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Alberto Amurgo Pacheco

Graduate Institute of International Studies

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# Institutions and Deep Integration

Alberto AMURGO PACHECO\*

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## Abstract

The paper explains why institutions matter for a deep integration process, as illustrated by the liberalization of Non-Tariff Barriers (NTBs) in Europe. We argue that deep trade liberalization requires supranational institutions of deeper integration that permit enforcement, surveillance, and adjudication. To support the claim, we develop a simple model showing why mutual recognition of norms and testing procedures, coupled with a supranational institution can shape the equilibrium level of NTBs in every member state. Member states host special-interest groups that make political contributions to influence their respective government's choice of NTBs. Politicians maximize a realistic welfare function that favours contributions over consumer's social welfare. The supranational institution drains the incentive to lobby for NTBs. The paper discusses the structure of protection that emerges in the equilibrium, stressing how the lobbies' contributions vary with the effectiveness of the supranational institution in reducing NTBs in the final policy outcome. We then use the model to explain the liberalization of NTBs in the EU.

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\*Graduate Institute of International Studies; Avenue de la Paix, 11; 1202 Geneva; Switzerland, e-mail: amurgop1@hei.unige.ch. I am grateful to Richard Baldwin, and Jaya Krishnakumar for useful discussions and helpful comments.

# 1 Introduction

There is deep versus shallow integration in the world, the European Union (EU) is a deep one. The EU is the biggest peaceful effort ever made to bring the peoples of the continent together. It is an exceptional endeavour without parallel elsewhere. Since the collapse of the European Defense Community in 1954, most of the effort has focused on economic integration. One of the most unusual aspects of European economic integration is deep trade liberalization; or the removal of technical barriers to trade arising from heterogeneous national *norms* (technical regulations and standards), and *testing procedures*.<sup>1</sup> The European process of NTB liberalization has no equivalent anywhere else in the world.<sup>2</sup>

Unlike any other trade arrangement, the ECJ has legislative authority, which supersedes national legislation. In the European experience the issue of supranationality has played a key role to foster deep trade liberalization. None questions the role of the European institutions to liberalize internal trade. Liberalization of tariffs and quotas is relatively simple. The GATT and its successor, the WTO, have been extraordinary successful in the multilateral context, and the EU, and NAFTA in the regional one. In all these cases negotiation has produced the desired outcome.

Deep trade liberalization is tricky. NTBs restrain trade by raising foreign firms' costs relative to the domestic ones. As Baldwin (2000) suggests, liberalization requires lowering the wedge. There are two dimensions to it; content-of-norms, and testing procedures. Liberalization of the first involves making product norms more cosmopolitan and thus narrowing the cost advantage of domestic firms. Liberalization of the second involves lowering the excess costs that foreign firms face in demonstrating compliance of their goods to accepted norms. There are two ways forward along both dimensions, *harmonization* (convergence to a single norm or test), and *mutual recognition* (acceptance of foreign norms and tests). Harmonization can be accomplished through *negotiation* (a discussion aimed at agreeing a single norm), or through the *hegemonic* route, (everyone adopts the norms of a

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<sup>1</sup>Technical regulations are mandatory whereas standards are voluntary. Norms are the specific requirements that products have to meet to be sold in a particular market; testing is required to assess whether products conform with the norms.

<sup>2</sup>Australia, and New Zealand have made some progress towards NTB liberalization but it is still very incipient.

hegemonic state).

There are few recent examples of deep trade liberalization.<sup>3</sup> The European experience is the most significant one. The EU has been dealing with NTBs since the Treaty of Rome. In 1957 the Community advocated for harmonization of technical standards but it did not happen; in fact it went backwards. Then from 1969 to 1983 the Community worked on a Programme that far from eliminating NTBs witnessed an increase in technical barriers in the internal market. And then the ECJ enforced mutual recognition and NTB liberalization followed very quickly.

European institutions have been important, and most researchers claim that mutual recognition is also an important aspect of NTB liberalization.<sup>4</sup> But, how does the combination of a supranational institution of deeper integration, and mutual recognition lead to liberalization? We present a model that provides a plausible explanation for the question. The model is motivated by the EU experience but it is more general than that; we use it to investigate the role of institutions in liberalization. We develop a model in which the combination of mutual recognition, and the court as an imperfect enforcement and surveillance mechanism, change the equilibrium in a way that there is no lobbying in the first place. There is a quick change, and NTBs disappear because nobody wants them anymore.

We organized the paper as follows: section 2 develops a simple formal model of supranational institutions in deep trade liberalization. We show how a supranational institution, and mutual recognition of norms and testing procedures can eliminate NTBs. We discuss some welfare implications, and the fact that there are winners and losers, but the winners win more. In section 3 we first use the model to inform a discussion over “stage zero”. And then we use the model to explain the liberalization of NTBs in the EU. We conclude in section 4 summarizing the main findings and providing some avenues for future research.

This is as far as the discussion can go without a formal model. We are turning now to a political economy model that crystallizes the logic behind institutions of deep integration, and NTB liberalization.

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<sup>3</sup>The process of formation of nations are old examples.

<sup>4</sup>See Egan (2001) for a detailed account.

## 2 Institutions and Deep Integration: A Formal Model

In order to make the analysis of NTB liberalization tractable, we consider the following simple model.

Consider a union of small and symmetric states, and a supranational court of justice. Without loss of generality we will refer to them as the European Union (EU), and the European Court of Justice (ECJ). Member states are free to adopt norms, and testing procedures that may generate NTBs in their territory. Individuals, industries, and member states, however, can complain about them before the ECJ. The court applies the principle of mutual recognition of norms, and testing procedures when it finds that the regulation presents an unnecessary distortion of trade. Supranational law supersedes state's law.

We are going to take the perspective that NTBs are politically optimal. This perspective has been the subject of formal work by Grossman and Helpman (1994). It may be useful to present it informally, we assume that governments make their trade policy choices in response to industry lobbying pressures balanced against consumer interests. This is known as the *lobbying approach* to endogenous protection, and it assumes that all elected governments respond to lobbying activities in the same way. We model the lobbying activities as a menu auction problem.<sup>5</sup> Namely, a situation where the lobby announces a *menu* of contributions for various possible NTBs open to an *auctioneer* and then pay the bids according to the action selected.

On the supply side, we consider a factor-specific framework.<sup>6</sup> This eliminates general equilibrium supply-side effects because wages are pinned down by productivity in the numeraire industry and each industry-specific factor is paid the Ricardian rent. A typical individual derives income from wages  $wL$ , and from the industry-specific factor that he may own. In particular, owners of the specific input used by industry  $i$  see their income tied to the domestic price of  $i$ . All income is expended.

Each member state is inhabited by individuals with identical preferences but different industry-specific factor endowments. The consumption space is bounded, good 0 acts as a numeraire and there are  $n$  non-numeraire goods.

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<sup>5</sup>See Bernheim and Whinston (1986), and Grossman and Helpman (1994) for a more more detailed treatment.

<sup>6</sup>Ricardo-Viner setup.

Every industry produces one type of good. The numeraire good is produced from labour alone. The non-numeraire goods are produced from labour and an industry-specific factor. In order to eliminate cross-price effects on the demand side, we assume that preferences are separable industry-by-industry. Preferences are strictly convex, and quasi-linear with respect to the numeraire good. We normalize the world and domestic price of the numeraire good to 1. Individuals derive utility from the consumption of goods. Given these assumptions we can represent the individual's preferences by the following quasi-linear utility function:

$$U = c_0 + \sum_{i=1}^n u_i[c_i] \quad (1)$$

where  $c_0$  is the consumption of the numeraire good;  $c_i$  is the consumption of the good produced by industry  $i$ ;  $i = 1, 2, \dots, n$  and  $n$  is the number of non-numeraire industries. The sub-utility functions of the non-numeraire industries  $u_i[c_i]$  are increasing, differentiable, and strictly concave.

We denote by  $p_i^w$  the exogenous world price<sup>7</sup> of the good produced by industry  $i$ , while  $p_i$  represents its domestic price. NTBs are the only trade barrier in this world. NTBs drive a wedge  $\tau_i$  between domestic and foreign price of the good produced by industry  $i$ . Thus, we denote domestic prices by  $p_i = (p_i^w + \tau_i)$ . Liberalization consists in reducing the wedge.

Utility-maximizing individuals consume  $x_0 = E - \sum_{i=1}^n p_i d_i(p_i)$ , and  $x_i = d_i(p_i)$ ; where  $E$  is the budget constraint ( $E$  stands for expenditure). The individual's optimal choice is embodied in the Walrasian demand function (note that  $d_i(\cdot)$  the inverse of  $u'_i[c_i]$ ). Given the assumption of quasi-linear preferences the demand is independent of income. The individual's optimal utility value is captured by the following indirect utility function:

$$V = E + \sum_{i=1}^n S_i[p_i] \quad (2)$$

where  $S_i[p_i]$  is the industry-specific consumer surplus function.

In some exogenous set of industries, industry-specific factor owners are organized politically.<sup>8</sup> Organized industries push for NTBs in order to un-

<sup>7</sup>Thanks to the small nation assumption we do not have to worry about it. The small country assumption is convenient so the volume of purchases and sales of each member state does not affect its "border prices".

<sup>8</sup>See Olson (1971).

dermine foreign competitors and thus create rents for themselves. As a result, each member state hosts special-interest groups that make political contributions to influence the incumbent government’s choice of NTBs. The remaining industries and consumers are not organized, and therefore do not offer any political contribution to the government. We assume that in each member state, all firms in an industry act as one when it comes to political contributions.

Contributions are directly and intuitively related to the main reason for lobbying: raising the price of goods that the industry sells by increasing the costs faced by foreign competitors. We can use reasoning from contract theory to argue that it is natural to expect each lobby’s contribution to be *truthful* in the sense that each lobby’s contribution varies with NTBs in the same way that the lobby’s objective function varies with NTBs. The contribution schedules are as follows:

$$C_i[p_i] = \pi_i[p_i] + \alpha_i N (S_i[p_i] + L) - B_i \quad (3)$$

where  $\pi_i[p_i]$  is the total the “Ricardian” surplus earned by firms in industry  $i$ ;  $N$  is the number of individuals in a member state;  $\alpha$  is the fraction of the population that owns the industry-specific factor for industry  $i$ ; and  $L$  is the individual’s labour endowment. Contributions may be reduced by a constant  $B_i$ . Without loss of generality we are going to assume that  $\alpha$  is zero.<sup>9</sup>

The present framework is, essentially, applied contract theory. In contract theory, we use two expressions to characterize the optimal contract: the *incentive constraint* (the agent’s first-order condition taking the contract as given), and the *participation constraint* (the requirement that the expected reward is generous enough to induce the agent to accept the contract in the first place). The lobby presents the government with incentive contracts called *contribution schedules* that induce the government to do what the organized industry wants the government to do. The government is the agent and the lobby is the principal.

Note that the form of the contribution schedule is exactly equal to the lobby’s welfare minus  $B_i$ . This means that the lobby’s contributions are di-

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<sup>9</sup>As Baldwin and Robert-Nicoud (2006) argue, we are confronted to an awkward situation where the lobby also adjusts its contributions to his interest as consumer. This is what they call the “ice-cream clause.”

rectly related to its rents,  $\pi_i[p_i]$ , but a lobby is not required to contribute all its Ricardian rents to the government; the lobby can reduce its contributions by  $B_i$  to retain some of the fruits of lobbying without violating the truthfulness constraint. All they have to do is to make sure that the government goes along with it.<sup>10</sup> The lobby does not necessarily give any money, when the point to make is that contribution won't have any effect it can set  $B_i$  in a way that does not have to pay anything to the government.<sup>11</sup>

The national government values the total amount of political contributions and social welfare. Specifically, the government favours campaign contributions over the individual's well being because the former provides a higher probability of becoming re-elected. The government of the typical member state maximizes a realistic welfare function<sup>12</sup> where organized producers receive a higher relative weight than consumers, and non-organized producers. The government's objective function consists of a weighted sum of the standard utilitarian social welfare  $W$ , and lobbying contributions  $C_i[p_i]$ , that is:

$$\Omega = aW + \sum_{j \in \Lambda} C_j[p_j] \quad (4)$$

where  $\Lambda$  is the set of industries that are politically organized, and as such are able to make political contributions;<sup>13</sup>  $a$  is how much the government weights the consumer surplus, and the producer surplus in unorganized industries; it can be interpreted as the relative weight that the government assigns to the "general interest." The parameter  $a$  is greater or equal to 0.

An equilibrium in the model is a set of *contribution schedules*, one for each industry, such that each one maximizes the joint welfare of the lobby given the anticipated political optimization by the government; and a *domestic price vector* that maximizes the government's objective function taking the contribution schedules as given.

We have developed a quasi-general equilibrium model that relates the level of NTBs in each state to its domestic political process. We are now

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<sup>10</sup>Note that it is very different from assuming that lobbyists bribe the governments.

<sup>11</sup>It is right in the equilibrium. I give you an incentive to do something in the margin, and then I take away to the point where you are just indifferent between saying yes or no to the whole package. Basic contract theory.

<sup>12</sup>See Baldwin (1987) on realistic welfare functions.

<sup>13</sup>There is no restriction on the size of the parameter  $a$ .



turning to discuss the equilibrium level of NTBs that will arise both in the absence and in the presence of the ECJ.

## 2.1 The equilibrium level of NTBs

We are interested in finding the equilibrium level of pre-liberalization barriers. Namely, the level of NTBs in the absence of the ECJ, and before the principle of mutual recognition plays any role in the story.

The government's decision problem is to find the domestic vector of prices that maximizes its objective function taking the contribution schedules as given. Thus, the government's problem is to choose  $\tau_i$  in order to maximize:

$$\Omega = a \left( NS_i[p_i] + \sum_{i \notin \Lambda} \pi_i[p_i] \right) + (1 + a) \sum_{i \in \Lambda} \pi_i[p_i] - B_i \quad (5)$$

Given that 5 is continuously differentiable, we can characterize an optimal  $\tau^*$  by means of the first-order conditions:

$$\Omega' = a (NS'_i[p_i] + \pi'_i[p_i]) + \pi'_i[p_i] = 0 \quad (6)$$

For tractability we assume linear demand and supply functions of the type  $Q_s[p_i] = b_s p_i$ , and  $Q_d[p_i] = a_d - b_d p_i$ . We have that the change in consumer surplus  $NS'_i[p_i]$  is (minus) the level of consumption, and the change in producer surplus  $\pi'_i[p_i]$  is the level of production. Therefore the parameter  $a$  is multiplying the negative term  $M[p_i]$ , the level of imports.

We can rewrite 6 as follows:

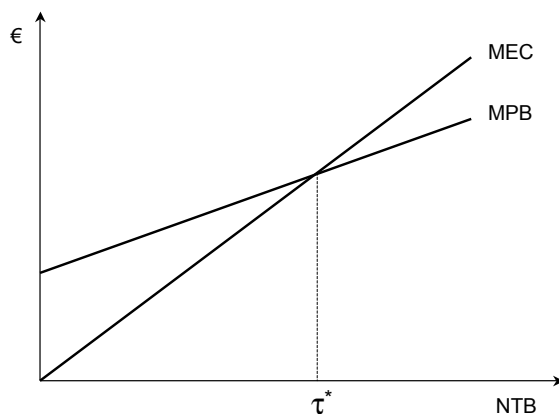
$$a(M[p_i]) = \pi'_i(p_i) \quad (7)$$

The left hand side term in 7 can be thought of as the *Marginal Economic Cost* (MEC) for the government of allowing NTBs. The right hand side can be interpreted as the *Marginal Political Benefit* (MPB) for the government of adopting the NTB. Note that the MPB is identical to the domestic supply curve  $Q_s[p_i]$ .

Substituting the functional forms in 7 and solving for  $\tau_i^*$  we find the level of NTBs that the government chooses in equilibrium:

$$\tau_i^* = \frac{aa_d}{[a(b_d + b_s) + b_s]} - p_i^w \quad (8)$$

where  $\tau^*$  is the equilibrium wedge (mark-up) on the domestic price of good  $i$ ;<sup>14</sup> the impact on prices resulting from the government's domestic choice of equilibrium NTBs in industry  $i$ . Given the symmetry of the model, we expect all governments to choose the same.



**Figure 1:** The level of NTBs  $\tau^*$  in the absence of the ECJ.

Figure 1 shows the MEC and MPB curves. The MPB curve is upward sloped. The MEC curve could start from zero under some regulatory conditions. Since the marginal economic loss from rising the NTB from zero is zero it makes sense to plot it in such a way. The MEC rises as long as the slopes of the domestic supply and demand curve do not change too much. Given the assumption of linear supply and demand curves the MEC curve is a positively sloped linear curve.

The determination of the level of contributions, in particular, the determination of the  $B_i$ 's is straight forward.<sup>15</sup> In the model, the assumption of truthfulness dictates the form of the contract, so 6 is the incentive constraint.

To find the participation constraint, we assume that the government has the right to refuse the contribution schedules. The assumption implies that the lobby must ensure that the level of the government's payoff is at least as high when it accepts the contributions as when it does not. If the government refuses the contribution schedule from the lobby in industry  $i$ ,

<sup>14</sup>The calculation of the domestic price is straight forward;  $p_i = \frac{aa_d}{[a(b_d+b_s)+b_s]}$ .

<sup>15</sup>A similar procedure for determining the B's is laid out in detail in Grossman and Helpman (1994).

its optimal choice of NTB is zero.<sup>16</sup> Consequently, the lobby must ensure that  $B_i$  is such that the government's payoff is equal to its reservation payoff, namely  $a$  times social welfare under free trade.<sup>17</sup> An organized industry will always choose to offer the contract to its agent, the government.

## 2.2 The equilibrium level of NTBs with the ECJ.

We are now going to determine the level of NTBs that arises in the presence of the ECJ, and the principle of mutual recognition in the model. The combination of mutual recognition and the ECJ makes protection less attainable to all firms, and changes the domestic problem in a way that favours liberalization.

We can think of mutual recognition as “an agreement to disagree.” It boils down to accepting that different regulations are simply different means of achieving the same regulatory goals.<sup>18</sup> The consequence for firms is freedom to use any of the available regulations, including those of their own national state. Put simply, mutual recognition allows all firms to avoid unpleasant foreign regulations that have the purpose of making their exports less competitive; products meeting the norms of any member state enjoy *single-market access*. By the same token, firms realize that pushing for similar unpleasant regulations at home does not protect them from foreign competition any longer. As a result, firms stop lobbying for regulatory protectionism, namely NTBs. The result for governments is that lobbies become less interested in regulatory protection.

The ECJ allows those hurt by NTBs to challenge them on court. We can use economic reasoning to infer that the challenged NTBs are going to be the ones creating the highest rents for the organized domestic firms, namely those that create the greatest losses for foreign competitors. The ECJ acts as an imperfect enforcement mechanism of mutual recognition. When the ECJ backs the claim mutual recognition is the baseline principle. Mutual recognition, and in particular its imperfect enforcement produced by the Court, drains the lobbies' incentive to lobby.

In the context of the model, we expect the lobby's truthful contribution schedule to capture the possibility to reach mutual recognition. The new

<sup>16</sup>Given the small nation fiction.

<sup>17</sup>We can easily compute  $B_i = \frac{a_d(b_d+3b_s)a}{-b_d^2+b_s^2}$ .

<sup>18</sup>See Baldwin (2000).

contribution schedules of the lobbies look as follows:

$$C_i^\theta = \begin{cases} \theta_i - B_i & \text{If the constraint binds;} \\ \pi_i[p_i] - B_i & \text{Otherwise.} \end{cases} \quad (9)$$

where  $C_i^\theta$  is the *level* of contribution schedules. Note that at the *margin* the lobby's contribution is  $\pi_i'(p_i)$  up to the point where the constraint binds, thereafter the marginal contribution drops to zero and stays there. We can interpret the level of  $\theta$  as the maximum amount of the lobby's producer surplus that is not likely to be challenged in court.

The government (acting as an auctioneer) observes the “menu” of political contributions that the lobby makes available, and aims to do as good as it can. The government's attainable rents are capped because mutual recognition has taken away much of the incentive to lobby, and the lobbies adjust their contribution schedules accordingly.

The salient feature of the model is the subtle intervention –or lack of it– of the ECJ. The ECJ does not determine directly the size of  $\theta$ , those hurt by NTBs do. In other words, surveillance is done by those hurt by NTBs. The ECJ adjudicates in case of complain, and by taking a narrow view as to what constitutes a NTB the ECJ can effectively enforce a “tight  $\theta$ .” We can think of it as a threshold.<sup>19</sup> The ECJ introduces a constraint on the amount of favour that lobbyists can extract from their national governments.

The presence of the court modifies the government's decision problem, and the optimal choice of NTB. The government, as the agent, can only choose among the contribution schedules proposed by the lobbies, and the lobbies contribution schedules reflect the bound imposed by mutual recognition. The government now faces a constraint on the MPB (the amount of truthful contributions schedules). We can write the constraint as follows:

$$\pi_i[p_i] \leq \theta \quad (10)$$

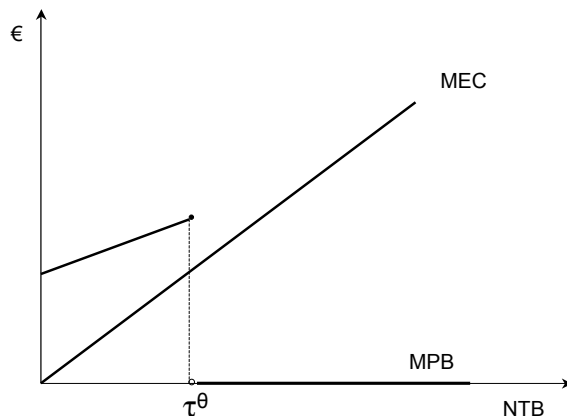
The problem of the government now consists in choosing  $\tau_i$  to maximize its objective function 5 given constraint on the lobby's rents.

So far so good, however, the ECJ and the possibility of mutual recognition introduces some elements of complexity in the model. Note that the constraint is continuous in the level space, but piecewise continuous in the

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<sup>19</sup>In reality we could think of it as a *diminimis* rule; norms having a marginal impact on trade are allowed.

marginal space.<sup>20</sup> This translates into the government's objective function having a kink at the point where the constraint becomes binding. As shown in figure 2, the first derivative of the producer surplus is positive until it drops to zero when the constraint binds. The objective function is piecewise continuous, but not differentiable. In other words, we have to maximize a non-smooth function.



**Figure 2:** The level of NTBs  $\tau^\theta$  in the presence of the ECJ.

There is a branch of mathematics that deals with non-smooth optimization.<sup>21</sup> We could apply it to solve this problem but it would require adding some structure on the problem and some restrictive assumptions. We can characterize a solution for the model in an accessible way, however, by realizing that given the way the problem is defined, the optima must be the corner solution.

The solution method that we propose does not fit the cookbook approach for constrained optimization; nevertheless it allows to characterize the optimal level of NTBs  $\tau^\theta$  chosen by the government.

We propose to divide the problem in two parts. The first part consists in maximizing 5 up to the point where the constraint becomes binding (included). The second part consists in maximizing 5 after the constraint becomes binding.<sup>22</sup> We then compare the local optima from each of the parts, and choose the highest. We show that there is no point belonging to

<sup>20</sup>When the constraint becomes binding the marginal  $\pi_i/[p_i]$  drops to zero.

<sup>21</sup>See Clarke (1983) for an introduction to the optimization of non-smooth functions.

<sup>22</sup>What the government wants to do is to get the marginal differences as close as possible, in fact zero if they can. The first-order conditions say that we should equate the MEC

the other part that yields a higher level of welfare for the government.

In the first part, until the constraint becomes binding, *Kuhn-Tucker (necessary) conditions* characterize the “local” optimum.<sup>23</sup>

We set up the lagrangean for the government’s maximization problem:

$$\mathcal{L} = a \left( NS_i[p_i] + \sum_{i \notin \Lambda} \pi_i[p_i] \right) + (1 + a) \sum_{i \in \Lambda} \pi_i[p_i] - B_i + \lambda (\theta - \pi_i[p_i]) \quad (11)$$

By inspection of the *Kuhn-Tucker (necessary) conditions*:

$$\begin{aligned} \frac{\partial \mathcal{L}}{\partial \tau \theta} &= a (NS'_i[p_i] + \pi'_i[p_i]) + (1 - \lambda) \pi'_i[p_i] = 0 \\ \frac{\partial \mathcal{L}}{\partial \lambda} &= (\theta - \pi_i[p_i]) \leq 0 \end{aligned} \quad (12)$$

With complementary slackness.<sup>24</sup> Given the linear specification of the model we can find an expression for the producer surplus that allows us to solve the problem.<sup>25</sup> The MEC of the government is the same as in the absence of the court. The MPB is discontinuous and the discontinuity lies where  $\pi_i[p_i] = \theta$ . It is straight forward to find a solution for part one  $\tau = \sqrt{\frac{2\theta}{b_s}} - p_i^w$ .

As for the second part, we have to show that there is no other point where the government can do better. By inspection of the discontinuous first order conditions it is straight forward.

We can verify this because after the constraint becomes binding, the change in the producer surplus  $\pi'_i[p_i]$  drops to zero. So we know that the function must necessarily take a lower value.

We are able to characterize the solution because it is a corner situation. The outcome is where the constraint is. The NTB will be dictated where profit is equal to  $\theta$ , and the solution is the  $\theta$  where the jump started if it is binding. If it is not binding it is the same old one. And this is exactly and the MPB, but if cannot equate them because of the non-differentiability, should be as close as possible.

<sup>23</sup>Concerning the FOCs. The solution is obtained from the FOC on lambda. The first order condition is a necessary condition for a smooth function, and that’s why we do not use it.

<sup>24</sup>The complementary slackness condition states that  $\lambda \frac{\partial \mathcal{L}}{\partial \lambda} = 0$ ; with  $\frac{\partial \mathcal{L}}{\partial \lambda} = 0$  where the constraint binds.

<sup>25</sup>The expression for the producer surplus is  $\pi_i[p_i] = \frac{b_s p_i^2}{2}$ .  $\lambda = 1 + a \left[ 1 + \frac{b_d}{b_s} - \frac{a_d}{b_s \sqrt{\frac{2\theta}{b_s}}} \right]$

what we want because what we get is that  $\tau^\theta$  is dictated by the institutional constraint and if the constraint gets tighter, the  $\theta$  gets lower.

We denote by  $\tau_i^\theta$  the equilibrium level of NTBs in industry  $i$ ; namely:

$$\tau^\theta = \sqrt{\frac{2\theta}{b_s}} - p_i^w \quad (13)$$

What we can see from 13 is that by choosing  $\theta$  the ECJ can bring the domestic price anywhere between the free trade level and the pre-liberalization level (both included). We can verify that choosing  $\theta^{FT}$  the ECJ would achieve  $p_i^{ECJ} = p_i^{FT}$ .

The result allows us to characterize a range for  $\theta$  that yields any value between the free trade outcome, and the equilibrium with the court. The range  $\theta^{FT} < \theta < \theta^*$  is:

$$\frac{b_s a_d^2}{2(b_s + b_d)^2} < \theta < \frac{b_s (a a_d)^2}{2[a(b_s + b_d) + b_s]^2} \quad (14)$$

In the presence of the ECJ the solution is the incentive constraint. Namely, when the lobby does its best given the constraint that it faces. There is no incentive constraint as before due to the non-smoothness problem. The incentive constraint is non-smooth. So that is the incentive constraint, their behaviour is compatible with what is good for them given the contract that they observe.

The participation constraint in the presence of the ECJ is  $B_i$ . We can verify that once the firms are done paying off the government, there is something left over for them; that's fairly obvious in this case.  $B_i$  is the difference between the government welfare with the ECJ and under free trade.<sup>26</sup>

### 2.3 Welfare considerations

In the model there is a difference between the *government's objective* function and the *social welfare* function. The problem arises when we deal with institutions in economic models, and can be solved assuming a “veil of ignorance” type of evaluation; we are outside of the political system and evaluate whether the ECJ is a good idea.<sup>27</sup> We can also think of it as the right and

<sup>26</sup>We can compute  $B_i = \theta \left(1 - \frac{b_d}{b_s}\right) a_d \sqrt{2} \sqrt{\frac{\theta}{b_s}} - \frac{a_d(b_d + 3b_s)}{-b_d^2 + b_s^2}$ , which is positive for any value of  $\theta > 1/2 \frac{a_d^2(2b_s + 2b_d + a_d a b_s - a_d b_d a)^2 b_s}{(-b_d^2 + b_s^2)^2}$ .

<sup>27</sup>Another way to think about this is like a constitution writing exercise; we write a constitution under the “veil of ignorance.” The government, the consumers, etc. ignore

left sides of the government's brain; the government worries about social welfare in stage one, but in stage two it cannot resist the lobbyists.<sup>28</sup>

The social welfare is simply the sum of the consumer and producer surplus. Given the linear specification of the model the expression for social welfare in industry  $i$  is:  $SW_i = a_d p_i + \frac{p_i^2}{2}(b_s - b_d)$ . We use the model to show how the social welfare changes with mutual recognition and the court.

We denote by  $W^{FT}$  the social welfare under free trade. Given the absence of transport costs in the model the domestic price of the good produced by industry  $i$  and its world price are identical. We have that  $p_i^w = p_i = \frac{a_d}{(b_s + b_d)}$ ; and the corresponding level of social welfare is:

$$W^{FT} = 1/2 \frac{a_d^3 a (a a_d b_s + 2 b_s + 2 b_d - b_d a a_d)}{(b_s + b_d)^2} \quad (15)$$

We denote by  $W^*$  the social welfare in the absence of the ECJ; the level of pre-liberalization social welfare. The domestic price of the good produced in industry  $i$  is  $p_i = \frac{a a_d}{[a(b_s + b_d) + b_s]}$ ; and the associated level of social welfare is:

$$W^* = 1/4 \frac{a a_d^2 (4 - b_d^2 + b_s^2)}{b_s + b_d} \quad (16)$$

We denote by  $W^\theta$  the social welfare when the ECJ constrains the level of attainable protection. The corresponding price is determined by  $\theta$ , namely those hurt by NTBs. The expression for domestic prices is  $p_i = \sqrt{\frac{2\theta}{b_s}}$ , and the associated level of welfare is:

$$W^\theta = \theta + a_d \sqrt{2} \sqrt{\frac{\theta}{b_s}} - \frac{b_d \theta}{b_s} \quad (17)$$

Note that  $W^\theta$  is positive for any value of  $\theta > 2 \frac{a_d^2 b_s}{(-b_s + b_d)^2}$ . We verify that as long as the domestic price with the court and mutual recognition is below the pre-liberalization level, social welfare is higher with the court than without:

$$(W^\theta > W^*) \iff (p_i^\theta < p_i^*) \quad (18)$$

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the way it is going to be, we decide a system to lead best, and then we find out whether we do good or not given the system we have.

<sup>28</sup>See Bhagwati and Feenstra (1982) for a "left versus right brain" discussion in the context of tariff-setting.



Given the linearity of the model individuals are better off in the equilibrium in the presence of the ECJ. They face a lower price, and the consumer surplus is higher. Organized industries are worse off with the Court than without since the price is lower and their combined producer surplus is also lower than the pre-liberalization level. The court has no impact for non-organized industries, if anything they win as consumers. Those who win with the court win more than those who lose because the combined social welfare is higher. Nobody would object to the ECJ.

### 3 Discussion

In this section, we first step outside the model and use the model to inform a discussion on “stage zero.” Then we use the model to explain a particular episode of European integration: the liberalization of NTBs in the EU.

#### 3.1 Some informal considerations

We refer to *stage zero* as the period of time when the deep measure is agreed; it is the setting up phase. Although it is not formally addressed in the model we can use the model to inform a discussion about it. Specifically, we can use the results of the model to discuss whether or not the *deep measure* (a supranational institution) would be acceptable.

When the deep measure is approved the wins exam is done under a veil of ignorance; nobody knows who is going to be the lobby in the future. If countries were to adopt a deep measure with immediate effects, we would expect a whole set of industries to lobby against it. But in the European case what happened is that the deep measure was adopted in 1957 and it does not really have an impact until thirty 30 years later. It was difficult to know at that point who would win or lose. Moreover, since the society as a whole is better off with the court, it is reasonable not to expect major objections to the court.

There may also be some aspects of discounting as well. Namely, potential lobbyists discount heavily uncertain losses that are far in the future, as a result the lobbies do not have any quasi-rents to defend. They do not get organized during stage zero.

In reality the ones who actually have to agree are the governments that negotiate the Treaty, and the people that have to approve it by referendum.

Big institutional changes as a deep measure of integration very often involve referendums where the citizens have to “more or less” approve it. It is the way it works in democracy. In the model both the people and the governments are happy with the Court, they are not shooting themselves in the foot, or acting irrationally. As a result we can argue that it is natural for the deep measure to be approved.

Organized industries lose from liberalization in their industries, but they win from liberalization in the remaining industries. In an utilitarian framework where one dollar counts one dollar, they do lose, there are winners and losers but the winners win more, so as long as there is symmetry in the model there is no reason for them not to agree to the ECJ. Everyone is involved in referendums involving big institutional changes, rather than just the lobbyists.

### **3.2 European institutions and internal trade liberalization**

As pointed out in the introduction, the model is motivated by the European experience with NTB liberalization. This section discusses the European experience in the light of the economic and political economy logic that is crystallized in our simple model.

The EU has been trying to deal effectively with NTBs since the Treaty of Rome. In 1957 the EEC advocated for harmonization of technical standards but it did not happen, although internal tariffs and quotas disappeared very quickly. Little progress was made to eliminate NTBs but since 1968 essentially all intra-Community trade has been free from tariffs and quotas; subsequent liberalization has focused on NTBs.

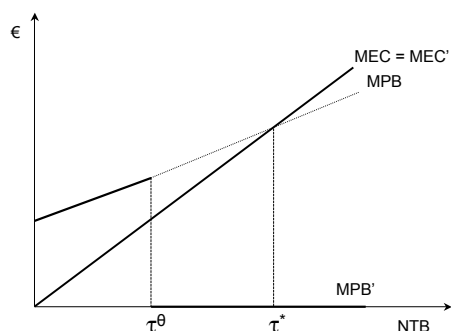
Then from 1969 to 1983 the EEC worked on a *General Programme* that specifically targeted NTBs.<sup>29</sup> The Programme is known as the *Old Approach* and it defined an ambitious agenda to eliminate all NTBs by 1971, and to prevent new ones from being adopted. The Old Approach focused on NTB liberalization through “negotiated harmonization.” Far from eliminating NTBs, it witnessed a surge of NTBs in the internal market. It was a remarkable failure by any measure.<sup>30</sup>

In the 1970s, the ECJ ruled that most NTBs conflicted with the Treaty

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<sup>29</sup>The General Programme for the removal of technical obstacles to trade was adopted on May 28, 1969, it was composed of four Council resolutions and a framework decision.

<sup>30</sup>See Majone (1994).



**Figure 3:** The equilibrium level of NTBs in the presence and in the absence of the ECJ.

of Rome and were therefore illegal. The rulings provided the key elements for mutual recognition and are the basis of the *New Approach*. After the *Dassonville*<sup>31</sup> and *Cassis*<sup>32</sup> sentences national governments were still free to adopt different norms and testing procedures, but mutual recognition assured that no significant protection of the domestic market was to be derived from them. Most NTBs could then be challenged in court under EU law.<sup>33</sup> The ECJ took a very narrow view as to what constituted an NTB; the ones creating the highest rents (the greatest losses for foreign competitors) were the first ones to be challenged.

As we can observe in figure 3, the model provides a plausible explanation for the process of European deep trade liberalization. The level of NTBs in the presence of mutual recognition and the ECJ is unambiguously lower than in the absence of the court; it is so because the ECJ can “dictate” a level of  $\theta$  such that  $\tau^\theta < \tau^*$ .

The ECJ’s sentences fostered NTB liberalization in the EU because they *enforced* the principle of mutual recognition. Mutual recognition guaranteed that the goods legally produced in any member state enjoyed *EU-market access*. As a result, the ECJ changed the value of lobbying for regulatory protection, and the domestic political process inside each member state.

<sup>31</sup>In 1974 the ECJ ruled that “all trading rules enacted by member states which are capable of hindering directly or indirectly, actually or potentially, intra-Community trade are to be considered as measures having an equivalent effect to quantitative restrictions.”

<sup>32</sup>In 1979 the ECJ explicitly allowed for some trade-inhibiting national norms, although it set the permissibility very high for rules applying to “import-only.”

<sup>33</sup>Under EU law it is possible for citizens and firms to bring cases before the ECJ even against its own government.

In the context of our highly stylized model; mutual recognition drains the incentive to lobby for NTBs. The maximum benefit that a lobby can obtain depends on whether *mutual recognition* is reached. The lobby takes the foreign norm as given, and the ECJ implies that the maximum benefit that can be obtained is capped since any complain before the ECJ is likely to lead to mutual recognition.

The sentences were an effective transfer of sovereignty from the member states to the European institutions. It meant that mutual recognition was the baseline principle and the ECJ was going to drive the liberalization agenda. We could wonder how the ECJ got so far out in front of EU politician. The ECJ's sentences amplified by the Commission's embrace of mutual recognition could have fostered regulatory competition, or even a race to the bottom. But the rapid embrace of the New Approach by the EU member states, first, and the Single European Act (SEA) later, were the means of regaining control over the liberalization process.

Of course, there were many other factors intervening. But the role of theory is to crystallize the logic of an economic process in a simplified way. What is relevant in the story is that the ECJ brought mutual recognition, and mutual recognition did away with NTBs because it changed the domestic political process in each member state. The supranational authority of the ECJ is key to the liberalization of NTBs. The model shows that European governments did not act irrationally when they agreed on the deep measure that created the ECJ in 1957.

## 4 Concluding remarks

We argue that deep trade liberalization requires supranational institutions that permit enforcement, surveillance, and adjudication. The paper presents a simple model of how *mutual recognition* of norms and testing procedures, and a *supranational institution* helps a group of protectionist states overcome a coordination failure, and thus foster deep trade liberalization that can benefit them all.

The basic logic is very simple. Member states agree to a deep measure that changes the incentives of national special interest groups to lobby for NTBs in a way that leads quickly to a new equilibrium with lower barriers; interestingly, all the parties involved in protection-making –the society as a

whole, the government, and even organized firms— are acting rationally.

The model takes the perspective that NTBs are the result of the domestic political process in each member state. Governments make their choice of NTBs in response to industry lobbying activities balanced against consumer interests. Mutual recognition is detrimental to the benefits of lobbying, and the supranational institution produces an imperfect enforcement of mutual recognition.

Since NTBs are endogenous to the lobbying activities and lobbying is affected by mutual recognition, a supranational institution that enforces mutual recognition changes the incentives to lobby for protection. In fact, when mutual recognition is reached the benefits of lobbying for NTBs evaporate and the lobbies cease their activities. The model explains how barriers which are politically optimal before the court are not politically optimal afterwards; as a result some of the barriers disappear.

We show that the model provides a reasonable accounting of the liberalization of NTBs in the EU; it is not empirical evidence but it is an example in which the model helps to organize the thinking about what happened in reality. What happened is that the EU failed to liberalize NTBs until the ECJ enforced mutual recognition. From there onwards mutual recognition would have been the baseline principle but politicians were quick to react and the Council officially launched the *Single European Act* on 1985. The SEA increased the governments' control over the liberalization process given that the ECJ had established mutual recognition as the baseline principle.

In democracy the ones that have to approve to a “deep measure of integration” are the governments that negotiate the Treaty, and the citizens. Since the entire society is involved in big institutional changes it makes sense to think of a referendum rather than just the lobbyists. We have presented a model where both the citizens and the governments are happy with the Court, they are not acting irrationally by approving the ECJ. Of course the lobbies that enjoyed high barriers before the Court do lose with it. In an utilitarian framework where one dollar counts one dollar, they do lose, there are winners and losers but the winners win more, so as long as there is symmetry there is no reason for not to approve the deep measure.

We have not formalized strategic behaviours; namely why countries do not find significant opposition from the lobbies that would potentially lose with the ECJ-type of agreements. We have assumed that lobbyists act under

a veil of ignorance. At the time when the deep measure is taken nobody knows who are going to be the lobbies in the future. An example from the European experience may help to clarify the point. In 1957, when the Treaty of Rome was signed none knew who would have an incentive to lobby against it fifty years later.

Given that the signature of the deep measure and liberalization happen at very distant points in time there may be also some issues of discounting potential future losses. When the treaty was signed the potential lobbies did not have any quasi-rents to defend.

The European experience with NTBs raises some important questions regarding the role of institutions in liberalization. Specifically, does deep trade liberalization in the multilateral context also require supranational institutions? or could mutual recognition work under a lighter enforcement mechanism than the ECJ? In future research it would also be interesting to step outside the EU and investigate both the relevance of the story to the multilateral initiatives to liberalize NTBs, and the scope for coordination between regional and multilateral NTB liberalization policies. Specifically, early coordination could be useful to prevent potential conflicts among highly-idiosyncratic institutions of deeper integration.

## References

- BALDWIN, R. E. (1987): “Politically Realistic Objective Functions and Trade Policy: PROFs and Tariffs,” *Economic Letters*, 24, 287–290.
- (2000): “Regulatory Protectionism, Developing Nations and a Two-Tier World Trading System,” *Brookings Trade Forum*, 2000, pp 237–293.
- BALDWIN, R. E., AND F. ROBERT-NICOUD (2006): “Protection for Sale Made Easy,” CEPR Discussion Papers 5452, C.E.P.R. Discussion Papers.
- BERNHEIM, B. D., AND M. D. WHINSTON (1986): “Menu Auctions, Resource Allocation, and Economic Influence,” *The Quarterly Journal of Economics*, 101(1), 1–31.
- BHAGWATI, J. N., AND R. C. FEENSTRA (1982): *Import Competition Policy and Response*. Tariff-Seeking and the Efficient Tariff, pp. 245–258. NBER and University of Chicago Press.

- CLARKE, F. H. (1983): *Optimization and Nonsmooth Analysis*, vol. 5 of *Classics in applied mathematics*. John Wiley and Sons.
- EGAN, M. P. (2001): *Constructing a European market: standards, regulations, and governance*. Oxford University Press.
- GROSSMAN, G. M., AND E. HELPMAN (1994): "Protection for Sale," *American Economic Review*, 84(4), 833–50.
- MAJONE, G. (1994): "Comparing Strategies of Regulatory Rapprochement," *Regulatory Cooperation for an Interdependent World*.
- OLSON, M. (1971): *The Logic of Collective Action*. Harvard University Press, Cambridge.