stein (2000) provide an overview of the political economy of exchange rate policy. Refer also to Drazen (2000), chapter 12, part 1.

as deviations between actual and reported policies can be well predicted by financial and political variables. Several other analysis have established the importance of political factors in explaining exchange rate policies for emerging market economies. Collins (1996) and Edwards (1996) use probit analysis to study the determinants of exchange rate regimes and find that the political cost associated with devaluations plays a key role. Finally Klein and Marion (1994) and Gavin and Perotti (1997) find that devaluations or regime shifts are typically delayed until elections take place.

In a series of papers, Frieden and Stein (2000), Frieden, Ghezzi and Stein (2001), Blomberg, Frieden and Stein (2005) evaluate the relative importance of macroeconomic/financial factors versus political economy elements and examine the conflict arising for an incumbent government between inflation stabilization, which benefits consumers, and competitiveness, which benefits producers. Among the political economy variables an important distinction is made between the pressures exerted by interest groups on the incumbent government and electoral considerations.

Finally it is worth mentioning that Frieden, Ghezzi and Stein (2001), Jaramillo, Steiner and Salazar (1999) and Ghezzi and Pascó-Font (2000) conduct empirical analysis for several Latin American countries which support the motivation and the assumptions behind our work. These authors noticed that with the advent of trade liberalization, as specific tariffs and subsidies began to be dismantled, producers no longer protected by trade restrictions had much stronger incentives to lobby the government to influence exchange rate policy. Similarly, the financial sector became vocal regarding exchange rate management when restrictions on capital flows were lifted in the 1990s. This implies that producers and the financial sector in Latin America generally have opposing views on exchange rate policy: in favour of a competitive –i.e. depreciated– exchange rate the first group, opposed the latter.

III. A model of common agency with rational expectations

The theory of common agency (Bernheim and Whinston 1986) has become the standard approach to model the interaction of the government with different groups in society (see Grossman and Helpman, 1994 and 2001). Dixit and Jensen (2003) extend the basic common agency framework to consider the situation in which the principals' payoffs are affected by their ex-ante expectations of the agent's ex-post choice of economic policy.

In this section we build on the Dixit and Jensen (2003) model of common

agency with rational expectations and consider a different objective function of the principals. More specifically, we study a situation where the principals' utility is influenced by the level of the policy variable and the ex-ante expectations of the policy variable volatility. In the next section we apply this model to study the political economy of exchange rate policy.

The agency game has two principals, in this case two organized lobby groups, and one agent, the incumbent government. The agent chooses a policy variable e after the realization of a shock z. Accordingly, the government's policy is a function $e(z)$. Interest groups form rational expectations on e before the shock is realized. Let $g(z)$ be the density function of z, we can write the conditions for rationality as

$$e^e = E\left[e(z)\right] = \int e(z)g(z)dz \tag{1}$$

$$\sigma_e^2 = Var\left[e(z)\right] = \int \left[e(z) - E\left[e(z)\right]\right]^2 g(z)\, dz \tag{2}$$

where e^e and σ_e^2 are respectively the expectation and the variance of e.

The objective functions of individuals belonging to lobby I take the general form:

$$w^i(e, \sigma_e^2, z), \tag{3}$$

where w^i can be interpreted as the (ex-post) indirect utility of a member of principal i, which depends on the actual policy chosen ex-post by the government e and the variance σ_e^2 of e as well as on the realization of the shock z.

As a benchmark, we find first the optimal policy from the perspective of group i. We then study the equilibrium properties of the outcome in the case of a single lobby and for the common agency game.

A. Lobby *i*'s preferred policy

The complete contingent commitment policy that principal i would most prefer is the one that solves the following problem:

$$\max \; E\left[w^i(e, \sigma_e^2, z)\right], \tag{4}$$

subject to condition (2). For this optimization we construct the Lagrangian:

$$L = E\left[w^i(e,\sigma_e^2,z)\right] + \zeta^i\left\{\sigma_e^2 - Var\left[e(z)\right]\right\}, \tag{5}$$

where ζ^i is the Lagrange multiplier on the constraint (2) and $Var\left[e(z)\right] = E\left\{\left[e(z)\right]^2\right\} - \left\{E\left[e(z)\right]\right\}^2$. The first order conditions of this problem with respect to e(z) and σ_e^2 are: [8]

$$\frac{\partial L}{\partial e} = \left\{\frac{\partial w^i}{\partial e} - \zeta^i 2\left[e - E(e)\right]\right\} g(z) = 0 \tag{6}$$

$$\frac{\partial L}{\partial \sigma_e^2} = E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) + \zeta^i = 0. \tag{7}$$

The last first order condition can be combined into the first one to eliminate the Lagrange multiplier:

$$\frac{\partial w^i}{\partial e} + E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) 2\left[e - E(e)\right] = 0. \tag{8}$$

This implicitly defines the optimal commitment policy from the perspective of principal *i*. Notice that a change in *e*(*z*) has a direct effect on the expected value of the objective function of group *i*, as well as an indirect one by affecting the variance. Condition (8) implies that the commitment rule preferred by principal *i* allows responses to the shock *z* on which the government has an informational advantage. However, it also takes into account the effect on group *i*'s welfare of an increase in the expected volatility of the policy variable.

B. Equilibrium policy

We now study the equilibrium properties of the lobbying game. We analyze first the case in which only one group is politically active and lobbies the government. Then, we study the equilibrium of the common agency game. The policy actually chosen is the equilibrium of a game that involves the lobby (or the two lobbies) and the government.

[8] For brevity we omit the function's arguments.

The timing of the political game is as follows. At the beginning of the period, the interest group offers to the government a contract which is contingent on the policy and the shock. If both lobbies are active, these contracts are assumed to be offered non-cooperatively. The incentive scheme is represented by a binding commitment to deliver a transfer (monetary or non-monetary) to the government when the policy is chosen. At a second stage, the shock is realized and the government chooses the policy taking into account social welfare and the principal's (or the principals') incentive schedule(s).

This timing of events allows the government to respond to the shock but -in the absence of a commitment technology- induces a time-consistency problem as the government takes as given expectations on the policy variable. Lobbies, acting under rational expectations, recognize the time-consistency problem and exert pressure on the government to follow the rule implicit in condition (8), which represents the optimal commitment policy from the perspective of lobby *i*. They do so by offering a contract to the government.

Contracts offered ex-ante take the form:

$$t^i(e,z) = k^i(z) + c^i(e,z). \tag{9}$$

This functional form of the incentive scheme assumes that group *i* promises to the government a fixed payment (i.e., which depends on the shock, but not on the policy) and a variable payment contingent on the choice of the policy variable by the government.[9] An important issue in this class of models relates to the specific form given to the variable payment $c^i(e,z)$ in equilibrium. We come back to this point later.

The government's objective function is given by:

$$w^{gov} = \eta \sum_i \theta_i w^i(e,\sigma_e^2,z) + (1-\eta)T(e,z), \tag{10}$$

where $0 \leq 1-\eta \leq 1$ is the weight that the agent puts on the incentive schemes $T(e,z)$ offered by the principals, where

$$T(e,z) = \begin{Bmatrix} \mu_i t^i(e,z) & \text{if only principal } i \text{ offers a contract to the agent} \\ \sum_i \mu_i t^i(e,z) & \text{if both principals offer contracts to the agent} \end{Bmatrix}, \tag{11}$$

[9] As it will be immediately clear, the choice of this functional form is mostly for analytical convenience: it simplifies the government participation constraint (see condition 13).

θ_i is the size of group *i* and μ_i is the weight that the agent puts on the contract offered by group *i*.

In a model of political influence, the first and the second term in condition (10) can respectively be interpreted as social welfare and political support by special interests. Accordingly, we can interpret η as a parameter that captures the quality of the institutional system or the check-and-balances schemes limiting the ability of interest groups to influence politicians. The parameter μ_i represents the political power of group *i* which can be larger, smaller or equal to its economic size θ_i. If economic and political influence of a group coincide, then $\mu_i = \theta_i$.

One lobby

We first solve the lobbying game under the assumption that only group *i* lobbies the government. In the last stage of the game, the government chooses the policy to maximize its objective function. The first order condition for this optimization problem is

$$\eta \sum_i \theta_i \frac{\partial w^i}{\partial e} + (1-\eta)\mu_i \frac{\partial t^i}{\partial e} = 0 \,. \tag{12}$$

Principal *i* maximizes $E\left[w^i(e,\sigma_e^2,z) - t^i(e,z)\right]$ subject to several constraints. First the group recognizes that the government will set the policy according to (12).[10] Second, the contract offered by the principal needs to satisfy a government participation constraint which reads as follows: $E(w^{gov}) \geq w_0^{gov}$, where w_0^{gov} is the utility assigned to an outside opportunity (for instance, the level of government utility when no contract is offered). The principal recognizes that expectations will be formed rationally. We regard the principal as if it were directly choosing the variance of *e* subject to constraint (2). Consider the decision problem of group *i*, the Lagrangian is

$$\begin{aligned} L_i = {} & E\left\{w^i(e,\sigma_e^2,z) - \left[k^i(z) + c^i(e,z)\right]\right\} + \lambda_1^i\left\{\sigma_e^2 - \left[E(e^2) - [E(e)]^2\right]\right\} + \\ & \lambda_2^i E\left\{\eta \sum_i \theta_i w^i(e,\sigma_e^2,z) + (1-\eta)\mu_i\left[k^i(z) + c^i(e,z)\right] - w_0^{gov}\right\} \,, \end{aligned} \tag{13}$$

[10] This, however, is kept implicit (as in Dixit and Jensen 2003) and in the Lagrangian below policy *e* is assumed to be a function of the contract *ti* offered by group *i* (the only active group).

where λ_1^i is the Lagrange multiplier on the rationality constraint and λ_2^i the multiplier on the participation constraint of the agent. Group *i*'s choice variables are the functions $k^i(z)$ and $c^i(z)$.

We can simplify the Lagrangian by noting that it depends only on the expectation $E\left[k^i(z)\right]$ and not directly on the function $k^i(z)$. The first order condition with respect to this variable gives us the Lagrange multiplier on the government's participation constraint which reads as follows: $\lambda_2^i = 1/\left[(1-\eta)\mu_i\right]$. Using this, and abstracting from the functional arguments, we can rewrite the Lagrangian of group *i* as:

$$L_i = E\left\{w^i\right\} + \lambda_1^i\left\{\sigma_e^2 - \left[E(e^2) - \left[E(e)\right]^2\right]\right\} + \frac{1}{(1-\eta)\mu_i} E\left\{\eta \sum_i \theta_i w^i - w_0^{gov}\right\}. \quad (14)$$

Consider now the effect of a change of *e* on this Lagrangian:

$$dL_i = \left\{\frac{\partial w^i}{\partial e} - \lambda_1^i 2\left[e - E(e)\right] + \frac{1}{(1-\eta)\mu_i}\left[\eta \sum_i \theta_i \frac{\partial w^i}{\partial e}\right]\right\} g(z)\, de(z). \quad (15)$$

From condition (12) we have:

$$-(1-\eta)\mu_i \frac{\partial c^i}{\partial e} = \eta \sum_i \theta_i \frac{\partial w^i}{\partial e}. \quad (16)$$

Using this last equation, condition (15) simplifies to:

$$dL_i = \left\{\frac{\partial w^i}{\partial e} - \lambda_1^i 2\left[e - E(e)\right] - \frac{\partial c^i}{\partial e}\right\} g(z)\, de(z), \quad (17)$$

which implies that the optimal choice of the contract that principal *i* offers to the agent needs to satisfy:

$$\frac{\partial c^i}{\partial e} = \frac{\partial w^i}{\partial e} - \lambda_1^i 2\left[e - E(e)\right]. \quad (18)$$

To interpret this condition, let's assume that $\lambda_1^i = 0$. In this case condition (18) implies that the equilibrium contract should satisfy the local truthfulness property defined by Bernheim and Whinston (1986).[11] The present model provides a

[11] For a discussion of this property see Grossman and Helpman (2001).

generalization of this property to the case in which the welfare of the principal is affected by the ex-post volatility of the policy variable. The effect of the volatility of the policy variable on the optimal choice for the contract offered by principal *i* is captured by the last term in condition (18).

The equilibrium policy needs to be consistent with the government incentive compatibility constraint. We therefore substitute the expression that implicitly defines the optimal contract of principal *i* into condition (12):

$$\eta\sum_i \theta_i \frac{\partial w^i}{\partial e} + (1-\eta)\mu_i \left\{ \frac{\partial w^i}{\partial e} - \lambda_1^i 2\left[e - E(e)\right] \right\} = 0. \tag{19}$$

To find an expression for the equilibrium policy, we still need the first order condition for the choice of σ_e^2 :

$$\frac{\partial L_i}{\partial \sigma_e^2} = E\left(\frac{\partial w^i}{\partial \sigma_e^2} \right) + \lambda_1^i + \frac{1}{(1-\eta)\mu_i} E\left(\eta\sum_i \theta_i \frac{\partial w^i}{\partial \sigma_e^2} \right) = 0. \tag{20}$$

From this first order condition, we find an expression for the Lagrange multiplier that we can substitute into (19). Rearranging, we get:

$$\eta\sum_i \theta_i \frac{\partial w^i}{\partial e} + (1-\eta)\mu_i \frac{\partial w^i}{\partial e} = -(1-\eta)\mu_i 2\left[e - E(e)\right] E\left(\frac{\partial w^i}{\partial \sigma_e^2} \right) -$$

$$\left. - \eta \left\{ \sum_i \theta_i 2\left[e - E(e)\right] E\left(\frac{\partial w^i}{\partial \sigma_e^2} \right) \right\} . \right. \tag{21}$$

Condition (21) implicitly defines the equilibrium policy when only group *i* is politically active. Absent lobbying, the government would set policy to maximize ex-post social welfare (i.e., *e* would be such that $\sum_i \theta_i \frac{\partial w^i}{\partial e} = 0$). [12] Lobbying by group *i* alters the equilibrium policy choice in two main respects. First, lobbying induces the government to take into account the effect of policy volatility on the

[12] If $\eta = 1$, lobbies do not offer any political contribution as this would not alter the policy choice of the government (see condition 10).

utility of group *i* when choosing policy *e* (see the right-hand side of condition 21). By substituting the Lagrange multiplier λ_1^i into condition (18), we see that the optimal contract needs to satisfy:

$$\frac{\partial c^i}{\partial e} = \frac{\partial w^i}{\partial e} + 2[e - E(e)]\left[E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) + \frac{\eta}{(1-\eta)\mu_i}\sum_i \theta_i E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right)\right], \tag{22}$$

which confirms that (ex-ante) lobby *i* optimally tailors its incentive scheme to induce the government to internalize the effect of policy volatility on its welfare w^i.

Second, and quite intuitively, the policy is biased in favor of the organized group. This is apparent in the extreme scenario in which the government is fully non-benevolent (i.e., η =0). In this case, from condition (21) we obtain the condition determining the equilibrium policy:

$$\frac{\partial w^i}{\partial e} + 2[e - E(e)]E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) = 0, \tag{23}$$

which coincides with the optimal commitment policy from the perspective of group *i* (see condition 8).

Two lobbies

We now solve the lobbying game under the assumption that both groups offer contracts to the common agent. In the last stage of the game, the government chooses the policy to maximize its objective function. The first order condition is now given by

$$\eta\sum_i \theta_i \frac{\partial w^i}{\partial e} + (1-\eta)\sum_i \mu_i \frac{\partial t^i}{\partial e} = 0. \tag{24}$$

As in the previous subsection, each principal maximizes $E\left[w^i(e,\sigma_e^2,z) - t^i(e,z)\right]$ subject to the same set of constraints and the Lagrangian of group *i* now takes the following form:[13]

[13] Contrary to what we did for condition (13), in this case we assume that in the Lagrangian the policy *e* is a function of the contracts offered by *all* active groups.

$$L_i = E\left\{w^i(e,\sigma_e^2,z) - \left[k^i(z)+c^i(e,z)\right]\right\} + \lambda_1^i\left\{\sigma_e^2 - \left[E(e^2) - [E(e)]^2\right]\right\} +$$
$$\lambda_2^i E\left\{\eta\sum_i \theta_i w^i(e,\sigma_e^2,z) + (1-\eta)\sum_i \mu_i\left[k^i(z)+c^i(e,z)\right] - w_0^{gov}\right\}, \qquad (25)$$

where group *i* takes as given the contract offered to the common agent by group *-i*.

It can be easily shown that under common agency the optimal choice of the incentive scheme that principal *i* offers to the government needs to satisfy condition (18).[14] However, now the equilibrium policy needs to be consistent with the government incentive compatibility constraint (24). We therefore substitute the expression that implicitly defines the optimal contract of principal *i* and the expression for the Lagrange multiplier λ_1^i into condition (24). Rearranging, we obtain the condition that implicitly defines the equilibrium policy under common agency:

$$\sum_i \left[\eta\theta_i + (1-\eta)\mu_i\right]\frac{\partial w^i}{\partial e} = -(1-\eta)\sum_i \mu_i 2\left[e - E(e)\right]E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) - \qquad (26)$$
$$-2\eta\left\{\sum_i \theta_i 2\left[e - E(e)\right]E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right)\right\}.$$

As in the case of a single lobby, the incentive schemes of the two groups induce the government to take into account the effect of the volatility of the policy variable on their utility. However, the dual agency game allows us to make two additional considerations. First, let's simplify condition (26) by assuming that the economic and political power of each group in society coincide, i.e., $\theta_i = \mu_i \ \ \forall i$. The equilibrium policy is determined by:

$$\sum_i \theta_i\left\{\frac{\partial w^i}{\partial e} + E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right)2\left[e - E(e)\right]\right\} = -\eta\sum_i \theta_i\left\{E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right)2\left[e - E(e)\right]\right\} \qquad (27)$$

If the left-hand side of this condition were equal to zero, the equilibrium policy would be a weighted average of the two groups preferred policies (see equation 8). In this case we would expect the actual policy to be closer to the objective of different groups depending on their economic weights θ_i. The right hand side of

[14] Clearly, this does not imply that the equilibrium contract is the same in the two cases, with one or two principals. Groups have to set their k^i to satisfy the participation constraint of the government, which now takes into account that both groups are offering contracts.

(27) is, however, different from zero for $0<\eta<1$. This captures the distortion induced on the equilibrium policy by the attempts of organized groups to solve non-cooperatively the commitment problem of the government. This additional effect is clearly absent in the one-lobby case.

Second, it is instructive to consider the extreme case of a fully non-benevolent government and allow θ_i to be different from μ_i. For $\eta=0$ in condition (26), we have that:

$$\sum_i \mu_i \left\{ \frac{\partial w^i}{\partial e} + 2[e - E(e)] E\left(\frac{\partial w^i}{\partial \sigma_e^2} \right) \right\} = 0, \tag{28}$$

where the equilibrium policy is a weighted average of the preferred policy of the two groups. From this expression, it is apparent the role of political weights μ_i under common agency: the stronger the political influence of group *i*, the closer the equilibrium policy is to *i*'s preferred policy (for given μ_{-i}).

IV. Political economy of exchange rate policy

In this section we apply the general framework previously described to explain how political influence affects exchange rate policy.

Consider a one period model of a small open economy where the exchange rate policy has different effects on the welfare of two different groups of individuals. Population has measure one and individuals are indexed with $j \in [0,1]$ and divided into two groups: bankers of size $\theta_B \subset [0,1]$ and producers of size $\theta_P \subset [0,1]$ with $\sum_{i=P,B} \theta_i = 1$. We label with w^B the welfare of bankers and with w^P the welfare of producers.

The government adjusts the policy instrument –the nominal interest rate– to achieve a certain target for the nominal exchange rate. To introduce the nominal exchange rate *e* as a policy decision variable we assume that the money market always clears at the prevailing exchange rate level. This is to say that either money demand or money supply adjusts to meet the relative price –i.e., the nominal exchange rate.

Bankers and producers' welfare are affected by exchange rate policy. This provides the main motivation for these groups to organize politically (i.e., form a

lobby) and influence the government to follow their wishes.[15] In this section we study the effects on the equilibrium exchange rate policy of political influence by bankers and producers.

As described in the previous section, political pressures take the form of incentive contracts that groups offer to the government. One should interpret the contract approach not only as describing remuneration to the government or monetary bribes, but also as capturing non-monetary transfers as public honour (or criticism), career concerns of government officials, etc.

Interest groups are assumed to commit their incentive schemes to the government before observing the realization of the shock to the economy. This assumption embeds the idea that interest groups have large influence in appointing the government officials (e.g., the economy minister or the governor of the central bank or a member of the board) who are in charge of managing exchange rate policy. Once appointed, policymakers have ex-post substantial autonomy in economic policy choices.

The economy has the following elements:

1. The production sector produces a tradable good with technology $y(z)$, where z is a supply shock (to which government policy reacts). At the beginning of the period, producers have to seek for a loan from the home financial sector to finance production.

2. Firms in the financial sector lend money to producers at the beginning of the period. This operation will pay to the financial sector in units of domestic currency. To lend money, bankers need to acquire funds from foreign investors in foreign currency.

3. Bankers are exposed ex-post to the cost of exchange rate fluctuations.[16] Hence we assume that there is no pass-through of the exchange rate onto the loan rate. Therefore, an unexpected depreciation (appreciation) of the exchange rate decreases (increases) profits, and ultimately the welfare of bankers $\left(\frac{\partial w^B}{\partial e} < 0 \right)$.[17]

[15] We assume that the two groups were able to solve the collective action problem of Olson (1965).

[16] In practice this is so even in countries that impose tight regulations to avoid currency mismatches in bank balance sheet. Indeed in presence of an ex-post exchange rate depreciation bankers would like to transfer the cost of higher foreign funds onto interest rate loans; however enforcement and moral hazard problems will induce firms to refuse loan repayment.

[17] This assumption can be easily rationalized in a situation in which loan contracts are preset at the beginning of the period and cannot be changed ex-post if the government moves the exchange rate. This captures in a simple manner the idea of the currency mismatch observed in the financial sector of several emerging market economies.

Producers' profits depend on the real exchange rate. We assume that price are sticky (with an exogenous probability ξ firms cannot adjust prices) so that nominal exchange rate fluctuations translate into real exchange rate fluctuations. An unexpected depreciation (appreciation) of the exchange rate –by rising (reducing) the competitiveness of the production sector– increases (decreases) profits, and therefore the welfare of producers $\left(\frac{\partial w^P}{\partial e} > 0\right)$.

4. Foreign investors charge an external finance premium which is negatively related to the volatility of the exchange rate. Microfoundations for this premium are provided in Appendix A. Higher expected volatility of the exchange rate increases the external finance premium and, therefore, the interest rate that the home financial sector pays to foreign investors. Bankers can shift at least part of the cost of expected exchange rate volatility to producers.

5. The government can use ex-post exchange rate policy to redistribute wealth between bankers and producers. For a given expected exchange level e^e, it is socially optimal to create an unexpected depreciation (appreciation) of the exchange rate when large negative (positive) supply shocks hit the economy (i.e., $e^* > e^e$ for z low and $e^* < e^e$ for z high). Here, the socially optimal exchange rate e^* is the level at which the left-hand side of condition (27) equals zero.[18]

6. Higher expected volatility by raising interest rates in the world market reduces interest groups' expected welfare $\left(E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) < 0\right)$.

In sum, exchange rate policy implies a trade-off between the benefits of ex-post stabilization/redistribution and the costs of ex-ante higher expected volatility of the exchange rate.

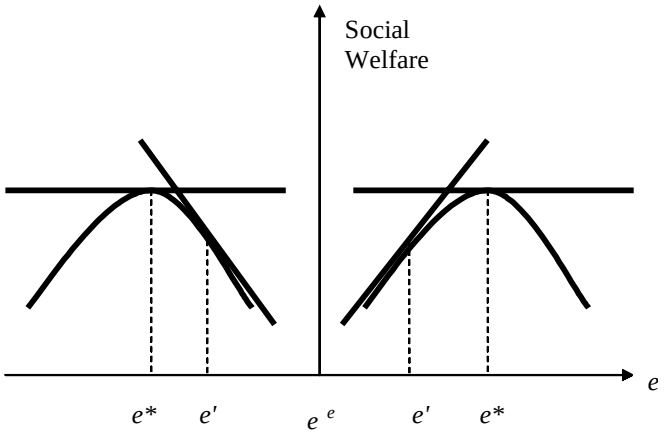
Under these assumptions, condition (27) implies a bias toward exchange rate stability in the sense that a politically motivated government does not allow much exchange rate fluctuation in response to shocks that hit the economy.[19] To understand the mechanics of this result inside our model suppose that a supply shock hits the economy in a way that the government would set $e = e^* > e^e$ (refer to Figure 1) - i.e. unexpected depreciation of the exchange rate. In this case the

[18] e^* is a weighted average of the exchange rate policy preferred by the two groups and the weights depend on the size of the groups.

[19] As it is made clear in Section III, the dual agency game is sufficient -even if not necessaryto obtain this result (see conditions 21 and 26).

right-hand side of condition (27) is positive because $E\left(\frac{\partial w^i}{\partial \sigma_e^2}\right) < 0$. This implies that the equilibrium exchange rate level (e') is smaller than the one that the government would set in the absence of lobbying (e^*), even if there is still a positive depreciation. If, instead, the shock is such that the government (absent lobbying) would create an unexpected appreciation ($e = e^* < e^e$), the right-hand side of (27) is negative and the equilibrium exchange rate appreciation is smaller.

Figure 1. Equilibrium exchange rate policy



Under political pressures, the exchange rate tends to be de facto more stable in response to shocks that hit the economy.

From condition (27), we can derive a less intuitive implication of the model. On the left-hand side of condition (27) we have the socially optimal exchange rate policy. However, the right-hand side is different from zero and implies lower than optimal exchange rate fluctuation. The intuition for this result is related to the structure of the lobbying game. When deciding on political pressures, each interest group wants to offer to the government incentives to maintain low exchange rate variability. This is so since both groups suffer the costs of high expected exchange rate volatility. As this argument applies to both special interest groups and since lobbies do not coordinate their political activities, the contracts offered to the government are such that incentives to limit exchange rate volatility are too strong. As a result, the government manages the exchange rate more than what it would be optimal from the groups' own perspective. In other words, lobbying creates an *over-commitment* to exchange rate stability.

A final consideration about the model's implications concerns the effects of institutional quality, as captured by the parameter η, on the equilibrium policy. An increase in η increases the cost of political influence and reduces incentives to lobby.[20] When η tends to one the government is not affected by special interests' political pressures and sets the exchange rate policy so as to maximize ex-post social welfare, thus fully accommodating the shock.

The model so far described has several testable implications. First, the model suggests that the fear of currency swings observed in several emerging market economies might be the result of the political influence exerted by different sectors in the economy –bankers and producers– on the policymaker. However we showed that for this to be the case we need three fundamental assumptions: a) different sectors in the economy have an interest in the determination of exchange rate policy; b) the intermediation sector should have liabilities denominated in foreign currency; and c) the government lacks a commitment technology. In the next section we test the implications of those assumptions on the volatility of the exchange rate. Our country sample represents an interesting laboratory because these preconditions are generally present in all emerging market economies. Furthermore we explore the role of institutions in mitigating the bias toward exchange rate stabilization.

V. Empirical results

In this section we test the main predictions of the theoretical model, which can be summarized as follows: (1) tradable producers and the financial sector individually have some influence on exchange rate policy; the larger is such influence the lower is the exchange rate volatility that we expect (regardless of the announced exchange rate regime) as governments –responsive to (ex-ante) political pressures– tend to stabilize the exchange rate; (2) the joint pressure of different interest groups is also associated with more stable de facto exchange rate regimes;[21] (3) the effect induced

[20] This follows directly from equation (22).

[21] Notice that the theoretical model predicts that lobbying by both groups creates an overcommitment to exchange rate stability. This would be clearly difficult to prove empirically as it would require an exact definition of the optimal exchange rate policy. We, therefore, limit our empirical investigation to attest whether the interaction of both groups has an effect on the de facto stability of the exchange rate in addition to the effect of individual lobbying by the two groups.

by the political pressure is mitigated when the quality of institutions is higher for both the case of individual and joint lobbying.

To test these hypotheses we use a sample composed of Latin American and Caribbean, and Asian countries, for which we were able to collect comparable data on the size of the manufacturing and financial sectors. Due to the availability of institutional quality or governance, the sample period is 1990-2000 (see Appendix B for data sources and a description of the variables). As emphasized above, political pressures by interest groups representing the interests of tradable producers and of the financial sector indebted in a foreign currency will induce the government to excessively intervene in exchange rate markets. As a result, we would expect to see a more stable de facto exchange rate (regardless of the announced exchange rate regime) in countries where the political influence of these groups is larger. Previous authors have looked into the impact of sectoral interest groups on the exchange rate regime. Frieden, Ghezzi and Stein (2001) study the political, institutional and lobbying factors determining the choice of the exchange rate regime in Latin American countries in the period 1974-1993 finding strong evidence in favor of the hypothesis that economies with an important manufacturing sector are more prone to announce either floating regimes or backward-looking crawling pegs. More recently, Blomberg, Frieden and Stein (2005) study the political determinants of the duration of exchange rate arrangements in Latin America from 1960 to 1999. They find that the larger the tradable sector, the less likely is the maintenance of an (announced) exchange rate regime. Lastly, Alesina and Wagner (2005) look at and find significant effects of the quality of institutions on the choice (and renege) of the exchange rate regime in a large sample of countries over the 1990s.

Our empirical analysis is related to the aforementioned studies. In particular, we assess the role of different lobbies –representing both the tradable and financial sectors– on exchange rate policy (besides controlling for different degrees of institutional quality or governance) and analyze a broader set of countries that include both Latin American and Asian countries. We implement ordered logit regressions where the dependent variable is the de facto classification of exchange rate regimes by Reinhart and Rogoff (2004) (RR hereafter). We also check our results by repeating all regressions with the de facto classification of exchange rate regimes by Levy-Yeyati and Sturzenegger (2005) (LYS hereafter).[22] Both

[22] We do not test our result using the traditional de jure classification of the exchange rate provided by the IMF since it is not the ideal measure in our study. This is so since our model

classifications (RR and LYS) share the methodology of looking at the actual or de facto, rather than announced de jure exchange rate regime. They differ, however, in that RR classify regimes based upon a statistical analysis of the observed behavior of actual exchange rates, whereas LYS base their index on data of official exchange rates and international reserves.[23] The differences in the underlying algorithms are reflected in a relatively low correlation coefficient of 0.31 between the two indices within our country and period sample.

Similarly to Frieden, Ghezzi and Stein (2001), as a proxy of the political influence of tradable producers we use the percentage of the manufacturing sector in GDP (MANUY1).[24] To measure the impact of the financial sector and of its exposure to foreign currency, we build a variable by multiplying the share of the financial sector in GDP with the percentage of total foreign denominated liabilities over money (FINYFL1).[25] Finally following Alesina and Wagner (2005), we take governance indicators from the studies of Kaufmann, Kraay and Zoido-Lobatón (1999, 2002). More specifically, we use two indexes: the first is a control index for corruption (COR), while the second is an index of composite governance (MGOV) (see Appendix B).

Our set of control variables is drawn from related works. Below we provide a brief discussion. We control for the impact of liability denomination by using the lagged ratio of foreign liabilities to money (FLM1) and for trade openness by using the lagged ratio of trade over GDP (OPEN1). To measure the relevance of external shocks we use the lagged share of trade with the largest trading partner (SHTRADE1) and the volatility of the terms of trade (VOLEXT). We also include the log of per capita GDP to control for the general level of development (LGDP), the lagged log of inflation (LINF1) to control for the effects of inflation on exchange

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provides predictions on the actual or de facto exchange rate regime rather than on the *selfdeclared* one. In addition several authors (see Alesina and Wagner 2005, among others) noticed that de facto deviations of actual behavior from announcements are rather common. We would thereby expect different implications if the de jure classification is used.

[23] See Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2005) for details.

[24] We implicitly assume that the sectors' influence on policymakers is proportional to its share in the country's GDP. In terms of the theoretical model of the previous section this is equivalent to assume $\theta_i = \mu_i \quad \forall i$. This is also the approach taken in Frieden, Ghezzi and Stein (2001) and Blomberg, Frieden and Stein (2005).

[25] We have also tested using the share of the foreign denominated liabilities over output. This alternative normalization does not affect the main results.

rate regime and a business cycle dummy (DUMCI). Finally, we include a trend which could pick up the 'climate of ideas' regarding the appropriate exchange rate regime in the 1990s. All regressions also include year dummies to account for other common shocks (e.g., global financial and trade liberalization) affecting the exchange rate choice of policy makers.

Table 1 displays the regression in which the size of the two sectors and the institutional variables are included separately. The special interests' influence is found to be highly significant and with a negative coefficient. This confirms the first prediction, that countries with larger manufacturing and financial groups tend to peg more the actual exchange rate.[26] The results related to the impact of the political pressure of the financial sector deserve some more comments. Indeed the statistical significance of the proxy for the financial sector depends on the exclusion of the total foreign denominated variable.[27] This is so since this proxy, although it varies across-countries according to the importance of the financial lobby, also reflects the dynamics of the total foreign denominated liabilities. This creates an identification problem and might be a potential source of multi-collinearity. We will return to this aspect below.

The indicator of institutional quality (MGOV) enters positively, indicating that better institutions lead to more flexible de facto exchange rate regimes. On this point Alesina and Wagner (2005) find that countries that float tend to be either very low or very high in the institutional quality scale. Our sample covers mainly countries with relatively lower governance indices, hence our results are consistent with their findings. Amongst the control variables, the coefficient associated with the log of GDP per capita, which is positive and statistically significant, deserves a comment. Alesina and Wagner (2005) find the same and give the following interpretation: more developed countries tend to have better institutions and therefore opt for floating exchange rate regimes. Similarly, but more controversially, higher (lagged) inflation rates are associated with more flexible exchange rates.[28]

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[26] Interestingly, countries with larger manufacturing sectors tend to have more flexible de jure exchange rate regimes, but *in practice* do not let fluctuate much the exchange rate. In fact, the differences of our empirical results compared to Frieden, Ghezzi and Stein (2001) do not seem to depend on the sample of countries or the period under observation, but mostly on the specification of the dependent variable.

[27] When both variables are included, FLM1 is never statistically significant, whereas the financial sector proxy FINYFL1 is negative and statistically significant only at 10% when the RR classification is used as dependent variable.

[28] In preliminary analysis we also used the average inflation rate over the previous years, which led to similar results.

Table 1. Ordered logit specifications with interest groups and institutional variables

Dependent variable	(1) RR	(2) RR	(3) RR	(4) RR	(5) LYS	(6) LYS	(7) LYS	(8) LYS
LGDP	0.27**	0.25**	0.25**	0.23**	0.18*	0.16	0.12	0.11
	(0.11)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)	(0.10)
OPEN1	2.12	1.85	1.55	1.35	0.17	0.05	-0.48	-0.55
	(1.77)	(1.52)	(1.85)	(1.53)	(1.6	(1.51)	(1.59)	(1.51)
SHTRADE1	-6.81	-4.76	-6.46	-3.96	-0.57	0.59	-0.25	-1.21
	(0.80)	(0.79)	(0.81)	(0.80)	(0.95)	(0.94)	(0.97)	(0.96)
VOLEXT	-6.81	-4.76	-6.46	-3.96	-0.57	0.59	-0.25	-1.21
	(5.33)	(4.06)	(5.57)	(4.09)	(4.49)	(4.49)	(4.72)	(4.95)
DUMCI	-0.31	-0.35	-0.30	-0.35	-0.08	-0.19	-0.01	-0.14
	(0.26)	(0.25)	(0.27)	(0.26)	(0.28)	(0.28)	(0.28)	(0.29)
LINF1	2.34**	2.18**	2.31**	2.14**	0.23	0.06	0.26	0.09
	(1.04)	(1.02)	(0.99)	(1.01)	(0.33)	(0.34)	(0.33)	(0.34)
TREND	-0.06	-0.08	-0.06	-0.09	-0.06	-0.06	-0.05	-0.06
	(0.11)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
MGOV	0.69**	0.50*			0.79**	0.59**		
	(0.32)	(0.31)			(0.27)	(0.26)		
COR			0.91***	0.65***			0.99***	0.77***
			(0.24)	(0.23)			(0.22)	(0.21)
MANUY1	-11.1**	-10.5**	-9.95**	-10.1***	-10.9***	-10.7***	-9.67**	-10.1***
	(4.41)	(4.33)	(3.95)	(3.91)	(4.19)	(3.88)	(4.07)	(3.73)
FLM1		-0.70***		-0.67***		-0.30***		-0.29***
		(0.23)		(0.23)		(0.06)		(0.05)
FINYFL1	-3.39***		-4.19***		-1.26***		-1.16***	
	(1.29)		(1.43)		(0.27)		(0.25)	
Pseudo R^2	0.137	0.137	0.147	0.142	0.140	0.146	0.160	0.150
Observations	259	275	259	275	259	259	259	259

Notes: Robust z statistics. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent. All regressions include year dummies. Sample period 1990-2000.

The other control variables do not seem to play a strong role. Columns (3) and (4) of the same table show results for the regressions where we replaced the variable MGOV with the control variable for the corruption index (COR). The results are qualitatively very similar. In addition the corruption control indicator seems to be statistically more significant. In the remaining columns of Table 1, we replicate all the previous specifications using as dependent variable the LYS exchange rate

index. While some of the control variables loose their significance, the effects of interest groups and of institutional factors are qualitatively and statistically unaffected, indicating that our results are not sensitive to the specific de facto classification.

Table 2 reports the specifications in which we interact the interest group variables with the institutional quality indicators. It is interesting to see that while

Table 2. Ordered logit specifications with interest groups interacted with institutions

Dependent variable	(1) RR	(2) RR	(3) RR	(4) RR	(5) LYS	(6) LYS	(7) LYS	(8) LYS
LGDP	0.27**	0.26**	0.22**	0.23**	0.21**	0.16*	0.11	0.08
	(0.11)	(0.11)	(0.11)	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)
OPEN1	2.14	1.47	2.29	1.98	0.33	-0.17	0.52	0.25
	(1.79)	(1.93)	(1.84)	(1.79)	(1.54)	(1.49)	(1.60)	(1.55)
SHTRADE1	0.62	0.95	0.69	0.50	-0.77	-0.50	-1.46	-1.58
	(0.80)	(0.82)	(0.81)	(0.87)	(0.96)	(0.96)	(1.00)	(0.98)
VOLEXT	-6.93	-6.57	-7.06	-6.71	-1.09	-1.02	-6.03	-6.24
	(5.36)	(5.74)	(5.38)	(5.25)	(4.87)	(4.59)	(5.05)	(4.96)
DUMCI	-0.32	-0.32	-0.30	-0.31	-0.08	-0.03	0.01	0.01
	(0.26)	(0.27)	(0.26)	(0.26)	(0.28)	(0.28)	(0.28)	(0.28)
LINF1	2.29**	2.21**	2.21**	2.28**	0.22	0.23	0.6	0.68
	(1.02)	(0.98)	(0.99)	(1.10)	(0.33)	(0.33)	(0.45)	(0.47)
TREND	-0.06	-0.04	-0.06	-0.05	-0.05	-0.05	0.05	0.01
	(0.06)	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
MANUY1	-10.3**	-8.91**	-7.93**	-7.32*	-11.3***	-9.16**	-4.10	-2.75
	(4.35)	(4.02)	(4.00)	(3.88)	(4.11)	(3.92)	(4.30)	(4.49)
MGOV*MANUY1	2.91*				4.29***			
	(1.71)				(1.36)			
COR*MANUY1		4.62***				4.94***		
		(1.34)				(1.15)		
FINYFL1	-3.34***	-4.05**	-1.91*	-4.73	-1.24***	-1.13***	-9.79**	-9.06***
	(1.31)	(0.74)	(1.01)	(3.25)	(0.27)	(0.25)	(0.25)	(0.25)
MGOV*FINYFL1			-2.48				9.17**	
			(2.80)				(4.03)	
COR*FINYFL1				1.63				6.64***
				(2.77)				(2.26)
Pseudo R^2	0.134	0.146	0.130	0.130	0.148	0.157	0.169	0.173
Observations	259	259	259	259	243	243	243	243

Notes: Robust z statistics. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent. All regressions include year dummies. Sample period 1990-2000.

countries with large manufacturing sectors tend to peg more the exchange rate, institutional quality tends to weaken the political channel. In particular, the higher the institutional quality or the control variable for the corruption index, the less effective the political pressure of the manufacturing sector is. Similar results are found in the case of the financial sector, although higher institutional quality is associated in this case with a smaller influence of this sector only when the LYS classification is used as dependent variable (columns 7 and 8). This is consistent with the idea that better institutions discourage lobbying activities, thus reducing the effects of political pressures on exchange rate volatility.

Finally, Table 3 reports the regressions in which we consider the joint pressure of the manufacturing and the financial sectors by including the product of the

Table 3. Ordered logit specifications with interaction of interest groups

Dependent variable	(1) RR	(2) RR	(3) LYS	(4) LYS
LGDP	0.10	0.09	-0.01	0.06
	(0.08)	(0.08)	(0.08)	(0.09)
OPEN1	-0.13	0.94	-0.56	-0.01
	(1.40)	(1.51)	(1.44)	(1.31)
SHTRADE1	1.14	0.97	-0.12	-1.21
	(0.81)	(0.77)	(0.96)	(1.00)
VOLEXT	-5.20	-6.34	-3.40	-4.92
	(4.38)	(4.72)	(4.39)	(4.12)
DUMCI	-0.27	-0.26	0.06	0.02
	(0.25)	(0.25)	(0.28)	(0.28)
LINF1	2.26**	2.12**	0.32	0.61
	(1.05)	(0.98)	(0.33)	(0.43)
TREND	-0.03	-0.04	-0.02	-0.01
	(0.06)	(0.06)	(0.06)	(0.06)
COR	0.84***		0.86***	
	(0.24)		(0.24)	
INTMF1	-28.48***	-11.29*	-11.38***	-38.78***
	(9.57)	(6.51)	(2.72)	(15.71)
COR*INTMF1		-26.69*		32.04***
		(15.43)		(15.62)
Pseudo R^2	0.136	0.123	0.166	0.166
Observations	259	259	243	243

Notes: Robust z statistics. * significant at 10 percent; ** significant at 5 percent; *** significant at 1 percent. All regressions include year dummies. Sample period 1990-2000.

share of these two variables (INTMF1). This term has the expected –i.e. negative– sign and is highly significant: consistently with the second prediction of our theoretical model, the de facto exchange rate is more stable when the size of this interaction term is larger. Also in this case, the LYS classification leads to very similar results. In columns (2) and (4) of Table 3 we also include this joint-pressure term (INTMF1) interacted with the control for corruption index. The coefficient associated to the latter term is negative and significant at ten percent level with the RR classification, whereas is positive and highly significant with the LYS classification. The lack of clear-cut robust findings might be due to the high correlation between these two variables (0.80), which makes it statistically difficult to disentangle their individual effect on the exchange rate regime.

VI. Conclusions

This paper studies the political economy of exchange rate stability in emerging market economies. The reason for introducing political economy elements is substantial and practical. It is substantial since economic elements do not account alone for exchange rate policy in emerging market economies. It is practical since several policy commentators blame the political environment for arousing the departures of exchange rate policy from genuine principles of economic efficiency.

The paper shows that the well documented fear of currency swings can be rationalized with a common agency game under rational expectations. The key features needed to obtain the result are as follows: a) different sectors of the economy (such as producers of tradable goods and bankers) have an interest in affecting exchange rate policy, b) the presence of a currency mismatch, c) the existence of welfare costs (for both producers and bankers) associated with expost volatility of the exchange rate. The assumptions and implications of our model are consistent with the empirical evidence that we report for a large set of emerging market economies.

An important theoretical dimension of our analysis is that it conjugates elements of international finance with political factors. Besides few notable exceptions, this type of analysis is indeed missing in the already flourishing political economy literature which conversely has provided successful applications in several other fields –i.e., international trade and public finance mostly. Needless to say, our model is suitable for applications that can go beyond the scope of the specific example. Facts concerning several historical episodes of financial crisis could indeed be reconnected to the economic and political determinants explored in our framework. Eichengreen and Temin (2001) for instance document the unwillingness

of the Federal Reserve to abandon the Gold Exchange Standard system and links this to the political pressure of lobbies representing the banking sector.

Appendix

A. External finance premium

To model the emergence of an external finance premium on foreign borrowing we use the one period debt contract by Gale and Hellwig (1985). We assume that informational asymmetries and moral hazard affect the relation between risk neutral foreign lenders and the risk neutral domestic bankers. In each period there is a continuum of competitive bankers (indexed by j) that needs to finance a continuum of investment projects by producers, I^j. We normalize the price of those investment projects to 1. The producers use the funds to finance production inputs. Bankers get funds by engaging in a financial contract with risk neutral foreign investors.

We assume the existence of an idiosyncratic shock, ω^j, to the returns of each banker, R^B. This shock can be rationalized by assuming that some bankers do not get full repayment of the loans provided to producers. The idiosyncratic shock has positive support, is independently distributed (across bankers) with a lognormal distribution, $F(\omega)$, with unitary mean, and density function $f(\omega)$. The return of the bankers is observable to the foreign investors only through the payment of a monitoring cost μ, which is proportional to the expected return on the bankers' investment activity.

Before entering the loan contract agreement each banker owns end-of-period internal funds for an amount NW^j and seeks funds to finance producers investment projects, I^j. It is assumed that the required funds exceed internal funds. Hence in every period each banker seeks funds:

$$eL^j = I^j - NW^j \geq 0. \qquad \text{(A1)}$$

External funds are evaluated at the prevailing nominal exchange rate, e. When the idiosyncratic shock is above the cut-off value which determines the default states, the bankers honor a repayment RL to foreign investors. On the contrary, in the default states, the foreign investors monitor the banking activity and repossess the assets left after the realization of the shock. Default occurs when the return to the bank $\omega^j R^B I^j$ falls short of the amount that needs to be repaid $R^L eL^j$ to foreign investors. Hence the *default space* is implicitly defined as the range for ω such that:

$$\omega^j < \varpi^j \equiv \frac{R^L e L^j}{R^B I^j}, \tag{A2}$$

where ϖ^j is a cutoff value for the idiosyncratic productivity shock. Let's now define $\Gamma(\varpi^j)$ and $1 - \Gamma(\varpi^j)$ as the fractions of net return received by the foreign lenders and the bankers. Hence we have:

$$\Gamma(\varpi^j) \equiv \int_0^{\varpi^j} \omega^j f(\omega) d\omega + \varpi^j \int_{\varpi}^{\infty} f(\omega) d\omega. \tag{A3}$$

Expected monitoring costs are defined as:

$$\mu M(\varpi^j) \equiv \mu \int_0^{\varpi^j} \omega^j f(\omega) d\omega, \tag{A4}$$

with the *net share* accruing to the foreign lenders being $\Gamma(\varpi^j) - \mu M(\varpi^j)$. Foreign lenders have as outside option a risk free asset that pays a return *R*. The *participation constraint* for the foreign lender states that the expected return from the lending activity should not fall short of the opportunity cost of finance:

$$R^B I^j \left(\Gamma(\varpi^j) - \mu M(\varpi^j)\right) \geq R(I^j - NW^j). \tag{A5}$$

The contract specifies a pair $\{\varpi^j, I^j\}$ which solves the following maximization problem:

$$Max \left(1 - \Gamma(\varpi^j)\right) R^B I^j, \tag{A6}$$

subject to the participation constraint (A5). Let χ be the Lagrange multiplier on (A5). First order conditions with respect to ωj and Ij read as follows:

$$\Gamma'(\varpi^j) = \chi\left(\Gamma'(\varpi^j) - \mu M'(\varpi^j)\right), \tag{A7}$$

$$\frac{R^B}{R}\left(\left(1 - \Gamma(\varpi^j)\right) + \chi\left(\Gamma(\varpi^j) - \mu M(\varpi^j)\right)\right) = \chi. \tag{A8}$$

Since the contract will deliver a linear relation between the external finance premium and the leverage ration we can impose ex-ante aggregation and skip the index *j*. Combining (A7) and (A8) and aggregating yields the following relation between the return to the bank and the risk free return:

$$R^B = \rho(\varpi) R, \tag{A9}$$

where

$$\rho(\varpi) = \left[\frac{(1-\Gamma(\varpi))(\Gamma'(\varpi) - \mu M'(\varpi))}{\Gamma'(\varpi)} + \left(\Gamma(\varpi) - \mu M(\varpi)\right) \right]^{-1}, \tag{A10}$$

with $\rho'(\varpi) > 0$. Let's define $rp \equiv \frac{R^B}{R}$ as the *premium on external finance*. By combining (A5) with (A10) one can write a relationship between the ex-post external finance premium, *rp*, and the leverage ratio $\frac{I}{NW}$:

$$\frac{R^B}{R} = rp\left(\frac{I}{I - eL}\right), \tag{A11}$$

with $rp'\left(\frac{I}{I-eL}\right) > 0$. An increase in the nominal exchange rate increases loan services and reduces bankers net worth, which in turn increases the external finance premium.

B. Data sources and description of variables

The variables used in this article are selected from the original dataset of Alesina and Wagner (2005). Data on the share of the sectors are collected from the *Comisión Económica para América Latina* (CEPAL) for the Latin American countries, and from the *Asian Development Bank* for the Asian countries. The six institutional indicators used come from the World Bank Dataset (Kaufmann, Kraay and Zoido-Lobatón). Assuming that these governance indices are rather stable within the same country, we take the average of the years 1998 and 2000 and impose the resulting value for the entire sample period 1990-2000. In our analysis we use COR and a composite governance index MGOV constructed as a simple average of the six indicators. The definitions of the variables used in the estimation are in Table A1.

Table A1. Economic and institutional variables

Name	Description
RR	Reinhart-Rogoff's de facto classification (1=peg, 5=freely falling)
LYS	Levy-Yeyati and Sturzenegger de facto classification (1=peg, 4=float)
LGDP	Log(GDP)
FLM1	Foreign liabilities / money, lagged
OPEN1	(Exports+imports)/GDP, lagged
SHTRADE1	Exports to the largest trading partner as share of total exports, lagged
LINF1	Log(1+inflation rate/100), lagged
VOLEXT	Standard deviation of the log terms of trade over the previous 5 years
DUMCI	Business cycle dummy (=1 if GDP growth in the preceding period is above long-run growth, 0 otherwise)
MANUY1	Share of manufacturing sector over GDP, lagged
FINYFL1	Share of financial sector over GDP, lagged, multiplied by FLM1
INTMF1	MANUY1* FINYFL1
TREND	Linear trend
VA	Voice and accountability
PS	Political stability
GE	Government effectiveness
RQ	Regulatory quality
RL	Rule of law
COR	Control of corruption
MGOV	Simple average of VA, PS, GE, RQ, RL and COR

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