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## ABSTRACT

### Who is Against a Common Market?\*

This paper develops a theory of the endogenous formation of a common market in a three-country, two-factor political economy model. In the status quo, Home and Foreign implement non-discriminatory policies towards international factor flows, as to maximize the domestic median voter's welfare. Each of the two countries simultaneously holds then a referendum on a Common Market initiative leading to the removal of the pre-existing policies for factor flows occurring between the member countries, while no coordination is imposed on policies vis-à-vis the rest of the world. Several interesting results emerge. In a common market, factors moving between the members are more likely to gain, the bigger is the import demand of one country as compared to the factor supply of the exporting partner. Factors which instead do not relocate are more likely to see their return decrease when flows are big and import demands are inelastic. Importantly, for the common market to emerge as an equilibrium, some factors must continue to experience enhanced protection when the integration process is completed. This result highlights the potential tension between social desirability and political feasibility of the integration process.

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# 1 Introduction

The emergence of preferential trading arrangements, i.e. of agreements between countries to systematically remove restrictions on bilateral trade flows, is a well known phenomenon that has captured the interest of trade economists since the pioneering study by Viner (1950) on the economics of customs unions. As of 2004, more than 200 Preferential Trading Arrangements (PTA's) were in force, and a vast literature has emerged to analyze their working. Both normative questions like “under which conditions is a preferential trading arrangement welfare improving?”,<sup>1</sup> as well as positive questions like “Under which conditions will a Free Trade Area emerge as a result of a given political process?”<sup>2</sup> have been addressed, and attention has also been dedicated to the potential effects of regional arrangements on the multilateral trading system.<sup>3</sup> So far the focus has been on analyzing free trade areas or customs unions, but the recent experience of the most successful PTA, the European Union, calls for new research on the way the integration process deepens, moving beyond commercial liberalization. In particular, surprisingly little has been said on the *democratic* foundations behind the decision of a group of countries to bilaterally liberalize factor flows, and this paper represents a first attempt at answering this question.<sup>4</sup>

The need for a deeper understanding of the political forces behind the creation of a Common Market emerges very clearly from the recent debate on the Eastern expansion of the European Union and on the possible accession of Turkey. On the one hand we read of new members fearing that “...foreigners (...) would descend ‘like crows’ and pick the country apart”<sup>5</sup>, depriving local residents of the ownership of large chunks of the country’s productive assets. On the other, rich western European countries have been wary of the risk of a massive inflow of East European workers, and the mythical “Polish plumber” seems to have played an important role in determining the recent French rejection of the EU constitution.<sup>6</sup> Since in many countries the various treaties behind the deepening of the European PTA have become effective only after having been ratified by referenda (or parliamentary vote),<sup>7</sup> understanding

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<sup>1</sup>See Kemp and Wan (1976) and Grinols (1981).

<sup>2</sup>See for instance Grossman and Helpman (1995).

<sup>3</sup>See the volume by Bhagwati, Krishna, and Panagarya (1999) for a systematic exposition of the literature.

<sup>4</sup>For a discussion of the related literature, see Section 2.

<sup>5</sup>*The Economist*, March 23d 2002, page 48 “Polish Land: A most emotional issue”.

<sup>6</sup>See “French voters soundly reject European Union Constitution” by Elaine Sciolino in *The New York Times*, May 30 2005.

<sup>7</sup>Besides the recent Dutch and French referenda on the EU constitution, other examples of non-ratification are the Danish vote in June 1992 on the Maastricht Treaty and the Irish vote in June 2001 on the Nice treaty.

the role of the democratic process in shaping policy towards international factor mobility becomes particularly important.

To this end, we develop a three-country, two-factor model, where in the *status quo* Home and Foreign choose non-discriminatory policies towards international factor flows in order to maximize the domestic median voter's welfare. A referendum is then simultaneously called in Home and Foreign on a common market initiative, i.e. on the preferential elimination of policy interventions towards factor flows between the two countries. In framing the incentives that influence the creation of a Common Market, we assume that every potential member retains the power to autonomously set policies towards external factor flows throughout the process.<sup>8</sup> Hence, when the majority of residents in both countries decides to liberalize factor flows, the government in each country resets the policy intervention toward the rest of the world, taking into account the change in the median voter's welfare following the relocation of productive factors within the common market. Therefore, the formation of the common market is modelled as a simultaneous move game between the median voters of the two countries that decide non-cooperatively whether to vote in favor of the initiative, anticipating that for any outcome of the referendum, the government will continue to set policies toward the rest of the world to maximize their welfare.

The model gives rise to several interesting results. On the one hand, pre-existing differences in the returns, combined with the liberalization of factor flows, imply that gains are likely to occur for those factors that actually move within the Common Market. At the same time, those factors which end up not relocating are likely to be made worse off, compared to the status quo. For the integration process to be sustained as a political equilibrium, the gains accruing to the median voter must more than compensate his losses, and the balance between the two depends both on the differences between the two countries' initial factor endowments, as well as on the elasticity of factor demand. When the differences in initial endowments lead to *large* factor flows and/or when the factor demand is rigid, the losses become sizable, and from the point of view of the median voter are likely to offset the poten-

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<sup>8</sup>This assumption seem to capture well the recent European Union's experience. In that context, several attempts to coordinate policy have been made, but the influence of the resulting agreements has been limited. In fact, the *Schengen acquis* translates mainly in the homogenization of border controls, while individual countries have retained most of the powers to independently set migratory policies. Similarly, efforts for the coordination of policies towards asylum-seekers are limited, as discussed in Facchini, Lorz, and Willmann (2006). Turning to foreign direct investment, the EU treaty contains explicit provisions aimed at limiting the use of state aid to companies, but the Commission has withhold wide reaching discretionary power to grant exceptions to the general ban on the use of such instruments (Oman (2000)).

tial benefits. On the other hand, if factor movements are *small* and/or the factor demand is elastic, the integration process is likely to lead to a situation of *enhanced* protection,<sup>9</sup> and consequently emerge as the political equilibrium. Therefore, the political economy implications of our analysis are quite striking. Although opportunities for efficiency gains from factors' mobility lie at the foundation of the Common Market initiative, flows that are 'too large' can harm the political feasibility of the integration process by reducing the protection granted to factors that do not relocate.

The distribution of factor's ownership is important to determine the chances of a successful integration. In particular, the median voter is more likely to support the integration process, the higher is his share of the relocating factor, and the closer to the average is his share of the non-relocating one. Importantly, when the median voter owns a below average share of capital (concentrated capital ownership), the common market will not be formed because the capital poor country will be unambiguously hurt by the integration. A similar outcome occurs when the two countries are quite different in terms of factor endowments (asymmetric country sizes). We also show that, if the distribution of factor ownership is not too extreme, the use of policy instruments like a quota, that allow only imperfect rent capturing will make the formation of the common market more likely. Hence, the general message of our analysis is that, for the Common Market initiative to succeed, some amount of protection will always be required for the factor that is not exported. Therefore, the fate of the preferential agreement we are analyzing rests unavoidably on its ability to perpetuate some distortion on factor returns. While this result is per se interesting, it highlights the potential tension between social desirability and political feasibility of the integration process.

The rest of the paper is organized as follows. Section 2 briefly discusses the related literature, while in section 3 the model is developed and in section 4 a characterization of the ex-ante policy is provided. Next, we consider the economic implications of the creation of a common market (section 5) and in section 6 we derive our main results. Section 7 discusses a series of extensions to our main results, while section 8 concludes the paper.

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<sup>9</sup>We will define this concept more precisely in section 5.

## 2 Related Literature

The growing importance of international factor flows has spurred renewed interest in the endogenous formation of policies towards factor movements.<sup>10</sup> While several papers have tackled narrowly defined questions,<sup>11</sup> Benhabib (1996) has considered how migratory policies that impose capital and/or skill requirements will be determined under majority voting if the polity maximizes its income. The setting allows for two factors, capital and labor, so that under direct democracy the policy will be chosen by the voter endowed with the median capital–labor ratio. The main message of this elegant model is that complementarities between the median voter’s and the potential immigrant’s factor endowment will determine the policy chosen.<sup>12</sup> Unfortunately, the assumption of constant returns to scale in production gives rise to a problematic result: the number of immigrants in equilibrium can be potentially unlimited, and this appears at odds with actual policies followed by most countries. Facchini and Willmann (2005), in a related paper, avoid this difficulty by assuming decreasing returns to scale in the mobile factors. The endogenous formation of policies towards factor movements is there the result of the interaction between lobbies representing organized factors and elected politicians. Policies can take the form of both taxes (subsidies) or quantitative restrictions, and in equilibrium the amount of protection granted depends both on whether the factor is organized or not, and on the degree of complementarity between inputs. The setup of this paper shares elements of both these models. On the one hand, the ex-ante policy towards factor movements and the decision to join the Common Market are the result of direct democracy, like in Benhabib (1996). On the other, the setup of the economy is (a simplified version of) the multi-factor model developed by Facchini and Willmann (2005), and the ex-ante non-discriminatory policy chosen involves taxes on inflows and, potentially, quantitative restrictions. Furthermore, while both previous papers focus on the policies of a single country, here we are interested in exploring the spillovers generated by the interaction of multiple jurisdictions.

The last problem has already been analyzed in two contexts that are related to the one we consider: commercial integration and the formation of economic unions. Commercial integration i.e., the formation of Free Trade Areas and Customs Unions, has been studied in

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<sup>10</sup>For a survey, see Facchini (2004), while for an early normative analysis, see Wooton (1988).

<sup>11</sup>See for instance Scholten and Thum (1996) and Razin and Sadka (1999) for interesting studies on the political economy of migration in presence of a social security system.

<sup>12</sup>For an extension to a dynamic setting see Ortega (2005)



the papers by Grossman and Helpman (1995), Richardson (1993) and Cadot, de Melo, and Olarreaga (1999), among others.<sup>13</sup> In the first contribution, the decision of two countries to join a free trade area is the result of lobbying activity by the organized owners of specific factors and the effects of the creation of a Free Trade Area on ex post tariff rates vis-à-vis the rest of the world are not explicitly analyzed. This problem is addressed by Richardson (1993), in a reduced form political-support function model and by Cadot, de Melo, and Olarreaga (1999), in the Grossman and Helpman's (1995) framework. In our paper, we also take into account that the optimal policies chosen toward the rest of the world when the common market is created differ from the initial status quo, but the political outcome is the result of a voting game rather than the interaction between organized lobbies.

At the other end of the spectrum, the growing institutional integration among western European countries has given rise to renewed interest in the mechanisms underlying the creation of economic unions, and in the welfare properties of the political outcome. Bolton and Roland (1997) develop a model of the unification and break-up of nations, in which from the point of view of social welfare, separation is never optimal. In a setting in which jurisdictions are characterized by different income distributions and the level of redistribution is chosen by majority voting, they obtain several interesting results. First of all, in their two-country model, perfect factor mobility brings about factor price equalization and thus the same per capita and median income. In our three country setting instead, by retaining control over policies towards the rest of the world, perfect factor mobility between members of the common market does not lead to factor price equalization. Second, Bolton and Roland (1997) show that greater heterogeneity in income distribution between regions works against unification. We find a similar result by considering asymmetries in factor endowments. Finally, they discuss how barriers vis-à-vis non-member countries play a key role in cementing the Union. We find a similar result in our paper, when we show that a common market is formed only if factors continue to experience enough protection vis-à-vis the rest of the world.<sup>14</sup>

Perotti (2001) studies the degree of income redistribution and factor mobility that would be chosen in a two-country setting by majority voting. Asymmetries in the labor markets

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<sup>13</sup>Several papers have also explored the effects of the endogenous formation of preferential trading arrangements from the point of view of aggregate well being of participating and excluded countries. Yi (1996) finds for instance that the formation of a customs union increases the aggregate welfare of the member countries, but reduces the welfare of non-member countries.

<sup>14</sup>In a related paper, Bolton and Roland (1996) study the effect of factor mobility on the formation of a union, considering different sources of heterogeneity in the preferences for the public good.

are the main driving force of the model, and no attention is paid to the policies undertaken towards the rest of the world. The latter are key in understanding the results of our paper where the source of heterogeneity between the potential member countries are factor endowments rather than different institutional settings. In two related recent papers, Alesina, Angeloni, and Etro (2001) and Alesina, Angeloni, and Etro (2005) consider the problem of the optimal institutional design of a union, as well as that of the endogenous determination of its size and composition. The driving force of their model is a tension between the advantages of internalizing potential spillovers and the heterogeneity of countries' preferences, and the most interesting result is that the political equilibrium implies a bias towards excessive centralization and small Union size, that calls for a careful design of the constitutional rules. In a similar setting Brou and Ruta (2006) model also the role of interest groups, showing that countries in which more groups are organized gain from political integration. In our paper we limit our attention to a less intrusive form of economic integration i.e., a common market, and the integration is not so much the result of the presence a market failure, but of potential income gains brought about by factor movements between member countries.

### 3 The model

We are now ready to introduce the economic environment within which we analyze the determination of policy towards international factor mobility. Let  $Z = \{H, F, R\}$  denote the set of three countries we will consider, where  $z = H$  is Home,  $z = F$  is Foreign and  $z = R$  is the Rest of the World. We assume that both Home and Foreign are “small” in the sense that the two countries cannot influence international factor prices, while country  $R$  is not explicitly modeled. Home and Foreign are identical with the exception of mobile factor endowments.<sup>15</sup>

For simplicity, and since the focus of this paper is on international factor movements, we assume that each country produces the same consumption good<sup>16</sup> using two mobile inputs,

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<sup>15</sup>We will generalize our analysis in section 7.

<sup>16</sup>By assuming that the two countries produce the same good, we do not explicitly consider trade in this model. Furthermore, we are also ignoring the effects that the international relocation of production factors might have on consumer prices. While these assumptions are made to keep the analysis tractable, the existing empirical evidence suggests that the relocation of production factors has small effects on good prices. In a recent study Cortes (2006), using a sample of 25 US cities, finds that the effects of a 10 percent increase in immigration decreases the price of non-tradable goods by 0.7 percent.

capital ( $K$ ) and labor ( $L$ ).<sup>17</sup> Each country is populated by a continuum of agents, and the population size is normalized to one. Each agent in  $[0, 1]$  is indexed by  $i$ . Country  $z$  total endowment of mobile factors is described by the vector  $\ell^z = (\ell_K^z, \ell_L^z)$ , i.e. we are assuming that a country's autarkic factor supply is inelastic. Let  $\lambda_{ij}^z$  be the fraction of factor  $j \in \{K, L\}$  supplied by agent  $i$  in country  $z$ , with  $\int \lambda_{ij}^z di = 1$ ,<sup>18</sup> and let  $m_j^z$  be the quantity of factor  $j$  that is imported by country  $z$  (exported if negative). The total supply of factor  $j$  available in country  $z$  is then  $L_j^{zS} = \ell_j^z + m_j^z$ , where  $m_j^z > 0$  for all  $j$  and  $z$ , i.e. each country imports both factors.

To produce a single consumption good, Home and Foreign share the same technology described by a differentiable and separable production function  $Y = F(L_K^z, L_L^z)$  for which there exists a well defined profit function, and the corresponding monetary payment can be interpreted as the compensation received by an immobile factor.<sup>19</sup> Country  $z$ 's factor demands  $L_j^{zD}$  can then be derived from the profit function via Hotelling's lemma. As for prices, we choose aggregate output as the numéraire, and the international real factor returns, i.e. the returns prevailing in  $R$ , are set equal to one. We define  $\Omega^z$  as the (bounded) set of real factor prices prevailing in country  $z$ , and a vector  $\omega^z = \{\omega_K^z, \omega_L^z\}$  represents a point in this set, while  $\pi(\omega^z) = \sum_j \pi_j(\omega_j^z)$ ,<sup>20</sup> is the corresponding profit function.

The governments in Home and Foreign can either restrict or promote factor flows using a combination of quotas/taxes/subsidies, that are assumed to be chosen to maximize the welfare of the majority of the native population within each country. The use of any of these instruments creates a gap between the domestic and the international factor return. In other words, the policy intervention translates into a change in the factor return and thus, in the small open economies we are considering, the domestic factor return conveys all the information on the direct consequences of the government intervention. To see this point, consider Figure 1, where we illustrate the effect of the introduction of a binding quota  $q_j$  on

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<sup>17</sup>In an earlier version of the paper, Facchini and Testa (2005) we considered a slightly more general model with  $n$  inputs. In that setting we showed how an increase in the heterogeneity across countries, as captured by the share of factors abundant in one country, could lead to a common market not being created.

<sup>18</sup>We are assuming that the distribution of factor ownership is atomless i.e., that every agent only owns a tiny fraction of each factor's supply. Notice that if we denote with  $\ell_{ij}^z$  the supply of factor  $j$  by agent  $i$  in country  $z$ ,  $\int_I \ell_{ij}^z di = \ell_j^z$ . Since population size is normalized to 1,  $\ell_j^z$  is also the average supply of factor  $j$  in the population of country  $z$ . Define  $\lambda_{ij}^z = \frac{\ell_{ij}^z}{\ell_j^z}$ . Then  $E(\lambda_{ij}^z) = \int_I \lambda_{ij}^z di = 1$  and this holds for every  $j \in J$ . In other words,  $\lambda_{ij}^z$  can be interpreted as the holding of factor  $j$  by agent  $i$  relative to the population average.

<sup>19</sup>Land is the natural candidate in this context. Notice that this assumption rules out the agglomeration dynamics that are central in the new economic geography models.

<sup>20</sup>See footnote 31 for the specific functional form we will be using to carry out our analysis.

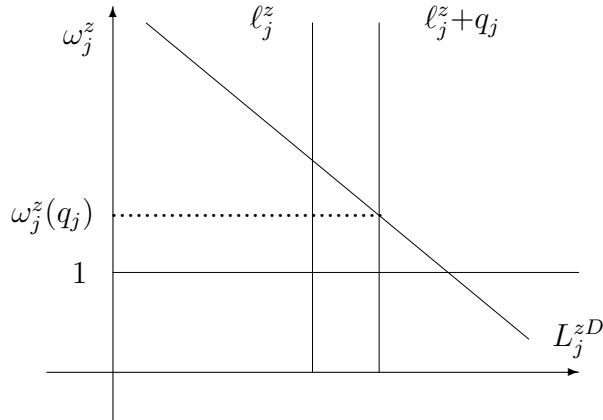


Figure 1: The effect of a quota

factor  $j$  in country  $z$ . In the figure,  $\omega_j^z(q_j)$  is the wage prevailing in the domestic market as a result of the restriction, and  $\omega_j^z(q_j) - 1$  is the rent associated to the introduction of the quota, i.e. the gap between the domestic and the international wage. Depending on the mechanism through which the quotas are allocated, a fraction  $\gamma_j \in [0, 1]$  of this rent will be captured by the government introducing the policy. For instance, in the case of an immigration quota, we expect  $\gamma_j \in (0, 1)$ , i.e. the government captures only part of the difference between the international and the domestic factor return, while the remainder accrues to the immigrant.<sup>21</sup> At the same time, if an inflow tax (subsidy) is instead used,  $\gamma_j = 1$  and the revenues (the burden) of the policy accrue (are born) by the country's government. Thus, if capital flows are restricted by the introduction of a tax, we expect rent capturing to be complete.

Assuming that all fiscal transfers, together with the return to the fixed factor, are lump sum equally rebated to the domestic population, the welfare of each citizen  $i$  in country  $z$  is described by the following expression:

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<sup>21</sup>There are several reasons for why migrants are likely to capture only part of the surplus associated to the quota. First of all, in countries where temporary working visas are employer-sponsored, such institutional arrangement introduces an artificial limit on labor market mobility, and leads to lower wages being received by immigrant workers. We would like to thank Gordon Hanson for suggesting this interpretation. Furthermore, there is substantial empirical evidence pointing out how the assimilation of migrants is slow, i.e. migrants earn less than natives with similar labor market characteristics (Borjas 1999). Second, many countries apply different fiscal treatments to natives vis à vis migrants: this involves both different tax schedules, but also different access to welfare state benefits (see Boeri, Hanson, and McCormick 2002).

$$u_i^z(\omega^z) = \sum_j \lambda_{ij}^z \ell_j^z \omega_j^z + \sum_j \gamma_j T_j^z(\omega_j^z) + \sum_j \pi_j(\omega_j^z) \quad (1)$$

Remembering that  $\lambda_{ij}^z$  is the share of factor  $j$  owned by citizen  $i$ , the first term on the right hand side of equation (1) represents  $i$ 's total factor income. The second term describes instead the fiscal transfers generated by the policy, where  $T_j^z(\omega_j^z) = (\omega_j^z - 1)m_j^z(\omega_j^z)$ , and  $\gamma_j \in [0, 1]$  is the share of these transfers that are captured by the host country government. The third term represents instead the immobile factor's income  $\pi(\omega^z) = \sum_j \pi_j(\omega_j^z)$ .<sup>22</sup> Hence, the general formulation we have chosen for the transfers brought about by the introduction of the policy, allows us to simultaneously describe the effects of quotas/taxes/subsidies towards factor flows.

As it is evident from equation 1, each individual  $i$ 's preference for the policy applied to factor  $j$  depends only on his ownership share of that particular factor. The preference function for each factor  $j$  can be represented as  $u_{ij}^z(\omega_j^z) = \lambda_{ij}^z \ell_j^z \omega_j^z + \gamma_j T_j^z(\omega_j^z) + \pi_j(\omega_j^z)$  and as a result, we can rewrite equation 1 as follows

$$u_i^z(\omega^z) = \sum_j u_{ij}^z(\omega_j^z) \quad (2)$$

In other words, if an individual  $i$  would be asked to choose his optimal policy towards factor  $j$ , because of separability he would choose the policy that maximizes  $u_{ij}^z(\omega_j^z)$ . If the subutility function  $u_{ij}^z(\omega_j^z)$  is single peaked in prices,<sup>23</sup> individuals can be ranked according to their most preferred policy. Hence, there exists a continuum of citizens distributed according to their preferences for the policy towards *each* factor and we denote by  $m$  the median voter of this distribution, which is assumed to be the same for both factors.

Given the initial set of restrictions/subsidies (i.e. the policies chosen in the status quo), the two countries hold a referendum allowing their citizens to remove barriers to factor mobility between each other, while the policies toward the rest of the world are re-optimized to maximize the welfare of the majority of the native population.<sup>24</sup> The common market

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<sup>22</sup>In other words, the second and third terms represent the *average* fiscal transfer and *average* profit redistributed. Note that we are assuming that the shares are the same for profits as well as fiscal revenues. If we were to relax this assumption, our qualitative results would carry through as long as the correlation between the two distribution rules is sufficiently high. Since we don't have an informed prior concerning this correlation, we prefer to work with the convenient assumption of identical distribution rules.

<sup>23</sup>For example,  $u_{ij}^z(\omega_j^z)$  is single peaked when factor demands are linear.

<sup>24</sup>The optimal restrictions/subsidies toward the rest of the world will stay unchanged if the common market

is formed if the majority of the population in each country votes in favor of it and in the remainder of the paper we will assume that a favorable vote will be cast if and only if a citizen strictly gains from the integration process. When the referendum takes place, the median voter is decisive for the final outcome.<sup>25</sup> More formally, the creation of a common market is modeled as a simultaneous move game in which the median voters of the two countries have two strategies at their disposal i.e.,  $\{Join, Stay Out\}$  and where the median voter's welfare represents the payoffs of the game. The common market is established if  $\{Join, Join\}$  is a Nash equilibrium for this game.

## 4 Status quo policies

The set of non-discriminatory policies prevailing in each country under the *status quo* is determined by maximizing the median voter's welfare.<sup>26</sup> The separability of the production function implies that the demand of each factor  $j$  in country  $z$  will only depend on its own price  $\omega_j^z$ . Focusing for tractability upon the case where rent capturing is complete<sup>27</sup> (i.e.  $\gamma_j = 1$  for all  $j$ ), when an interior solution exists,<sup>28</sup> the factor price that maximizes the welfare of citizen  $i$  can be found by solving the first order condition:<sup>29</sup>

$$\frac{\partial u_i^z}{\partial \omega_j} = (\lambda_{ij}^z - 1)\ell_j^z + (\omega_j^z - 1)m_j'^z = 0 \quad (3)$$

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is not implemented, while in general they will be different from the status quo if the two countries form the common market. Note also that by assuming that the optimal restriction/subsidy maximizes the welfare of the majority of the natives, we are ruling out the possibility that the owners of the relocating factor can influence the optimal policy in the destination country. This appears to be a natural assumption, at least if we are considering a short term political economy perspective.

<sup>25</sup>Since preferences are single peaked on each *single* dimension, the policy preferred by the median voter on each factor price is a Condorcet winner.

<sup>26</sup>Mayer (1984) was the first to characterize the policy chosen by the median voter in a specific factor model similar to ours.

<sup>27</sup>We will analyze in detail the case of imperfect rent capturing in section 7.4.

<sup>28</sup>This requires  $u_i^z(\omega^z)$  to be concave in prices. This assumption is satisfied for instance whenever factor demands are linear, i.e. if  $L_j^z(\omega_j) = L - b\omega_j^z$ , with  $L, b > 0$ . In fact, in this case  $\frac{\partial u_i^z}{\partial \omega_j^z} = (\lambda_{ij}^z - 1)\ell_j^z - (\omega_j^z - 1)b$  and  $\frac{\partial^2 u_i^z}{\partial \omega_j^z} = -b < 0$ .

<sup>29</sup>From equation 1,  $\frac{\partial u_i^z}{\partial \omega_j^z} = \lambda_{ij}^z \ell_j^z + (\omega_j^z - 1) \frac{\partial m_j^z}{\partial \omega_j^z} + m_j + \frac{\partial \pi_j^z}{\partial \omega_j^z}$  where  $m_j^z = L_j^z - \ell_j^z$  and from Hotelling's lemma we have that  $\frac{\partial \pi_j^z}{\partial \omega_j^z} = -L_j^z$ . Thus  $\frac{\partial u_i^z}{\partial \omega_j^z} = \lambda_{ij}^z \ell_j^z + (\omega_j^z - 1) \frac{\partial m_j^z}{\partial \omega_j^z} + L_j^z - \ell_j^z - L_j^z$  from which equation 4 follows immediately.

Therefore, citizen's  $i$  most preferred factor return is given by:

$$\omega_j^z - 1 = (\lambda_{ij}^z - 1) \frac{\ell_j^z}{-m_j'^z} \quad (4)$$

Where  $m_j^z$ , i.e. the derivative of the factor import demand, is negative. As a result, agents characterized by an ownership share of the factor  $\lambda_{ij}^z > 1$ , prefer the introduction of protection (i.e.  $\omega_j^z > 1$ ), while the opposite is true for agents characterized by less than the average ownership share ( $\lambda_{ij}^z < 1$ ). Let  $\lambda_{mj}^z$  be country  $z$ 's median voter ownership share of factor  $j$ . Then, the status quo factor return  $\hat{\omega}_j^z$ , which is chosen by the median voter satisfies the following

$$\hat{\omega}_j^z - 1 = (\lambda_{mj}^z - 1) \frac{\ell_j^z}{-m_j'^z} \quad (5)$$

Notice that the policy towards inflows of factor  $j$  takes the form of a restriction (this could be a tax or a quota with perfect rent capturing) if the median voter's ownership share is higher than the population's average ( $\lambda_{mj}^z > 1$ ), while it is a subsidy if it is below the population average. Thus, for example FDI subsidies should be observed if capital ownership is concentrated and similarly this is the case for an education requirement for immigrants when human capital is concentrated.<sup>30</sup> Furthermore, the first order condition of equation 5 tells us that the extent of policy intervention is increasing with the domestic factor supply, and is decreasing with the price sensitivity of import demand.

## 5 The economic consequences of a common market

Before we discuss the conditions under which a common market will emerge in equilibrium, it is worth analyzing the welfare implications, for each domestic *factor*, of the decision of a country to join it. When a common market is formed, it is no longer true that the two mobile factors will receive their rewards in the country of origin, since in the absence of barriers, the existing price differentials may lead to the relocation of capital and labor between the member countries. As a consequence, the factor income can be earned in any of the two

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<sup>30</sup>Notice that a similar pattern of protection emerges in a Ricardo-Viner model of international trade, in which trade policies are determined by the median voter. While our result is plausible in the case of international factor movements, i.e. capital ownership is concentrated and most countries have subsidies in place to attract FDI, the same is not true when we think of a trade model. In fact, sectors in which capital ownership is more concentrated are those which tend to receive higher protection. For a discussion see Helpman (1997). We would like to thank a referee for pointing this out.

countries, while returns on the immobile factor and fiscal transfers are still determined in the country of origin. Let  $\tilde{\omega}_j^z$  and  $\tilde{\omega}_j^{z'}$  be the return earned by factor  $j$  in country  $z$  and  $z'$  respectively, where  $z, z' \in \{H, F\}$ , when the common market is formed. Then the welfare of each citizen born in country  $z$  becomes:

$$u_i^z(\tilde{\omega}^z, \tilde{\omega}^{z'}) = \sum_j \lambda_{ij}^z \ell_j^z [I^z \tilde{\omega}_j^z + (1 - I^z) \tilde{\omega}_j^{z'}] + \sum_j T_j^z(\tilde{\omega}_j^z) + \pi(\tilde{\omega}^z) \quad (6)$$

where  $I^z = 1$  if the factor earns its return in  $z$ , and zero otherwise.

We use Figure 2 to depict the market for input  $j$  from the point of view of the Home country (left panel), while in the right panel we depict the same factor's market from the point of view of the Foreign country. The analysis of the market for factor  $j'$  is analogous. We start our discussion describing the possible equilibria that can arise, beginning with the point of view of Home, and consider next the corresponding equilibrium outcomes in Foreign. To keep the analysis tractable, in the remainder of the paper we limit our attention to the case in which the demand for each mobile production factor is linear, i.e.<sup>31</sup>

$$L_j^{zD} = L - b\omega_j^z \quad (7)$$

where  $L_j^{zD} > 0$  for all  $j$ . With a linear demand, the optimal ex ante policy in each country takes the form

$$\hat{\omega}_j^z - 1 = (\lambda_{mj}^z - 1) \frac{\ell_j^z}{b} \quad (8)$$

The downward sloping line in the left panel of Figure 2 depicts Home's *import* demand function for the factor, i.e.  $m_j^H = L_j^H(\omega_j^H) - \ell_j^H$ , while the three vertical lines labeled (1), (2) and (3) indicate three different original endowments of the factor in Foreign. In what follows we will assume, for simplicity, that in the status quo both Home and Foreign are importing factor  $j$ , and that in both Home and Foreign the median voter opts for a restriction in the imports of factor  $j$  (i.e.  $\lambda_{mj}^z > 1$ ). Furthermore, without loss of generality, we will focus on the situation in which Home's *status quo* non-discriminatory policy is more restrictive than Foreign's, so that  $\hat{\omega}_j^H > \hat{\omega}_j^F$ . Finally, our analysis will focus on the short run, and as a result we assume that an individual born in country  $z$  will always vote and thus affect policy

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<sup>31</sup>A concave production function that would give rise to this factor demand is given by  $Y = \frac{L}{b} \sum_{j \in J} L_j - \frac{1}{2b} \sum_{j \in J} L_j^2$ , and the corresponding profit function is given by  $\pi(\omega) = \frac{L^2}{b} + \frac{b}{2} \sum_{j \in J} \omega_j^2 - L \sum_{j \in J} \omega_j$ . Using a more general production structure, like one inducing a constant elasticity factor demand function would make the analysis computationally more involved, while not changing the essence of the main results.



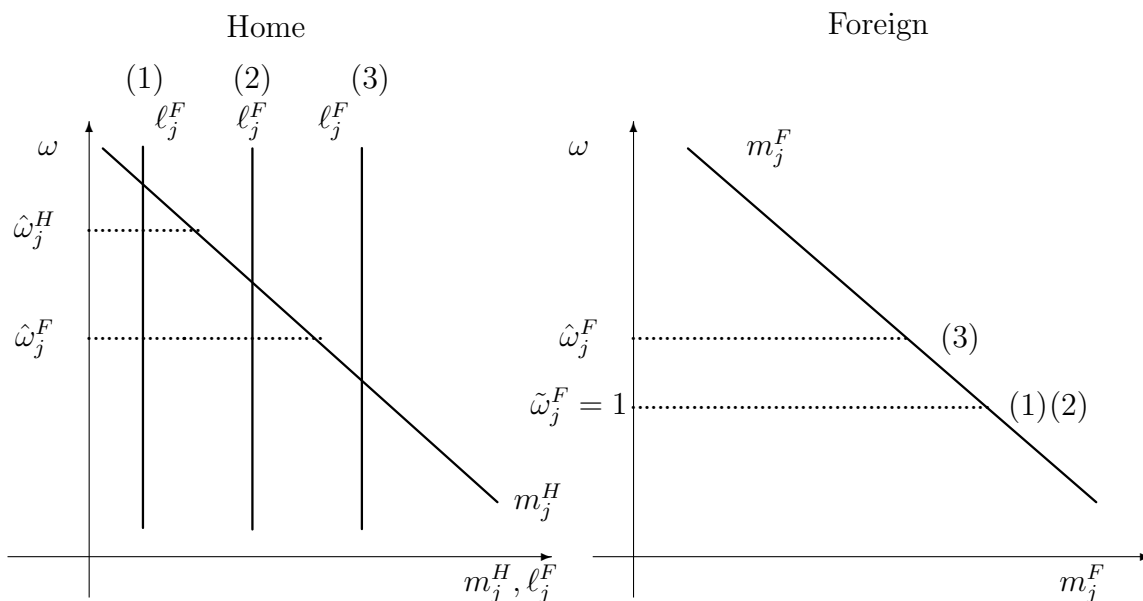


Figure 2: Factor return in a common market

outcomes in his/her country of birth.<sup>32</sup>

The three different combinations of factor endowments allow us to highlight the welfare effects of the creation of a common market.<sup>33</sup> One of the most important consequences of the free mobility of factors is the potential change in the factor income in the destination country. Let  $\ell_j^H + \ell_j^F = \ell$  for  $j = \{K, L\}$  be the total supply of factor  $j$  in the common market. As long as there is a positive price differential between Home and Foreign, the Foreign's factor will have an incentive to relocate to Home. For our later discussion it is useful to introduce the price  $\omega_j^{H*}$  such that  $L_j^{HD} = \ell$ . It is easy to show that  $\omega_j^{H*} = \frac{L-\ell}{b}$ . Clearly, whenever  $\omega_j^{H*} \geq \hat{\omega}_j^H$ , i.e. if  $\frac{L-\ell}{b} \geq 1 + (\lambda_{mj}^H - 1)\frac{\ell_j^H}{b}$ , the factor movement does not trigger a decrease of the price prevailing in Home, while the opposite holds when  $\frac{L-\ell}{b} < 1 + (\lambda_{mj}^H - 1)\frac{\ell_j^H}{b}$ .

Case (1) in the left panel of Figure 2 represents the scenario where  $\frac{L-\ell}{b} > 1 + (\lambda_{mj}^H - 1)\frac{\ell_j^H}{b}$ .

<sup>32</sup>Of course, enfranchising or not immigrants is *per se* a policy decision. In general, as it has been extensively documented by Bertocchi and Strozzi (2004), the acquisition of voting rights in the destination country involves complex procedures even in traditionally open countries like the United States. In Germany, until the recent reform of the citizenship law approved in 1999, even the descendants of immigrants were not admitted to citizenship and thus did not enjoy the right to vote.

<sup>33</sup>The discussion carried out here is similar in spirit to Richardson (1992) and Grossman and Helpman (1995), with the main difference being that ex post policies vis-à-vis the rest of the world are endogenously determined in our model, while there they are taken as exogenously given.

In this case, Foreign’s supply of the factor is limited and, at the status quo price  $\hat{\omega}_j^H$ , it is not sufficient to satisfy Home’s import demand. A “rule of origin” provision will ensure that Home will continue to satisfy its residual demand by directly importing from the Rest of the World. The initial policy chosen by the median does not change and continues to be binding. Thus, the politically determined return to factor  $j$  in Home is the same as under the status quo, i.e.  $\tilde{\omega}_j^H = \hat{\omega}_j^H$ .<sup>34</sup> On the other hand, Home’s fiscal revenues are reduced by the inflow of freely moving Foreign’s factor. More specifically, the change in fiscal revenues is

$$\Delta T_j^H = -(\hat{\omega}_j^H - 1)\ell_j^F \quad (9)$$

This effect corresponds to what is known as “trade diversion” in the Vinerian theory of preferential trading arrangements.

Turning to Foreign, as a result of the common market formation, the country now experiences an outflow of the factor to Home, and satisfies its demand importing from the Rest of the World. Note that since the entire Foreign’s supply of factor  $j$  has moved to Home, Foreign’s median voter will now obtain factor  $j$ ’s income in Home, while fiscal transfers and profits continue to accrue to him in his country of origin. As a result, using equation 6 his welfare becomes:

$$u_m^F(\omega^H, \omega^F) = \lambda_{ij}^F \ell_j^F \hat{\omega}_j^H + \lambda_{ij'}^F \ell_{j'}^F \omega_{j'}^F + T_j^z(\omega_j^F) + T_{j'}^z(\omega_{j'}^F) + \pi(\omega^F) \quad (10)$$

The complete relocation of Foreign’s supply of factor  $j$  to Home implies that the ex-post policy chosen in Foreign vis-à-vis imports of factor  $j$  from the rest of the world changes compared to the status quo and is determined by solving:

$$\frac{\partial u_m^F}{\partial \omega_j^F} = -(\omega_j^z - 1)b = 0 \quad (11)$$

and thus we have that

$$\tilde{\omega}_j^F = 1 \quad (12)$$

i.e. free factor mobility prevails. The corresponding revenue loss in Foreign as a result of the formation of the common market amounts to

$$\Delta T_j^F = -(\hat{\omega}_j^F - 1)m_j^F(\hat{\omega}_j^F) \quad (13)$$

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<sup>34</sup>The policy vis-à-vis the rest of the world continues to be determined by Home’s median voter.

Foreign's citizens will be instead able to grab the benefits of the higher return to the factor  $j$  realized when it moves to Home:

$$\Delta W_j^F = (\hat{\omega}_j^H - \hat{\omega}_j^F)\ell_j^F \quad (14)$$

To summarize, in case (1), the return to factor  $j$  for both Home and Foreign individual suppliers as well as profits do not decline (some factors actually strictly gain). For this reason we will say that the introduction of a common market results in *enhanced protection* for the factors.<sup>35</sup>

At the opposite end of the spectrum of possible outcomes, we have the situation in which Foreign's factor supply is very large (case (3) in Figure 2), and is more than sufficient to satisfy Home's import demand at the lowest status quo price  $\hat{\omega}_j^F$ . In other words,  $\omega_j^{H*} \leq \hat{\omega}_j^F$ , or  $\frac{L-\ell}{b} \leq 1 + (\lambda_{mj}^F - 1)\frac{\ell_j^F}{b}$ . Also in this case, Foreign's factor will move to Home in order to take advantage of the initially higher return. However, the supply is so large that the inflow will lead to a decrease in the factor return in Home until factor prices are equalized, i.e.  $\tilde{\omega}_j^H = \hat{\omega}_j^F$ .

We can label this as the *reduced protection* case, i.e. the situation in which in Home the factor return declines compared to the status quo as the result of the creation of a Common Market. The income loss for Home's factor owners will be

$$\Delta W_j^H = -(\hat{\omega}_j^H - \hat{\omega}_j^F)\ell_j^H \quad (15)$$

and Home's residents will see their position worsened also through a reduction in the fiscal revenues, since now factor  $j$  is no longer imported from the Rest of the World. The loss occurring to Home's government budget is

$$\Delta T_j^H = -(\hat{\omega}_j^H - 1)m_j^H(\hat{\omega}_j^H) \quad (16)$$

Notice that, at the same time, profits are naturally going to rise as a result of the decline in factor prices.

From the point of view of Foreign, only part of the total mobile factor supply has moved to Home, and in particular the factor supply of the median voter has not relocated. In fact,

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<sup>35</sup>This concept has been originally introduced by Krueger (1999) while analyzing the effects of a preferential trading arrangement.

as we can see from the left panel of Figure 2, if the entire Foreign factor supply were to move to Home, the equilibrium price prevailing in Home's market would be lower than the status quo price obtained in Foreign. As a consequence, the median voter faced with the option to relocate the factor to Home and obtain a lower return than by maintaining it in Foreign, will clearly prefer not to change its location. Therefore, the factor income earned by Foreign's median voter in Foreign does not change in equilibrium, and similarly the profits he earns will also remain unaffected. On the other hand, Foreign tariff revenues increase by the following amount

$$\Delta T_j^F = (\hat{\omega}_j^F - 1)m_j^H(\hat{\omega}_j^F) \quad (17)$$

since Home will now employ  $m_j^H(\hat{\omega}_j^F)$  units of factor  $j$  originating in Foreign, this factor supply will be replaced in Foreign by inflows from the Rest of the World. To summarize, in case (3) the return to Home's factor and the fiscal revenues will decline if a common market is formed, while profits increase. At the same time, in Foreign the return to the factor will not be affected and the same will be true for profits, while the government's revenues will increase due to the larger inflow of (taxed) factor from the rest of the world.

The last possibility, described in Figure 2 as case (2) arises when Foreign's factor supply is in an intermediate position, so that it is large enough to satisfy Home's import demand at the status quo price  $\hat{\omega}_j^H$ , but it is not large enough to reduce the price prevailing in Home to  $\hat{\omega}_j^F$ . In other words, the equilibrium price prevailing in Home if the common market is formed is  $\tilde{\omega}_j^H$ , where  $\hat{\omega}_j^F < \tilde{\omega}_j^H < \hat{\omega}_j^H$ . This situation will arise if  $1 + (\lambda_{mj}^F - 1)\frac{\ell_j^F}{b} < \frac{L-\ell}{b} < 1 + (\lambda_{mj}^H - 1)\frac{\ell_j^H}{b}$ . Foreign's factor will once again take advantage of the higher return prevailing in Home and move there. Clearly, if  $\hat{\omega}_j^F < \tilde{\omega}_j^H$ , the positive price differential implies that Foreign's *entire* factor supply has relocated to Home. Therefore, as in case 1, Foreign's median voter will choose to impose no restriction on the imports of factor  $j$  from the Rest of the World, i.e.  $\tilde{\omega}_j^F = 1$ .

The welfare implications in this case are particularly interesting. From Home's residents' point of view, the country experiences a welfare reduction through a decline in factor income and a decline in fiscal revenues, while through the profit channel there is a welfare improvement. More precisely, since  $\hat{\omega}_j^H > \tilde{\omega}_j^H$ , with the introduction of the Common Market the domestic factor reward declines by the following amount:

$$\Delta W_j^H = -(\hat{\omega}_j^H - \tilde{\omega}_j^H)\ell_j^H < 0 \quad (18)$$

Table 1: Creating a common market

	Case (1)	Case (2)	Case (3)
Return to factor $j$ in Foreign	↓	↓	Unchanged
Return to factor $j$ in Home	Unchanged	↓	↓

The same is true for fiscal revenues that will shrink by:

$$\Delta T_j^H = -(\hat{\omega}_j^H - 1)m_j^H(\hat{\omega}_j^H) \quad (19)$$

as imports from the Rest of the World are completely replaced by imports from Foreign. The profits will instead increase due to the decline in the mobile factor reward.

In Foreign's case the situation can be described as follows. Foreign's factor experiences an increase in its compensation when it moves to Home:

$$\Delta W_j^F = (\tilde{\omega}_j^H - \hat{\omega}_j^F)\ell_j^F \quad (20)$$

while Foreign's government revenues are entirely lost, i.e there is a decline

$$\Delta T_j^F = -(\hat{\omega}_j^F - 1)m_j^F(\hat{\omega}_j^F) \quad (21)$$

in fiscal revenues. The profits on the other hand increase since the mobile factor's return prevailing in Foreign has declined as a result of the country's membership in the Common Market.

The analysis developed so far has identified the incentives behind the creation of a common market, and in so doing has allowed us to lay out the foundations for the characterization of the voting equilibrium, which will be developed in the next section. Before considering these policies, notice a few common elements that emerge from our discussion. If a common market is created, the wage earned abroad by a factor that is exported from one country to its partner will never be lower than the one it was earning in the status quo. At the same time, the return on a factor that is imported from a partner country as a result of the creation of a Common Market will never increase compared to the status quo. Finally, the

relocation of a factor from one country to the other in the presence of a Common Market might induce changes in the optimal policy chosen in the factor's country of origin. The effects of the creation of a common market between Home and Foreign on the return to factor  $j$  is illustrated in Table 1.<sup>36</sup> The main message of our discussion is that the factor return prevailing in each country cannot rise as a result of the formation of the Common Market. Consequently, the return earned by the fixed factor (i.e. the profits) will increase. Once we take into account the fiscal transfers to the agents, the position of the median voter becomes more complex, as we will see in the next section.

## 6 The common market game

When choosing whether to form or not a Common Market, Home and Foreign hold a referendum whereby they decide whether to remove barriers to factor movements between the two countries or to keep the status quo policies that we have described in section 4. Given the outcome of the referendum, the government will then adjust the restrictions/subsidies towards the rest of the world in order to maximize the welfare of the native median voter as discussed in section 5.<sup>37</sup> Hence, the native median voters of the two countries decide simultaneously and non-cooperatively whether to support or not the common market initiative,<sup>38</sup> given the optimal set of restrictions/subsidies toward the Rest of the World. Remembering that the strategies of the median voters are  $\{Join, Stay Out\}$ , we know that a common market will be established only if  $\{Join, Join\}$  is a Nash equilibrium for this game.

For simplicity, we will assume that the median voter's ownership share of every factor is  $\lambda_m$ , so that for all  $j \in \{K, L\}$  and  $z \in \{H, F\}$ ,  $\lambda_{mj}^z = \lambda_m$ .<sup>39</sup> Furthermore, there exists a *median agent*  $i$  such that  $\lambda_{ij}^z = \lambda_m > 1$  for all  $j$  and  $z$ .<sup>40</sup> The driving force behind the model are differences in factor endowments. Denoting by  $\theta_j^z$  the share of factor  $j$  in country

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<sup>36</sup>The argument for the other factor is analogous.

<sup>37</sup>Notice that in this setting, we are not considering explicit redistribution between member countries, which could be used to alter the incentives of the median voter in favor of the creation of the common market. This seems realistic since in the EU, only 0.1 % of the total GDP of the area is used for this purpose, and even with the recent enlargement, it is very hard to configure a much bigger role for this type of expenditures.

<sup>38</sup>In choosing the non-cooperative approach, we follow the existing literature on PTA formation. See among others Grossman and Helpman (1995), Levy (1997) and Cadot, de Melo, and Olarreaga (1999).

<sup>39</sup>We will relax this assumption in section 7.

<sup>40</sup>In other words, we focus on the situation in which factor flows are restricted. The analysis of a more general set of policies is carried out in the next section.

$z$ , we assume that Home is capital abundant, i.e. that it is endowed with a fraction  $\theta_K^H > \frac{1}{2}$  of  $\ell = \ell_K^H + \ell_K^F$ , while Foreign is assumed to be labor abundant, i.e. it is endowed with a fraction  $\theta_L^F > \frac{1}{2}$  of  $\ell = \ell_L^H + \ell_L^F$ . For simplicity we will consider first the case in which  $\theta_K^H = \theta_L^F = \theta > \frac{1}{2}$ , and generalize our analysis in section 7.

We are now ready to evaluate the effects of the creation of a common market on the median voter's welfare in the three cases outlined in the previous section. Before discussing each of the three possible scenarios, remembering that  $\pi(\omega) = \sum_j \pi_j(\omega_j)$ , where  $j \in \{K, L\}$ <sup>41</sup> we prove the following lemma, which turns out to be useful in characterizing the solution to our problem:

**Lemma 1** *Let  $R_j(\omega_j^z) = \pi_j(\omega_j^z) + T_j(\omega_j^z)$ . Then  $\frac{\partial R_j(\omega_j^z)}{\partial \omega_j^z} \leq 0 \forall \omega_j^z \geq 1, z \in Z$*

**Proof.** Note that  $\frac{\partial R_j(\omega_j^z)}{\partial \omega_j^z} = m_j^z(\omega_j^z - 1) - \ell_j^z$  which can be rewritten as  $\frac{\partial R_j(\omega_j^z)}{\partial \omega_j^z} = -b(\omega_j^z - 1) - \ell_j^z \leq 0 \forall \omega_j^z \geq 1$  and  $\forall \ell_j^z \geq 0$ .  $\square$

Intuitively, Lemma 1 says that, starting from a situation of protection (i.e.  $\omega_j^z > 1$ ), should the factor price  $\omega_j^z$  decrease, the (eventual) fiscal revenue loss for factor  $j$  is more than compensated by the profit gain.

Using Lemma 1, we can evaluate the effect of the common market initiative on the 'other source of income'  $R_j(\omega_j^z)$  for each factor  $j$ . Consider the case in which factor  $j$  is relatively abundant in Home. From our discussion in section 5, we know that in the presence of a common market, the equilibrium factor return prevailing at Home,  $\tilde{\omega}_j^z$ , cannot be higher than in the status quo. Hence, since in Lemma 1 we have established that  $R_j(\omega_j^z)$  is decreasing in  $\omega_j^z$ , we can immediately conclude that the formation of the common market leads to an increase of the other source of income for factor  $j$  at Home. As for factor  $j' \in \{K, L\}$  the symmetry of our setup implies that this is Home's less abundant factor which is exported to Foreign. Therefore, to establish the effect of the common market initiative, we need to distinguish the case where the factor supply of the median voter relocates to the partner country from the case where it remains in its country of origin. Starting from the case where the factor supply of the median voter does not relocate, the price of the scarce factor in the country of origin does not change (case 3 in our discussion in section 5), which implies that  $\pi_{j'}$  will also not be affected. However, since part of the scarce factor has relocated to the partner country, Home's imports from the ROW need to increase, leading to an increase in

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<sup>41</sup>See the derivation of the profit function in footnote 31.

tariff revenues. Hence, given that  $\pi_j$  remains unchanged, while tariff revenues increase, we can conclude that when the factor supply of the median voter does not relocate, the 'other source' of income increases. On the other hand, if the factor supply of the median voter relocates (case 2 in section 5) the return to the less abundant factor in Home converges to the international price, i.e.  $\omega_j^z = 1$ . Note that, when  $\omega_j^z = 1$ , the other source of income for factor  $j$  becomes  $R_j(1) = \pi_j(1)$  and from Lemma 1 we know that  $\pi_j(1) > \pi_j(\omega_j^z) + T_j(\omega_j^z)$  for any given level of  $\ell_j^z$ . In particular, this is true in the common market scenario we are considering, where the scarce factor entirely relocates to the partner country and hence  $\ell_j^z = 0$ .

To sum up, from the above discussion, we can conclude that the variation in the 'other source of income'  $R_j(\omega_j^z)$  works in favor of the common market initiative for both factors in all the scenarios we considered, while this is not generally true for the variation of factor returns, since we know that the equilibrium price of some factor can be lower in the common market than in the status quo. In fact, in the scenario labeled as increased protection, the total factor income works in the same direction as the 'other source of income' since they both increase as compared to the status quo when the common market is formed. On the other hand, in the other two scenarios (decreased protection and intermediate case) the decrease of the equilibrium price of some factors may have an adverse effect on the common market initiative.

Some additional simplifying notation will be useful to formally lay out our main results in the three different cases. Let  $\bar{\eta}$  (respectively  $\underline{\eta}$ ) be the amount of protection enjoyed by the more (less) abundant factor in each country before the integration takes place, where  $\bar{\eta} = (\lambda_m - 1)\theta\frac{\ell}{b}$  and  $\underline{\eta} = (\lambda_m - 1)(1 - \theta)\frac{\ell}{b}$  with  $\theta > \frac{1}{2}$ . The following proposition summarizes the outcome of the common market game under enhanced protection (case 1) and reduced protection (case 3) :

**Proposition 1** *If  $\frac{L-\ell}{b} \geq 1 + \bar{\eta}$ , then the common market is formed. On the other hand, if  $\frac{L-\ell}{b} \leq 1 + \underline{\eta}$  then the common market is not formed.*

**Proof.** Let  $\tilde{U}_m^z$  be the indirect utility of the median voter in country  $z$  when the common market is formed. Furthermore, let  $\hat{U}_m^z$  be his indirect utility in the status quo and let  $\Delta U_m^z = (\tilde{U}_m^z - \hat{U}_m^z)$ . First note that for  $\{Join, Join\}$  to be a Nash equilibrium,  $\Delta U_m^z$  must be strictly positive for both countries. If  $\frac{L-\ell}{b} \geq 1 + \bar{\eta}$ , we are in the *enhanced protection* situation (case 1) discussed in section 5 and since both the total factor income and the other



source of income are higher under the common market than under the status quo then clearly  $\Delta U_m^z > 0$ . When  $\frac{L-\ell}{b} \leq 1 + \underline{\eta}$ , then we are in the *decreased protection* situation described as case (3) and  $\Delta U_m^z = (\hat{\omega}_j^z - \tilde{\omega}_j^z)[L - b\frac{(\hat{\omega}_j^z - \tilde{\omega}_j^z)}{2} - \lambda_m \theta \ell] - (\hat{\omega}_j^z - \tilde{\omega}_j^z)(L - \theta \ell) + b[\hat{\omega}_j^z(\hat{\omega}_j^z - 1) - \tilde{\omega}_j^z(\tilde{\omega}_j^z - 1)]$ . Knowing that  $\hat{\omega}_j^z = 1 + (\lambda_m - 1)\frac{\theta \ell}{b}$  and  $\tilde{\omega}_j^z = 1 + (\lambda_m - 1)\frac{(1-\theta)\ell}{b}$  where  $\theta > \frac{1}{2}$ , then,  $\Delta U_m^z$  can be rewritten as  $\Delta U_m^z = \lambda(\frac{1}{2} - \theta) + (\theta - \frac{1}{2}) < 0 \forall \lambda \geq 1$ . Hence, since  $\Delta U_m^z < 0$ , we conclude that under decreased protection the common market cannot arise as a Nash equilibrium.  $\square$

Intuitively, the proposition shows that the change in the equilibrium price of the two factors has a crucial effect on the common market initiative. In the decreased protection scenario, the loss from the mobile factors' return outweighs the gains from other sources of income thus preventing the formation of the common market. On the other hand, under enhanced protection, when the total mobile factor income increases, the median voter does not have any reason to oppose the formation of the common market, since he actually strictly gains from it. More generally, given that the common market initiative has always a positive impact on the other source of income, when the total mobile factor income increases, the median voter will certainly support the initiative. Hence, even in the intermediate case, where the return on the abundant factor decreases and the one on the scarce factor increases, whenever the gain on one factor compensates the loss on the other, the common market will be formed. More formally, for the intermediate situation discussed under case 2, assuming that  $j$  is the scarce factor so that that  $\tilde{\omega}_j$  denotes the return fetched by the exported factor  $j$  in the destination country when a Common Market is formed, we can show the following result:

**Proposition 2** *Suppose that  $1 + \bar{\eta} > \frac{L-\ell}{b} > 1 + \underline{\eta}$ . If  $\tilde{\omega}_j > 1 + \theta\bar{\eta} + (1 - \theta)\underline{\eta}$ , then the common market is formed*

**Proof.** If  $1 + \bar{\eta} > \frac{L-\ell}{b} > 1 + \underline{\eta}$ , the total *mobile* factor income variation from joining the common market for the median voter in country  $z$  is

$$\Delta E_m^z = \lambda_m \left[ \left(1 + \bar{\eta} - \frac{L-\ell}{b}\right) \theta \ell + \left(1 + \underline{\eta} - \frac{L-\ell}{b}\right) (1 - \theta) \ell \right]$$

Since  $\Delta E_m^z > 0$  whenever  $\frac{L-\ell}{b} > 1 + \theta\bar{\eta} + (1 - \theta)\underline{\eta}$ , then the result follows from proposition 1.  $\square$

Intuitively, the proposition says that if the return to the mobile factor exported to the partner country is sufficiently high as to compensate the decrease in the return of the mobile

factor, which is not exported, then the median voter is willing to support the common market. The term  $\theta\bar{\eta} + (1 - \theta)\underline{\eta}$  is a weighted average of the protection previously enjoyed by the two factors in country  $z$  (with weights equivalent to the relative shares of the factors) and it measures the increase above the international price that will be sufficient to induce the median voter to support the integration process.<sup>42</sup> In other words, if the exported factor enjoys an *increased protection* equal to the weighted average of the protection levels previously enjoyed by the two mobile factors, then the common market will be supported by the median voter.<sup>43</sup>

## 7 Extensions

So far we have assumed some basic symmetry between Home and Foreign. In particular, in our discussion the median voter in both countries owns the same, greater than average, share of each factor. Furthermore, while Home is capital abundant and Foreign is labor abundant, the two countries are mirror images of each other (i.e.  $\theta_K^H = \theta_L^F = \theta$ ). To make our analysis more realistic, we will relax one at the time these assumptions in what follows. We start by considering a situation in which, given the same distribution of factor ownership across countries, the median voter has a below-average ownership share of capital, while he owns an above average share of labor. Next, to study the effects of a perspective member's economic size, we will allow countries to be endowed with different factor's shares ( $\theta_K^H \neq \theta_L^F$ ). Third, we will show how the distribution of factor ownership matters in shaping the incentives for the creation of a common market. Finally, in our last extension, we will consider the consequences of explicitly introducing partial rent capturing in the model, which could arise for example because a quota is used to limit immigration flows which is accompanied by a tax generating a differential fiscal treatment for immigrants.

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<sup>42</sup>The necessary and sufficient condition for the common market formation is  $\omega_j(\lambda l - L) + \frac{\bar{Y}}{2} + \frac{b}{2}\omega_j^2 + \pi(1) \geq \hat{U}_m^z$  which is always satisfied if and only if  $\tilde{\omega}_j > 1 + \varphi$  with  $\varphi = \frac{L - \lambda l - b + \sqrt{(L - \lambda l)^2 + 2b\hat{U}_m^z - 2b(Y/2 + \pi(1))}}{b} > 0$ , where  $\hat{U}_m^z$  denotes the utility obtained by the median voter in the status quo. Note that, although algebraically more complex, the necessary and sufficient condition also requires the equilibrium price of the scarce factor to be above the international price, where the increase above the international price, given by the term  $\phi$ , is positively related to the status quo utility, and therefore to the level of protection previously enjoyed by both factors.

<sup>43</sup>If we remove the simplifying assumption on the symmetry of total endowments, i.e. we let  $\ell_K \neq \ell_L$ , the sufficient condition becomes:  $\tilde{\omega}_j > 1 + \frac{\theta_j^z \ell_j}{\theta_j^z \ell_j + (1 - \theta_{j'}^z) \ell_{j'}} \bar{\eta}_j + \frac{(1 - \theta_{j'}^z) \ell_{j'}}{\theta_j^z \ell_j + (1 - \theta_{j'}^z) \ell_{j'}} \eta_{-j'}$  for  $j, j' \in \{K, L\}$ .

## 7.1 Concentrated capital ownership

The ownership of assets in an economy is typically highly concentrated and thus our original assumption that the median voter owns more capital than the population average is likely to be violated in reality. For this reason it is important to study how the formation of a common market is affected if we assume that  $\lambda_{mK} < 1$ , while the median voter's labor share continues to be  $\lambda_{mL} > 1$ . In these circumstances the optimal *status quo* policy in each country is a subsidy on capital and a tariff on labor. From equation 8 we know that the subsidy/tariff is higher in the country that is relatively more abundant in each factor. Hence, having assumed that Home is capital abundant and Foreign is labor abundant, then both the subsidized price of capital and the protected price of labor are higher in Foreign than in Home. As a consequence, if the two countries form a common market, both labor and capital will relocate from Home to Foreign to take advantage of potentially higher factor returns. Thus, from the point of view of the median voter in Foreign, the creation of a common market clearly has a detrimental effect on both his factor returns, and from the characterization of the median voter optimal choice under decreased protection we can establish the following result:

**Proposition 3** *Suppose that  $\lambda_{mK} < 1$  and  $\lambda_{mL} > 1$  and assume that Home is capital abundant while Foreign is labor abundant. Under this scenario the common market is not formed.*

Hence, a concentrated distribution of capital works against the formation of a common market. Interestingly, proposition 3 tells us that the opposition to the common market comes from the country that is relatively less abundant in capital because, when the barriers between the two member states are removed, the country with a relatively lower capital endowment becomes an importer of both factors.

## 7.2 Asymmetric country size

So far in our discussion we have assumed that the two countries are mirror images of each other. Of course, economies can vary substantially in their size, and it is important to study how this can impact the likelihood of the formation of a common market, keeping our other hypotheses unchanged. In our model, if  $\theta_K^H \neq \theta_L^F$ , in the *status quo* Home's and Foreign's factors will be subject to different levels of protection, and as a result, to carry out our

analysis, we need to consider two asymmetric scenarios, where the intermediate situation (case 2), arising for one factor, is combined with either enhanced protection (case 1) or decreased protection (case 3) for the other.<sup>44</sup>

To consider these possibilities, we need to introduce some additional notation. Let  $z$  be the country abundant in factor  $j$  ( $\theta_j^z > \frac{1}{2}$ ) and let  $z'$  be the country abundant in factor  $j'$  ( $\theta_{j'}^{z'} > \frac{1}{2}$ ), where  $\theta_j^z \neq \theta_{j'}^{z'}$ . Under the status quo factor  $j$  gets protection  $\bar{\eta}_j^z$  in country  $z$  and  $\underline{\eta}_j^{z'}$  in country  $z'$ , with  $\bar{\eta}_j^z > \underline{\eta}_j^{z'}$ . Similarly, factor  $j'$  obtains protection  $\bar{\eta}_{j'}^{z'}$  in  $z'$  and protection  $\underline{\eta}_{j'}^z$  in  $z$ , where  $\bar{\eta}_{j'}^{z'} > \underline{\eta}_{j'}^z$ .

We assume that factor  $j'$  is in the intermediate situation (case 2) and that factor  $j$  either experiences enhanced protection (case 1), or decreased protection (case 3). Formally:

$$1 + \bar{\eta}_{j'}^{z'} > \frac{L - \ell}{b} \geq 1 + \bar{\eta}_j^z \quad (22)$$

$$1 + \underline{\eta}_j^{z'} \geq \frac{L - \ell}{b} > 1 + \underline{\eta}_{j'}^z \quad (23)$$

The right hand side of the first inequality (i.e.  $\frac{L - \ell}{b} \geq 1 + \bar{\eta}_j^z$ ) represents the scenario where factor  $j$  experiences enhanced protection (case 1) and the left hand side (i.e.  $1 + \bar{\eta}_{j'}^{z'} > \frac{L - \ell}{b}$ ) illustrates the case where  $j'$  is the intermediate situation of case 2. Similarly, the left hand part of the second inequality ( $1 + \underline{\eta}_j^{z'} \geq \frac{L - \ell}{b}$ ) represents the scenario where factor  $j$  obtains decreased protection (case 3), while the right hand side ( $\frac{L - \ell}{b} > 1 + \underline{\eta}_{j'}^z$ ) corresponds to the intermediate scenario for factor  $j'$  (case 2). Considering these alternative scenarios, we can prove the following result:

**Proposition 4** *Suppose that  $1 + \bar{\eta}_{j'}^{z'} > \frac{L - \ell}{b} \geq 1 + \bar{\eta}_j^z$ . In this case the common market is formed whenever  $\tilde{\omega}_{j'}^{z'} > 1 + \underline{\eta}_{j'}^{z'} - \frac{1 - \theta_{j'}^{z'}}{\theta_{j'}^{z'}}(\bar{\eta}_j^z - \underline{\eta}_j^{z'})$ . On the other hand, if  $1 + \underline{\eta}_j^{z'} \geq \frac{L - \ell}{b} > 1 + \underline{\eta}_{j'}^z$ , then the common market is not formed.*

**Proof.** The parameter restriction  $\frac{L - \ell}{b} \geq 1 + \bar{\eta}_j^z$  implies that the common market price for factor  $j$  in country  $z$  is  $\tilde{\omega}_j = 1 + \bar{\eta}_j^z$ . For factor  $j'$ , given that  $1 + \bar{\eta}_{j'}^{z'} > \frac{L - \ell}{b}$ , we know that the common market price in country  $z'$  is  $\tilde{\omega}_{j'}^{z'} = \frac{L - \ell}{b} > (1 + \underline{\eta}_{j'}^z)$ . The total variation in the median voter's factor income in  $z$  is therefore  $\Delta E_m^z = \lambda_m[(1 - \theta_{j'}^z) \ell(\frac{L - \ell}{b} - 1 - \underline{\eta}_{j'}^z)] > 0$ . The variation in factor income for the median voter of country  $z'$  is instead  $\Delta E_m^{z'} = \lambda_m[\theta_{j'}^{z'} \ell(\frac{L - \ell}{b} -$

<sup>44</sup>Note that the combination of case 1 and case 3 cannot arise because enhanced protection for factor  $j$  (i.e.  $\frac{L - \ell}{b} > 1 + \bar{\eta}_j^z$ ) and decreased protection for factor  $j'$  (i.e.  $1 + \underline{\eta}_{j'}^z > \frac{L - \ell}{b}$ ) cannot simultaneously hold since  $\underline{\eta}_{j'}^z < \bar{\eta}_j^z$ .

$1 - \bar{\eta}_{j'}^{z'} + (1 - \theta_j^{-z}) \ell(\bar{\eta}_j^z - \underline{\eta}_j^{z'})] > 0$  whenever  $\frac{L-\ell}{b} > 1 + \underline{\eta}_{j'}^{z'} - \frac{1-\theta_j^{z'}}{\theta_j^{z'}}(\bar{\eta}_j^z - \underline{\eta}_j^{z'})$ . Hence, when  $\tilde{\omega}_{j'}^{z'} = \frac{L-\ell}{b} > 1 + \underline{\eta}_{j'}^{z'} - \frac{1-\theta_j^{z'}}{\theta_j^{z'}}(\bar{\eta}_j^z - \underline{\eta}_j^{z'})$ , given that  $\Delta E_m^z > 0$  and  $\Delta E_m^{z'} > 0$ , the common market is supported as a Nash equilibrium. On the other hand, if  $1 + \underline{\eta}_{j'}^{z'} \geq \frac{L-\ell}{b} > 1 + \underline{\eta}_j^z$ , the median voter's  $j$  factor supply does not relocate from country  $z'$  to country  $z$ . As a consequence, his income deriving from the exported factor does not change, while the return he receives on the imported factor decreases. Hence, from proposition 1 we know that  $\Delta U_m^z < 0$ , which implies that the common market is not a Nash equilibrium.  $\square$

Note that the first part of the proposition combines the enhanced protection and the intermediate situation. Therefore, compared to proposition 1 (where both factors experience enhanced protection) clearly the Common Market formation is here less likely. The opposite holds if we compare this result with proposition 2, since the threshold level for  $\tilde{\omega}_{j'}^{z'}$  in 2 is higher than in proposition 4. Finally, with asymmetric country sizes it might turn out that one country only is unambiguously hurt by decreased protection. In this case, as the second part of the last proposition shows, the common market will of course not be formed. Hence, overall we find that in two scenarios out of three, the introduction of asymmetric endowments makes the integration process more difficult.

### 7.3 Heterogenous median voters

Up to now, we have assumed that the median voter in Home and Foreign are identical, i.e. they own the same share of the two factors. Of course, it is very likely that a substantial degree of heterogeneity exists in the cross-country distributions of factor ownership, so that the median voters may be different both across factors and countries. In what follows we generalize the results of propositions 1-4 allowing the median voter's ownership share to vary across countries and factors, while retaining all the other assumptions of our original model. Remembering that the optimal amount of protection depends on the median voter's share of the factor, let  $\bar{\eta}_{j'}^z = (\lambda_{m,j'}^z - 1) \theta \frac{\ell}{b}$  be the protection enjoyed by the relatively more abundant factor  $j'$  in country  $z$  when the median voter's share of the factor is  $\lambda_{m,j'}^z$ . Similarly, let  $\underline{\eta}_j^z = (\lambda_{m,j}^z - 1) (1 - \theta) \frac{\ell}{b}$  be the protection enjoyed by the less abundant factor  $j$ , where we assume that  $\bar{\eta}_{j'}^z > \underline{\eta}_j^z$ . We can then prove the following result:

**Proposition 5** *Given any share  $\lambda_{m,j}^z, \lambda_{m,j'}^z > 1$ , if  $\frac{L-\ell}{b} \geq 1 + \bar{\eta}_{j'}^z$ , then the common market is formed, while if  $\frac{L-\ell}{b} \leq 1 + \underline{\eta}_j^z$  then the common market is not formed. Finally, when*

$1 + \bar{\eta}_{j'}^z > \frac{L-\ell}{b} > 1 + \underline{\eta}_j^z$ , the Common Market is formed whenever  $\tilde{\omega}_j > 1 + \frac{\theta\lambda_{mj'}^z}{\theta\lambda_{mj'}^z + (1-\theta)\lambda_{mj}^z} \bar{\eta}_{j'}^z + \frac{(1-\theta)\lambda_{mj}^z}{\theta\lambda_{mj'}^z + (1-\theta)\lambda_{mj}^z} \underline{\eta}_j^z$ .

**Proof.** When  $\frac{L-\ell}{b} \geq 1 + \bar{\eta}_{j'}^z$  or  $\frac{L-\ell}{b} \leq 1 + \underline{\eta}_j^z$  the proposition is merely a restatement of proposition 1 assuming that the degree of protection varies with the ownership share. When  $1 + \bar{\eta}_{j'}^z > \frac{L-\ell}{b} > 1 + \underline{\eta}_j^z$ , the change in factor income for the median voter in country  $z$  is  $\Delta E_m^z = [(1-\theta)\lambda_{mj}^z + \theta\lambda_{mj'}^z] \frac{L-\ell}{b} - [(1-\theta)\lambda_{mj}^z + \theta\lambda_{mj'}^z] - \theta\lambda_{mj'}^z \bar{\eta}_{j'}^z - (1-\theta)\lambda_{mj}^z \underline{\eta}_j^z$ . Since  $\Delta E_m^z > 0$  whenever  $\frac{L-\ell}{b} > 1 + \frac{\theta\lambda_{mj'}^z}{\theta\lambda_{mj'}^z + (1-\theta)\lambda_{mj}^z} \bar{\eta}_{j'}^z + \frac{(1-\theta)\lambda_{mj}^z}{\theta\lambda_{mj'}^z + (1-\theta)\lambda_{mj}^z} \underline{\eta}_j^z$ , then the result follows from proposition 2.  $\square$

The most interesting effect of heterogeneity in the median voter's share arises in the intermediate case where again we can see that if the exported factor enjoys a protection equal to a “weighted average” of pre-common market protection levels, where the weights are given by the median voter's relative ownership shares of the two factors, then the median voter supports the common market. Note that the degree of enhanced protection sustaining the Common Market initiative is higher, the bigger is the median voter's ownership share of the factor that does not relocate. Therefore, the (positive) implication of proposition 5 is that the integration process is more likely to be successful when the median ownership share of the factor that is not exported is not too different from the average. Moreover, from a normative perspective, this will also make the Common Market less distortive.

What have we learned? First of all, for factor market integration to be sustained as a political equilibrium, the median voter should gain from the resulting factor flows between the two countries. Differences in initial returns imply that the removal of obstacles to factor mobility might lead to gains for those factors that actually end up relocating between the member countries. At the same time, factors which do not move might suffer a decline in their return as a result of the integration process. Gains from factor mobility are more likely to occur the bigger is the import demand of the destination country compared to the factor supply of the country of origin. Indeed, as we have seen in section 5, under enhanced protection when the factor supply of the ‘source’ partner country is not sufficient to satisfy the entire import demand of the receiving country, not only will the median voter of the exporting country grab substantial gains, but also no losses will harm the median voter of the importing country. On the other hand, when reductions in factor returns as a result of market integration cannot be avoided, then for a Common Market to arise, it is crucial that the median voter's benefit from the relocation of one factor is sufficiently large to compensate

the loss on the factor that has not relocated (case 2). Certainly, the Common Market is not politically feasible when factors' movements are so big that price differentials would disappear and the median voters experience an income loss from the factor inflow and no gain from the factor outflow (case 3). In other words, a large factor inflow triggering a dramatic decrease in factor returns in one country would be sufficient to prevent the formation of the Common Market. Besides factor flows' size, import demand elasticities also play an important role, since a rigid import demand will – *ceteris paribus* – lead to a sharp decrease in factor returns, and this will work against the integration process.

Furthermore, since for the integration process to move forward both countries need to support the initiative, a common market will not be formed under any asymmetric scenario in which the median voter of just one country suffers this type of loss. This situation can occur either when countries differ in size (proposition 4) or if a member becomes an importer of both factors when the common market is formed (proposition 3). Finally, the distribution of factors' ownership in the population is also important. In general, the median voter is more likely to support the common market, the bigger is his share of the relocating factor. At the same time, when the median voter's share of the non relocating factor is closer to the average, the chances of successful integration are higher (proposition 5).

An important lesson to be learned from our analysis is therefore that some factors must experience enhanced protection as a result of the formation of the Common Market, for the entity to emerge as a political equilibrium. In other words, by relocating to the partner country, the moving factor must enjoy a positive *policy spillover* in the form of a higher protection (return) that could not be sustained as a political equilibrium if the country of origin were not to join the integration process. Furthermore, the return required to sustain the common market is higher, the bigger the ownership share of the median voter as compared to the rest of the population, and the higher is his relative share in the factor that is not exported. From the point of view of society as a whole, this might well be a troublesome conclusion. The political process is indeed telling us that economic integration is more likely to move forward, the more distortive are its effects. This conclusion should not be too surprising though, since the median voter and the average citizen's interests are not fully aligned in this model.

## 7.4 Quotas and imperfect rent capturing

Restrictions to the physical relocation of people across countries often take the form of a (binding) quota, accompanied by a tax (i.e. a differential fiscal treatment for immigrants),<sup>45</sup> resulting in the immigrant retaining part of the surplus associated to the relocation (i.e. the difference between the wage prevailing in the country of destination and the country of origin). It is thus interesting to explore the effects of imperfect rent capturing on the formation of the common market, while retaining all other assumptions of our original model. As we have seen in section 3, in the presence of imperfect rent capturing, citizens  $i$ 's utility can be rewritten as:

$$u_i^z(\omega) = \sum_j \lambda_{ij}^z \ell_j^z \omega_j^z + \sum_j \gamma_j T_j(\omega_j^z) + \sum_j \pi_j(\omega_j^z) \quad (24)$$

which is a well behaved function under the restriction  $1/2 < \gamma_j < 1$ , that we assume to hold throughout the analysis.<sup>46</sup> To keep the discussion simple, we will assume also in this section that the median voter's ownership share of each factor is the same across countries, so that  $\lambda_{m,j}^z = \lambda_m > 1$ , while we allow for asymmetric factor endowments. When an import quota is the instrument chosen and rent capturing is not perfect, the status quo policy chosen by the native median voter of country  $z$  is given by:

$$\omega_j^z - 1 = \frac{(\lambda_m - \gamma_j)}{b(2\gamma_j - 1)} \ell_j^z + \frac{(1 - \gamma_j)}{b(1 - 2\gamma_j)} (L - b) \quad (25)$$

A protectionist policy will be in place (i.e.  $\omega_j^z > 1$ ), if and only if the the median voter owns a share  $\lambda_m$  such that:

$$\lambda_m > \gamma_j + (1 - \gamma_j) \frac{(L - b)}{\ell_j^z} \quad (26)$$

Hence, protection is chosen when the median voter's ownership share of the factor is bigger than the threshold level  $\underline{\lambda}_j^z = \gamma_j + (1 - \gamma_j) \frac{(L - b)}{\ell_j^z} > 1$ .<sup>47</sup> In other words, if capturing of the rent by the government is imperfect, protection is less likely to emerge in equilibrium,

<sup>45</sup>See Timmer and Williamson (1996) for an interesting historical account.

<sup>46</sup>Note that when  $\gamma_j = 1$  the subutility  $u_{ij}(\omega_j)$  is strictly concave and this property is preserved for any  $1/2 < \gamma_j < 1$ . Since each subutility is single-picked, the median voter result can be applied, i.e. the policy preferred by the median voter is a Condorcet winner.

<sup>47</sup>The only policy instrument available is a quota cum tax and no negative protection can be chosen in this case. Hence, when the first order condition would give  $\omega_j^z < 1$ , we obtain the corner solution  $\omega_j^z = 1$ , i.e. no protection.



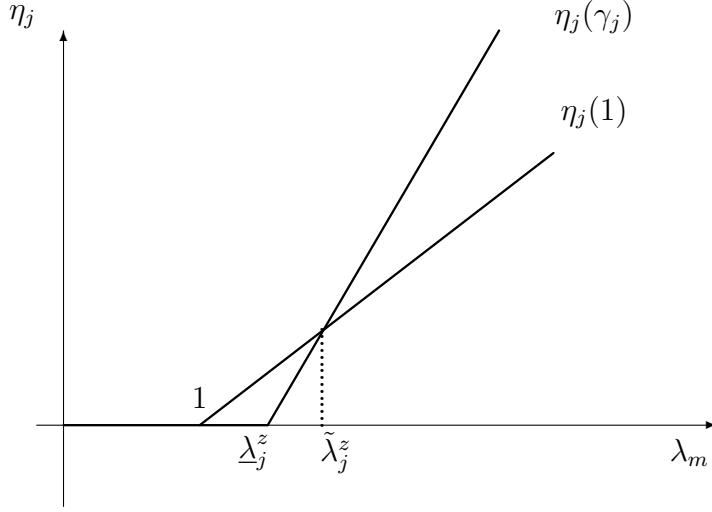


Figure 3: Protection with imperfect rent capturing

because a more skewed distribution of factor ownership is required. Let  $\eta_j(\gamma_j) = \frac{(\lambda_m - \gamma_j)\ell_j^z}{b(2\gamma_j - 1)} + \frac{(1 - \gamma_j)}{b(1 - 2\gamma_j)}(L - b)$  be the level of protection granted to factor  $j$  in country  $z$  before the integration takes place when the share of rent capturing is  $\gamma_j$  and let  $\lambda_j^{*z} = \frac{1}{2} + \frac{1}{2}\left(\frac{L - b}{\ell_j^z}\right)$  so that  $\lambda_j^{*z} > \lambda_j^z$ . The following lemma allow us to compare the level of protection chosen under perfect and imperfect rent capturing:

**Lemma 2** *Suppose that  $\lambda_m > \lambda_j^z$ . Then,  $\eta_j(1) \geq \eta_j(\gamma_j)$  if and only if  $\lambda_j^z < \lambda_m \leq \lambda_j^{*z}$ .*

**Proof.** Since  $\eta_j(1) = (\lambda_m - 1)\frac{\ell_j^z}{b}$  and  $\eta_j(\gamma_j) = \frac{(\lambda_m - \gamma_j)\ell_j^z}{b(2\gamma_j - 1)} + \frac{(1 - \gamma_j)}{b(1 - 2\gamma_j)}(L - b)$ , then  $\eta_j(1) \geq \eta_j(\gamma_j)$  if and only if  $\lambda_m < \frac{1}{2} + \frac{1}{2}\left(\frac{L - b}{\ell_j^z}\right)$ .  $\square$

Intuitively, under perfect rent capturing, for a given level of imports, an increase in the tax revenue from protection completely offsets the profit loss, while this is no longer true under imperfect rent capturing. Hence, in the latter case protection becomes less desirable unless the gain from factor income is sufficiently high to more than compensate the loss in fiscal revenues associated with imperfect capturing (i.e.  $\lambda_m > \lambda_j^{*z}$ ). The result is illustrated in figure 3.

Having discussed the median voter's optimal level of protection under both perfect and imperfect rent capturing, we are now ready to consider how the use of different policy instruments affects the likelihood of the formation of a common market. To do so, we will study under which policy tool the conditions highlighted in proposition 1 and 2 are

more likely to be satisfied.<sup>48</sup> Some interesting results emerge, which are summarized in the following

**Proposition 6** *If  $\underline{\lambda}_j^z < \lambda_m \leq \lambda_j^{*z}$  the formation of a common market is more likely under a quota cum tax than under an inflow tax with perfect rent capturing. On the other hand, if  $\lambda_m > \lambda_j^{*z}$ , the use of a quota cum tax renders the formation of the common market less likely.*

**Proof.** Suppose that  $\underline{\lambda}_j^z < \lambda_m \leq \lambda_j^{*z}$ . From lemma 2 it follows that  $\eta_j(1) > \eta_j(\gamma_j)$  for all  $\gamma_j \neq 1$ . From proposition 1 we know that if  $\frac{L-\ell}{b} \geq 1 + \bar{\eta}_j(1) \geq 1 + \bar{\eta}_j(\gamma_j)$  then the common market is formed for all  $\gamma_j$ . On the other hand, if  $1 + \bar{\eta}_j(1) > \frac{L-\ell}{b} \geq 1 + \bar{\eta}_j(\gamma_j)$  with  $\gamma_j \neq 1$ , the common market is always formed for all  $\gamma_j \neq 1$  but is not necessarily formed for  $\gamma_j = 1$ . Similarly, when  $\frac{L-\ell}{b} \leq 1 + \underline{\eta}_j(\gamma_j) \leq 1 + \underline{\eta}_j(1)$ , the common market is not formed for any  $\gamma_j$ . However, when  $1 + \underline{\eta}_j(\gamma_j) \leq \frac{L-\ell}{b} < 1 + \underline{\eta}_j(1)$  with  $\gamma_j \neq 1$ , the common market is not formed for  $\gamma_j = 1$  but it can be formed for  $\gamma_j \neq 1$ . Consider now the results discussed in proposition 2. From lemma 2 we know that  $1 + \bar{\eta}_j(1) \geq 1 + \bar{\eta}_j(\gamma_j) > \frac{L-\ell}{b} > 1 + \underline{\eta}_j(1) \geq 1 + \underline{\eta}_j(\gamma)$ . Hence, if  $\tilde{\omega}_j > 1 + \theta \bar{\eta}_j(1) + (1 - \theta) \underline{\eta}_j(1) \geq 1 + \theta \bar{\eta}_j(\gamma_j) + (1 - \theta) \underline{\eta}_j(\gamma_j)$  then the common market is formed for all  $\gamma_j$ . On the other hand, if  $1 + \theta \bar{\eta}_j(1) + (1 - \theta) \underline{\eta}_j(1) > \tilde{\omega}_j > 1 + \theta \bar{\eta}_j(\gamma_j) + (1 - \theta) \underline{\eta}_j(\gamma_j)$ , with  $\gamma_j \neq 1$  then the common market is only formed for  $\gamma_j \neq 1$ . Hence we can conclude that whenever the common market is formed for  $\gamma_j \neq 1$ , it is not necessarily formed for  $\gamma_j = 1$ , while the reverse is not true. Consider now the case where  $\lambda_m > \lambda_j^{*z}$ . Since  $\lambda_m > \lambda_j^{*z}$  implies  $\bar{\eta}_j(1) < \bar{\eta}_j(\gamma_j)$  and  $\underline{\eta}_j(1) < \underline{\eta}_j(\gamma_j)$ , by symmetry we obtain that the common market is more likely to be formed under perfect rent capturing.  $\square$

Hence, for intermediate levels of  $\lambda_m$  (i.e.  $\underline{\lambda}_j^z < \lambda_m < \lambda_j^{*z}$ ), imperfect rent capturing, by reducing the rent obtained by the native median voter, makes the status quo optimal immigration policy less restrictive. As a consequence, the opportunity cost of giving up protection decreases and therefore the formation of the common market becomes more likely. On the other hand, for more extreme values of  $\lambda_m$  (i.e.  $\lambda_m > \lambda_j^{*z}$ ), imperfect rent capturing makes protection more desirable, thereby lowering the likelihood that the common market is formed.

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<sup>48</sup>The analysis for the asymmetric case considered in proposition 4 is analogous.

## 8 Conclusions

This paper develops a theory of the endogenous formation of a common market. The institutional setting is a direct democracy, and the driving force behind the results is the difference in factor endowments between the potential partner countries.

In our the three-country setting the first best policy is free factor mobility at the world-wide level. At the same time, compared to the status quo, the creation of a common market is always welfare enhancing. In fact, as we have shown, factor prices will never increase as a result of the bilateral liberalization and thus, the well-being of the *average* citizen can only (weakly) increase if the common market comes about. However, in the presence of heterogenous agents, a common market will bring about winners and losers. As a result, a welfare enhancing bilateral liberalization might well turn out to be not politically feasible. Although the analysis of the policy instruments that may help to overcome this obstacle goes beyond the scope of this paper, we can think of at least two instruments that might be available to the governments of the perspective member countries. On the one hand, ex-ante transfers across countries could be used to reduce the asymmetries that prevent the formation of the common market. On the other, ex-post transfers within countries from those who gain from the integration to those who lose could be implemented.<sup>49</sup>

While we leave an empirical evaluation of the model for further research, we believe that this framework is capable to rationalize some of the recent developments in the EU enlargement process. Consider, for instance, the case of Switzerland, a natural candidate to membership in the western European club. In March 2001 Swiss voters overwhelmingly rejected a proposal aimed at the immediate start of accession negotiations, and the existing bilateral agreements with the EU on labor movement are also inspired by extreme caution.<sup>50</sup> The model developed in this paper helps explaining this outcome. Switzerland is a small country, with a highly skilled labor force, very low unemployment rates (1.9 % in 2001) and very high GDP per capita, even by Western European standards.<sup>51</sup> If the country were to join the EU, it is reasonable to expect a substantial inflow of foreign labor, at all skill levels, with the likely outcome being “reduced protection”, given the substantial difference in size and unemployment rates between the two potential members. The negative reaction of the

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<sup>49</sup>For a very related discussion, see Bolton and Roland (1997).

<sup>50</sup>For more details, see the Economist Intelligence Unit 2002 Country Profile.

<sup>51</sup>The latest World Development Report ranks Switzerland 6th in the world in terms of GDP per capita, with a GDP per capita more than 40 % above the EU average.

Swiss electorate appears then to be consistent with the predictions of our model.

The predictions obtained in this paper are quite sharp, and it is worth stressing that they depend on a series of important simplifying assumptions. First of all, in our setting, once the common market is established, there will be no residual frictions affecting factor movements. The EU experience has shown that this is largely the case for cross-border capital flows, but as far as labor movements are concerned, linguistic and cultural differences have often represented an important obstacle, which we do not explicitly consider.<sup>52</sup> Secondly, in our setup, each country retains the power to autonomously set policies towards factor mobility vis-à-vis the rest of the world. The “The Hague program”<sup>53</sup> calls instead for a coordination of migration policies at the EU level. Hence, it would be very interesting to extend our model to explore the consequences of policy coordination on the political feasibility of the Common Market.

Finally, the setting of the model is static, and a dynamic extension would allow to tackle two important questions. On the one hand, we could analyze the impact of the creation of a common market on the existing social security system of the perspective member countries. This would be particularly important if there are substantial differences in the age composition of the population like, for instance, in the case of the US and Mexico. Alternatively, the dynamic impact of Foreign Direct Investment could be modeled explicitly, highlighting the role of technological spillovers on welfare. While all these are very important questions, we leave them for further research.

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<sup>52</sup>While these are important factors, the literature has found robust evidence that economic characteristics are key in explaining the attitudes towards immigrants. See for instance Mayda (2006) and Facchini and Mayda (2008).

<sup>53</sup>See [http://ec.europa.eu/justice\\_home/fsj/immigration/fsj\\_immigration\\_intro\\_en.htm](http://ec.europa.eu/justice_home/fsj/immigration/fsj_immigration_intro_en.htm).

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