Exchange Rate Variability and Lobbies

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Abstract

This paper provides a political economy model showing that when the exchange rate appreciates beyond an endogenously determined level, the tradeable sector will feel compelled to bribe the government in exchange for protection. Interestingly enough, when the realization of the exchange rate is above this endogenous threshold, the equilibrium will entail negative tariffs, meaning goods are sold at prices below international levels.

1 Introduction

Since Mundell's (1961) classic paper, many authors have put a great deal of effort in the study of the costs and benefits related to the formation of a monetary union. Briefly, the often cited gains are increased trade and capital flows among member states, and enhanced anti-inflationary credibility for those countries previously lacking it. On the costs side, the commonly emphasized features are the loss of monetary autonomy when shocks hitting different jurisdictions are asymmetric, and the potential for conflict when decisions on the course of monetary policy have to be made collectively[1].

Adding to the benefits list, Eichengreen (1993; 1998) presents a novel and interesting argument, namely, that the stabilization in the real exchange rate arising from the shared use of a unique currency may weaken national lobbies' willingness to campaign against trade liberalization. The political economy argument is not difficult to understand: when drastic appreciations of the nominal (and real)[2] exchange rate occur, inflicting huge losses to the domestic tradeable sector, national lobbies will hastily enter the political arena to pressure the country´s authorities for the adoption of countervailling measures. If they are successful in their endeavor, a backlash on import liberalization will then ensue. In Eichengreen´s own words: *"...separate national currencies, insofar as they make exchange rate variability an unavoidable fact of economic life, are dangerously corrosive of the political support for regional free trade"*.

Indeed, anecdotal evidence seems to be supportive of this argument As Eichengreen (1998) and Eichengreen and Ghironi (1996) report, antiliberalization sentiment gained *momentum* in the United States in 1995 when the Mexican Peso depreciated sharply against the Dollar and also in many European countries in 1992, when both England and Italy left the ERM and allowed their currencies to fall considerably against the Deutch Mark[3]. Hence, for countries planning to liberalize trade (maybe through the formation of a trade union), high exchange rate variability may prove to be a difficult obstacle in the way. Not that this volatility *per se* hinders trade significantly (say, due to higher transaction costs), but for the indirect effects it has on lobbies' incentives to organize and take action.

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[1] See, for instance, Alesina and Barro (2002) and Feldstein (1997).

[2] It is a well known fact that, because prices are sticky, shocks to the nominal exchange rate translate almost entirely to the real exchange rate.

[3] A more recent example took place in Argentina in 1999, when Brazil left its currency peg and allowed the Real to float freely. The pressure exerted by the argentinean domestic industry on their government to raise Mercosur's intra import tariffs was immense.

A first objection to this line of reasoning would be that, under complete markets, the tradeable sector could avoid huge losses in profitability by hedging itself against large drops in relative prices. Moreover, since lobbying is not costless as it entails activities like advertising, sending representatives to visit congressmen, financing of politicians' election campaigns and even bribing public officials directly, it might indeed be optimal to buy hedge instead. Unfortunately, though, markets are rarely complete and even when there are ways to insure oneself against exchange rate variability hedging can easily be more expensive than lobbying.

A second criticism to the political economy rationale here suggested would go as follows: why don't the beneficiaries of an exchange rate appreciation, the generally larger nontradeable sector (or the population at large, who earn wages in domestic currency) press the government in the opposite direction, namely, not to raise tariffs? Our answer to this argument is simple and relies on Mancur Olson's (1965) proposition that only smaller, organized groups are capable of overcoming the free rider problem and are thus able to raise the necessary funds to invest in lobbying. For its part, the general public is too large and disperse and hence the benefits from confronting the tradeable lobby accruing to each individual are often fairly small. As a consequence, it is quite reasonable to assume the general public cannot efficiently counteract the organized tradable sector pressure for protection.

Drawing on Eichengreen's intuitive argument, the contribution of this paper is to provide a coherent political economy model showing that when the exchange rate appreciates beyond an endogenously defined threshold, national lobbies will successfully press for positive taxation of imports, meaning they will be able to sell their products at above market prices. The intuition is that a government partially worried about social welfare, partially seeking higher rents, will concede to lobbies's demands for positive tariffs (which hurt the general public) when the latter offers them too high a compensation in return.

The term "compensation" here does not necessarily mean sheer bribe, though this may in fact be the case. One could also think, for example, in legal financing of campaigns or binding commitments by the tradeable sector to vote for the politician in forthcoming elections. Interestingly enough, it is shown that lobbies will find it profitable to offer such compensations to public officials only in situations of extremely unfavorable relative prices. On the other hand, if the realization of the exchange rate turns out to be favorable, lobbies will refrain from squandering their money trying to please politicians. Moreover, because the government also cares about social

welfare, it will grow increasingly reluctant to further hurt the general public with tariffs when the domestic price of the tradeable good rises due to an exchange rate depreciation.

The model laid down in the next section also presents the result that for greater realizations of the exchange rate, optimal tariffs may indeed be *negative*, this meaning prices below international levels. The idea is that it will be more lucrative for the tradeable sector to accept a direct transfer *from* the government in exchange for supplying the goods at lower prices.

In sum, the idea here is that when losses stemming from an unexpected exchange rate appreciation are big and hedging is either expensive or nonexistent, the tradeable sector feels compelled to satisfy the government's "participation constraint" (through transfers) in return for greater protection. Nevertheless, it is found that for higher levels of the exchange rate, lobbies will prefer to receive net transfers (subsidies) from the government in exchange for lower prices.

2   The model

In this section, we provide a full-fledged political economy model wherein sharp exchange rate appreciations spark a protectionist backlash. There are three key players in the model: the smaller tradeable sector which prefers a devalued currency, the big nontradeable sector or general public that sees its real wages soaring when the currency strenghtens, and the government who cares about both sectors but also values potential transfers from the organized lobby representing the interests of the tradeable sector.

2.1   Timing

The time schedule below describes the order events unfold in the model.

Timing

1. The tradeable sector chooses how much to produce (maximizing expected profits) and hires capital accordingly.
2. The exchange rate becomes known to everyone.

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3.The lobby approaches the government with a proposal for tariffs and transfers (bribes). Following this meeting, the level of protection agreed is revealed.

4. The public consumes tradeable and nontradeable goods.

Firstly, firms in the tradeable sector choose how much capital to hire in order to maximize expected profits (they do not know prices beforehand). After that, a realization of the exchange rate is drawn from a previously known distribution. The lobby then interacts with the government and a decision on the level of protection is made. Finally, the public maximizes its utility choosing how to allocate its income between the consumption of tradeable and nontradeable goods.

2.2 The tradeable sector

We assume the tradeable sector's production function employs only capital and is expressed by $y = k^\alpha$. Another important assumption is the existence of a time gap between capital installation and the production/selling of the final good. Assuming purchasing power parity (inclusive of tariffs) holds, the price p of the tradable good equals $(1 + \tau).\theta$ [4]. Crucially, by the time it chooses the capital stock, the tradeable sector is not perfectly informed about the exchange rate prevailing the moment goods are to be sold. In spite of not knowing θ in advance, we assume firms do know this variable follows a stochastic process given by some $f(\theta)$ and that $\int_0^{\theta^{\max}} \theta.f(\theta).d\theta = \overline{\theta}$.

Maximization of expected profits, $\Pi^E = \overline{\theta}.k^\alpha - r.k$,[5] thus yields the following optimal demand for capital: $k^* = \left(\dfrac{\alpha.\overline{\theta}}{r}\right)^{\frac{1}{1-\alpha}}$. Because the capital stock is not adjustable in the short run (assuming liquidation costs are prohibitively high), it is easy to see that *actual* profits, when the exchange turns out to be θ, will be given by:

$$\Pi = \left[p - \alpha.\overline{\theta}\right].\gamma \tag{1}$$

Where $\gamma = \left(\dfrac{\alpha\overline{\theta}}{r}\right)^{\frac{\alpha}{1-\alpha}}$.

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[4] The foreign price of the tradeable good is normalized to zero to simplify algebra.

[5] The expected price of the tradeable good is equal to $\overline{\theta}$ because: (i) $E(\theta) = \overline{\theta}$ and (ii) the assumed form of the density function $f(\theta)$ will guarantee that *expected* tariffs (which can actually be either positive or negative) will turn out to be zero. The intuition will become clear later in the paper.

The intuition in (1) is clear: when capital is sunk and has to be accumulated before prices are revealed, huge losses occur if the exchange rate appreciates too much and tariffs remain unchanged. As it will be shown later, these unhedgeable appreciations of the exchange rate are precisely the factor triggering lobbies' desire for greater protection.

2.3 The general public/nontradeable sector

As it was mentioned in the introduction above, the general public will not take part in the political process via lobbying. Nonetheless, because they consume both nontradeables and tradeables the outcome of this process will affect them directly. More precisely, their budget constraint will shift outwards when p decreases and inwards when it increases. For concreteness, the public is assumed to earn a nontradeable income of w and to have logarithmic preferences in both goods. Its maximization problem is therefore simply to decide how to allocate this nontradeable income between the consumption of tradeables and nontradeables goods.

The public thus solves the following problem:

$$
\begin{aligned}
V &\equiv Max \log c^N + \log c^T \\
s.t &: c^N + p.c^T = w
\end{aligned}
\tag{2}
$$

Where V is the indirect utility function of the general public and the nontradeable prices are normalized to one. Substituting the first order conditions back into the indirect utility function, one easily reaches:

$$
V = 2.\log(\frac{w}{2}) - \log p.
\tag{3}
$$

As expected, higher prices unequivocally damage those earning wages in domestic currency. As it will become clear later in the paper, because the government internalizes a variant of V in its own utility function, it will end up resisting the lobbies when the exchange rate shrinks real wages too harshly.

2.4 The government

In the model, the government cares about social welfare but also values money rents. Moreover, we assume taxation not only means higher prices,

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but also entails deadweight losses. Due to this additional inefficiency, the social concern of the government will be characterized by $V^G = 2. \log(\frac{w}{2}) - (1 + \tau). [\log(1 + \tau).\theta]$, where the multiplicative term $(1 + \tau)$ is meant to capture this extra cost of taxation.

Its utility function is hence given by:

$$U = [\beta.\Pi + V^G] + R \qquad (4)$$

Where:

β: is the relative importance the government ascribes to the tradeable sector in social welfare;

Π: is the tradeable sector profit;

V^G : is the indirect utility function of the public at large inclusive of the deadweight loss;

R : represents government rents, comprised by transfers, T, and wages, w_g.

The inclusion of the tradeable sector's profit in government's utility function may reflect an objective of improving the current account (because external debt is too high, for example). The term in brackets in (4) hence captures government's concern with social welfare. However, the presence of money rents in its utility function hints it will not behave like a purely benevolent social planner when deciding τ jointly with the lobby.

2.5   Equilibrium taxes

For simplicity, we assume taxes are zero ($\tau = 0$) in the *status quo* situation. As indicated above, after nature draws some θ from $f(\theta)$, government and lobby meet to decide whether taxes should remain where they are, turn negative (meaning prices below international levels) or increase to positive territory. The dynamics of this interaction involves the lobby approaching the government with an optimal proposal for the pair $(\tau; T)$, denominated $(\tau^*; T^*)$[6]. Moreover, there is no real bargaining process in the model and thus the proposal has to be either accepted or declined altogether by the government

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[6]It seems more realistic to assume the lobby approaches the government, and not the other way around.

The choice of the optimal proposal by the lobby comes from the maximization of the tradeable sector's net profit, $\Pi(\tau) - T$ [7]. The important restriction in this maximization problem is that the government be better off accepting the proposal than rejecting it. To put it differently, the government's participation constraint has to be satisfied if it is to prefer the proposal to the *status quo*. The lobby's problem can be described as follows:

$$\underset{\{\tau\}}{Max}\ \Pi(\tau) - T \qquad (5)$$
$$s.t\ :\ U(\tau, T) \geq U(\tau = 0, T = 0)$$

The nature of the tradeoff implicit in the problem above is clear: the need to satisfy the government's participation constraint will imply higher protection comes only at the cost of increased transfers. At $(\tau^*; T^*)$, the marginal benefit of proposing a greater τ (selling at higher prices) equals its marginal cost (expending more resources with transfers).

Furthermore, because the lobby the proposer the constraint in (5) has to be binding. The intuition is simple: there is no reason for the lobby to spend more than the strictly necessary to bring the government into the game. Using (1), (3) and (4) it readily follows that:

$$U(\tau = 0) = \beta.\left(\theta - \alpha.\overline{\theta}\right).\gamma + \left[2.\log(\frac{w}{2}) - \log\theta\right] + w_g \qquad (6)$$

and

$$U(\tau \neq 0) = \beta.\left((1+\tau).\theta - \alpha.\overline{\theta}\right).\gamma + \left[2.\log(\frac{w}{2}) - (1+\tau)\log\left[(1+\tau).\theta\right]\right] + w_g + T \qquad (7)$$

Imposing $U(\tau, T) = U(\tau = 0, T = 0)$, one gets to:

$$T^{\min} = \tau.\log\theta + (1+\tau).\log(1+\tau) - \beta\gamma\theta\tau \qquad (8)$$

Using equation (8),the lobby's maximization problem simplifies to:

[7] Obviously, a negative T means resources are being transferred *from* the government *to* the tradeable sector.

$$\underset{\tau}{Max} \left\{ \left((1+\tau).\theta - \alpha.\overline{\theta} \right).\gamma - (1+\tau).\log(1+\tau) - \tau.\log\theta + \beta\gamma\theta\tau \right\} \qquad (9)$$

The first order condition of this problem yields the optimal value of τ and is given by[8]:

$$\log(1+\tau^*) = \gamma\theta(1+\beta) - (1+\log\theta) \qquad (10)$$

Substituting τ^* back into (8) we are able to find the minimal amount of transfers needed to satisfy the government's participation constraint.

Using these results, we establish the following propositions:

Proposition 1 *Greater protection always comes at the cost of higher transfers to the government*

Proof. $\dfrac{\partial T}{\partial \tau} = (1 + \log\theta) + \log(1+\tau) - \beta\gamma\theta = \gamma\theta > 0.$ ∎

Proposition 1 makes explicit the tradeoff faced by the lobby when it approaches the government to ask for heightened protection: because higher tariffs hurt the general public, the government will concede to lobby's demands only if the latter is willing to increase the amount of transfers.

Moreover, it becomes clear that positive tariffs will be enacted only when the exchange rate strenghtens beyond an endogenously determined level. This is the result stated in proposition 2 below:

Proposition 2 *Given* $[(1+\beta).\gamma] < 1$, *equilibrium tariffs will be positive for low enough values of* θ $\left(< \theta^{thr} \right)$ *and negative for high enough values of* θ $\left(> \theta^{thr} \right)$ *and zero when* $\theta = \theta^{thr}$.

Proof. First, note $\tau \lesseqgtr 0 \iff \log(1+\tau) \lesseqgtr 0$. This condition implies $\tau \lesseqgtr 0$ whenever $\gamma\theta(1+\beta) \lesseqgtr (1+\log\theta)$. The graph below makes clear positive tariffs are associated with extreme exchange rate appreciations and negative tariffs with higher values of θ. In Region I, $\theta < \theta^{thr}$ and $\tau > 0$, whereas in Region II we have $\theta > \theta^{thr}$ and $\tau < 0$. ∎

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[8]It is easy to see the second order condition is satisfied.

Graph 1
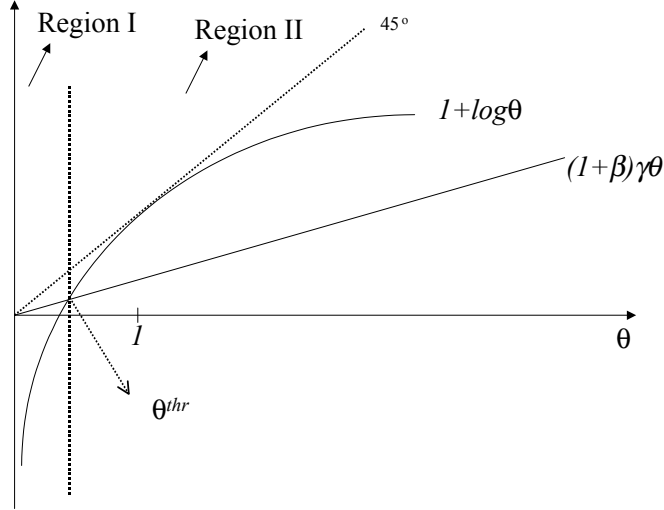
Proposition 2 above thus confirms Eichengreen's intuition put forth in the introduction, namely, that economies facing high exchange rate variability (which imply a greater chance θ falls below θ^{thr}) are more likely to witness a protectionist backlash. A corollary stemming from this proposition is that a monetary union irrevocably fixing the exchange rate and hence preventing wild gyrations in θ may be conducive to openness.

It is interesting to see in the graph above that an increase in the weigh the government attaches to the tradeable sector, β, leads to a greater θ^{thr} and therefore expands Region I where protection is in place ($\tau > 0$). Note that when $\gamma(1 + \beta)\theta$ is steeper than the 45^0 line, τ will always be positive.

Proposition 3 *For low enough values of θ, higher appreciations lead to greater protection.*

Proof. $\dfrac{d\tau}{1 + \tau} = \gamma(1 + \beta)d\theta - \dfrac{d\theta}{\theta} \Rightarrow \dfrac{d\tau}{d\theta} = \dfrac{1 + \tau}{\theta}\left[\gamma(1 + \beta)\theta - 1\right] \Rightarrow \dfrac{d\tau}{d\theta} <$ $0 \Leftrightarrow \theta < \left[\gamma(1 + \beta)\right]^{-1}$. Note this last inequality holds for the entire Region I in the graph above. ∎

Finally, a last *caveat* is in order: because in this paper we didn't intend to deal with the issue of time inconsistency, we assumed in section 2.1 the expected price of the tradeable good to be equal to $\overline{\theta}$. Note that because $E(p) = \overline{\theta} + E(\tau)$, to circumvent time inconsistency and have $E(p) = \overline{\theta}$ we

need to assume $f(\theta)$ is such that when "applied" to graph 1, it yields an $E(\tau)$ equal to zero.

3   Conclusion

In sum, the model here presented provides a political economy mechanism corroborating the intuitive argument that when the exchange rate appreciates too much positive import tariffs will ensue. The results do not follow from an *ad hoc* fixed cost of lobbying, but from first principles. More precisely, it derives from the necessity to satisfy a partially benevolent government's participation constraint.

In terms of policy recommendations, the paper lends credence to the assertion that high exchange rate variability may hamper openness by encouraging lobbies to take action. Entering a monetary union may hence has the additional benefit of facilitating the opening of the economy.

References

ALESINA, Alberto. BARRO, Robert. "Currency Unions".*Quarterly Journa of Economic*, 409-436, April 2002.

EICHENGREEN, Barry. "European Monetary Unification". *Journal of Economic Literature*: 1321-1357, September 1993.

_____. "Is Mercosur an Optimal Currency Area?" *NBER Working Paper 6821*, December 1998.

EICHENGREEN, Barry & GHIRONI, Fabio. "European Monetary Unification: The Challenges Ahead" in Francisco Torres (ed.) *Monetary Reform in Europe,* Universidade Católica Editora, 1996.

FELDSTEIN, Martin. "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability". *Journal of Economic Perspectives:*23-42, Vol.11, Fall 1997.

MUNDELL, Robert. "The Theory of Optimum Currency Areas". *American Economic Review: 657-665*, September 1961.

OLSON, Mancur. "The Logic of Collective Action". Harvard University Press, 1965.