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Economic Integration in an Endogenous Policy Model

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I. Introduction

The current extent of economic integration is expanding on several fronts: the European Union is expanding, Asian nations are considering a trading block, and the members of NAFTA are looking for new partners elsewhere in Latin America. In this context, one must ask which nations will be most likely to join regional free trade areas and why. The political decision of whether or not to become a part of a free trade area (FTA) certainly relies on welfare, but as the Stolper-Samuelson Theorem posits, following liberalization the welfare of different factors of production may move in opposite directions. Therefore, we might see one factor in favor of freer trade while the other opposes it. For instance, public policy debates on the creation of NAFTA suggest that a sharp division of opinion between capital and organized labor interests exists (Kaempfer and Marks, 1993). Thus, it seems clear that when examining why certain countries adopt economic integration, we should examine the returns to factors of production.

Much of the early work done on economic integration by economists focused on trade creation and trade divergence. If an FTA causes welfare improving trade because of the elimination of trade barriers then there is trade creation. Trade divergence occurs when one country, by entering into an FTA, switches from trading with a country outside the FTA to trading with a member country, even though the outside country has a comparative advantage over the member country (MMKM 1995).¹

More recently, other issues at least as important in analyzing FTAs have been brought to light. If scale economies are present, firms can capitalize on the internal advantages of a larger market

¹ When there exists substitution in consumption, a country in an FTA that redirects its international trade to a country with less efficient producers can increase its welfare, therefore trade diversion can be either welfare reducing or improving. Note that this is still a second-best solution to global free trade (MMKM, 1995).

with no trade barriers. When imperfect competition exists in some sectors, the formation of a FTA can force firms in those sectors to compete with possible imports leading to procompetitive gains (MMKM 1995). Krugman (1991) uses a monopolistic competition model with many countries; each having only one industry with identical production technologies, to show that world welfare is minimized if there are but three large trading blocks. Casella (1992) looks at customs unions in a public economics framework to show the importance of the links between markets and institutions. Jaquimin and Sapir (1991) argue that combined internal and external liberalization are needed to realize the potential gains in the EU. Brada and Mendez (1988) use a dynamic model to study the effects of regional integration on levels of investment and factor productivity growth.

The trade creation / trade divergence outlook as well as some of the other approaches taken can be useful in addressing which countries benefit and which lose from integration, but they cannot explain the initial existence of trade barriers. It seems clear that any complete analysis of economic integration must explain the existence of trade barriers before any FTA is formed.

There are many theories as to why trade barriers exist but most optimal policy theories such as infant industry protection or government revenue were refuted when Bhagwati (1972,1980) and others revealed that tariffs are typically dominated by other, first-best policies. Theories that explain the existence of trade barriers as ways to gain a terms of trade advantage are also questionable because they cannot explain why small economies would promote tariffs. This paper relies on a political economy model to explain the existence of protectionist policies prior to economic integration, and then uses it to examine the benefits and costs of integration.

Political economy models take into account the fact that distortions, like free riding by voters, in political markets can lead to welfare inferior policy outcomes. Agents in the political arena are

assumed to direct their efforts towards maximizing their own utility. Political economy models can be diverse in the way they are designed. The result is that the interests of the government do not always match those of the country as a whole (Frey, 1984). In this environment, trade policies are decided in a “political market” where interest groups devote resources in order to affect the decisions of the policy-makers and obtain the returns from the trade policies enacted. The amount and nature of protection depends on the exchange between interest groups and the government.

One framework for examining economic integration in a political economy context focuses on the role of institutions. Here producer constituents are represented by politicians who vote on legislation which allows bureaucrats to furnish the constituents with “favors” increasing the politicians chances for reelection (Krueger 1992). Still other work (Sapir 1989, Arndt and Willett 1991) asserts that the political outcome of an FTA depends largely on the member countries' ability to manage the transition, which can create turmoil, division and unemployment. Fratzscher (1996) looks at trading blocks in a Krugman-like setting where two sectors with differing marginal costs add the possibility of comparative advantage. He finds that trade integration implies a conflict of interest between the two sectors as well as between consumers and producers. Fratzscher admits that a shortcoming in his model is that there is only one factor of production.

All of the issues addressed in the works cited above are important. Nonetheless, a clear weakness in all of the political economy integration literature is the lack of an explicit model, which includes more than one factor of production. Our model abstracts from some of the above issues and focuses on the change in returns to capital and labor that come about when a country joins an FTA. Furthermore, we examine the returns to the two factors of production in an endogenous

policy framework. We show that in the existence of political markets can have effects which, when combined with changes in technology and production processes, may reverse the expected positions taken by factors on whether or not to join an FTA.

We utilize the $2 \times 2 \times 2 \times 2$ endogenous policy model of Magee, Brock and Young (MBY) 1989. In the MBY model politicians seeking reelection must balance two opposing forces; the voter's negative opinion of protectionist policies, and lobbying by special interest groups. Voters are not completely informed about the degree to which politicians support special interests. The applicability of the model is demonstrated by Anderson and Eliassen (1991) who estimate that there were nearly 10,000 lobbyists and 3,000 lobby organizations in the EU in 1990. Thus, it seems that the MBY model gives us an excellent framework in a two-factor setting for examining some of the issues faced by nations preparing to enter an FTA.

The rest of the paper is laid out as follows. Section two presents the MBY model modified by a technology parameter to allow us to include the technology gains a country can benefit from when joining a common market. Section 3 briefly summarizes how the parameters of the model affect the returns to each factor of production. In section 4, we discuss how the capital-labor ratio, the similarity of production technologies and a change in technology can affect each factors decision of whether or not to join. Section 5 contains some concluding remarks.

II. Model

In this paper, we examine the effects of joining an FTA on both factors of production in a potential member country. By using the MBY $2 \times 2 \times 2 \times 2$ model in a novel context. The MBY analysis showed that tariffs and subsidies may exist in an economy where all agents maximize their welfare. They solved for equilibrium levels of tariffs and subsidies as well as the levels of

contribution to politics and the probability of election by either party. MBY also used comparative statics to examine the effects of changes in their model parameters. They came up with a “political independence” result which says that all of the political variables in their model (the policies chosen by each party, the fraction of both factors devoted to lobbying and the probabilities of election for each party) are independent of world prices. This result continues to hold in our model. We use some of their comparative static results and extend their model to look at economic integration. In the context of a nation deciding whether to become a part of an FTA, the size of the effects on the entering country may be extreme. In a political economy model, the consequences on the political players of entering an FTA may completely reverse the type and amount of protection those players promote. In addition, the potential technology gains of the FTA play a significant role.

For expositional simplicity, we look only at the case of a common market. A common market allows free movement of products and production factors internally, and has common regulation for both products and production factors externally. We build on the Cobb-Douglas version of the MBY model, which has two goods, two factors, two lobbies, and two political parties. This model assumes that production functions exhibit constant returns to scale and there are no factor intensity reversals. The country is small, and faces a world price ratio, P . Good one is the numeraire and is capital intensive.

We find that there are two major variables from the MBY model that affect the returns to each factor. First, we show that the capital-labor ratios before and after the potential integration are vital in determining which factors will be in favor of joining the common market. Second, the production parameters (i.e. the ratio of factor intensities in production) play an equally important role in the decision to join the FTA. In addition, we include a technology parameter, which may

be the most important consideration in determining which factors will be in favor of the unification.

Following from the Stolper-Samuelson theorem any increase in the domestic price ratio, $Q=Q_2/Q_1$, will help labor, the factor used relatively intensively in production of good two, and hurt capital. Each political party chooses a policy (an export subsidy or import tariff which effectively sets Q) to maximize its chance of being elected. Each lobby chooses the amount of its contribution to a political party given that party's policy to maximize the expected utility of a representative agent of that lobby's factor. The voters choose an amount of their resource to contribute to the lobby to maximize their utility given the lobby's contribution and the party's policy. The parties act as Stackleberg leaders to their lobby and the lobbies as Stackleberg leaders to their voters. This means that the political parties know the reactions to any policy decisions of both the lobbies and the voters, therefore, the parties internalize the optimal behavior of both groups before setting their trade policies. The lobbies behave similarly with respect to the voters. All other games are Nash; that is, each agent takes the actions of the other agents as fixed.

Given Cobb-Douglas production functions of the form $X_1 = JAK^a L^{1-a}$ and $X_2 = HBK^b L^{1-b}$ where $J = a^a (1-a)^{1-a}$, $H = b^b (1-b)^{1-b}$, and A and B are technology parameters, the unit cost functions can also be written in Cobb-Douglas form:

$$C_1(R, W, A) = A^{-1} R^a W^{1-a} \quad C_2(R, W, B) = B^{-1} R^b W^{1-b} \quad (1)$$

The zero-profit conditions give $Q = A^{-1} R^a W^{1-a}$ and $1 = B^{-1} R^b W^{1-b}$. If we let the technology parameter for good two be unity then the equilibrium factor prices are

$$R = Q^{-M} A^f \quad W = Q^N A^g \quad (2)$$

where $M = \frac{1-a}{a-b}$, $N = \frac{a}{a-b}$, $f = \frac{1-b}{a-b}$, and $g = \frac{-b}{a-b}$. The factor prices are identical to the factor prices in the MBY model with the exception of the technology term. Each factor's income can be represented by the amount of capital or labor left after a contribution times the return to that factor.²

$$\text{Thus } I_R = (K_0 - K)Q^{-M}A^f \text{ and } I_W = (L_0 - L)Q^N A^g \quad (3)$$

where K_0 and L_0 are the initial endowments of capital and labor for the representative owners, and K and L are their respective contributions to politics. The contributions of each factor to politics result in a welfare loss for that factor. If neither labor nor capital lobbied, both would typically be better off. Nonetheless, if one factor lobbies while the other does not, the lobbying factor will certainly gain at the other's expense. Therefore, we are faced with the common Prisoner's Dilemma result.

Given appropriate Cobb-Douglas utility functions the indirect utility functions take the form

$$V_R = (K_0 - K)Q^{-M}A^f Q^{-g}, \quad V_W = (L_0 - L)Q^N A^g Q^{-d} \quad (4)$$

where $0 \leq \gamma, \delta \leq 1$ and Q^g acts as an index of the capital owners cost of living. Again, these are identical to the indirect utilities in the MBY model except for the technology parameter. Let

$$Q^{-m} = Q^{-M} Q^{-g} \text{ and } Q^n = Q^N Q^{-d}. \text{ Thus } m = \frac{(1-a)}{(a-b)} + g \text{ and } n = \frac{a}{(a-b)} - d \quad (5)$$

are the elasticities of the real returns to capital and labor with respect to the domestic commodity price Q .

As in MBY, the representative capital owner solves

$$\max_K \mathbf{p}V_R(P/S, (K_0 - K)R(P/S), A^f) + (1-\mathbf{p})V_R(PT, (K_0 - K)R(PT), A^f) \quad (6a)$$

² Without loss of generality, we pick P to be less than unity.

where S and T are the levels of subsidy and tariff proposed by the pro-capital and pro-labor party respectively. The representative labor owner solves a similar problem

$$\max_L \mathbf{p}V_w(P/S, (K_0 - K)W(P/S), A^s) + (1 - \mathbf{p})V_w(PT, (K_0 - K)W(PT), A^s) \quad (6b)$$

which give the solutions $K^*(L, S, T, A)$ and $L^*(K, S, T, A)$. Note that this is a long run model.

We are assuming that political markets adjust more quickly than economic markets, "so that the economy stays at the long run 'expected value' of the relative goods prices. If one thinks of the probability of success of the protectionist party in the broader context of all bureaucratic decisions, court decisions, and legislative decisions on protection, then [this] approach is reasonable."³

The political parties wish to maximize their probabilities of election, act as Stackleberg leaders to their lobbies, and adopt Nash behavior toward the other players. Thus, the pro-capital party

$$\text{solves } \max_S \mathbf{p}(K^*(L, S, T, A), L, S, T, A)$$

$$(7a) \quad \text{and the pro-labor party solves } \min_T \mathbf{p}(L^*(K, S, T, A), K, S, T, A).$$

$$(7b) \quad \text{The optimal policies of each party therefore are given by } S^*(L, T, A) \text{ and } T^*(K, S, A).$$

The action of each player in the political game depends on the action of two or three of the other players, as expressed by the reaction functions $K^*(L, S, T)$, $L^*(K, S, T)$, $S^*(L, T)$ and $T^*(K, S)$. An equilibrium of the game is a set of mutually consistent actions (K_e, L_e, S_e, T_e) satisfying

$$\begin{aligned} K_e &= K^*(L_e, S_e, T_e), & L_e &= L^*(K_e, S_e, T_e), \\ S_e &= S^*(L_e, T_e), & T_e &= T^*(K_e, S_e). \end{aligned} \quad (4)$$

³ Magee, Brock and Young, 1989, pg. 129.

⁴ Magee, Brock and Young, 1989, pg. 332. The only difference in our model being that each is a function of the technology parameter, A , as well.

If, as in the Cobb-Douglas version of the MBY model, we assume a logit election function with the elasticities of electoral odds assumed to be unity, then \mathbf{p} , the probability of election for the

$$\text{capital party is equal to } \frac{KT}{KT + LS} \text{ and } 1 - \mathbf{p} = \frac{LS}{KT + LS}. \quad (8)$$

Thus, in our model the capital lobby solves

$$\max_K . e(K) = (K_0 - K) \frac{KT(P/S)^{-m} + LS(PT)^{-m}}{KT + LS} A^f \quad (9a)$$

$$\text{and the labor lobby solves } \max_L . h(L) = (L_0 - L) \frac{KT(P/S)^n + LS(PT)^n}{KT + LS} A^g. \quad (9b)$$

Again, the difference between our model and the MBY model are the technology parameters, A^f and A^g .

Note that we have implicitly assumed that there is no free-rider problem plaguing the lobbies and therefore the lobbies are essentially solving the same maximization problem as their representative voters. The first term in their maximization problem is the quantity of capital or labor left after contributions K and L ; the second term is the probability of election for each party times the price ratio that will exist if that party is elected. The lobbies exist to disseminate information from the parties to the voters and vice versa. They are an important theoretical component, but the solution to this model (without any free-rider problems) would be identical if we only maximized voter and party welfare.

The optimal policy for the capital lobby ends up being

$$K(L, S, T) = (LS/T)[\{(1 - (ST)^{-m})(1 + K_0T/LS)\}^{1/2} - 1] \quad (10)$$

or zero, whichever is greater. The technology terms drop out when we solve for optimal levels of S , T , K , and L , and we are left with

$$K_e = \frac{K_0 a}{c} \quad L_e = \frac{L_0 b}{d} \quad S_e = \left[\frac{K_0 (S_e T_e) d}{L_0 b c} \right]^{.5} \quad T_e = \left[\frac{L_0 (S_e T_e) c}{K_0 a d} \right]^{.5} \quad (11) \quad \text{where}$$

$$\begin{aligned} a(m, n) &= -1 + (1 - (S_e T_e)^{-m}) [1 - (1 + m)(S_e T_e)^{-m}]^{.5} \\ b(m, n) &= -1 + (1 - (S_e T_e)^{-n}) [1 - (1 + n)(S_e T_e)^{-n}]^{.5} \\ c(m, n) &= \frac{m}{(S_e T_e)^m - m - 1} \quad \text{and} \quad d(m, n) = \frac{n}{(S_e T_e)^n - n - 1} \end{aligned} \quad (12)$$

These solutions are identical to MBY.⁵

The parameters of the model are $K_0, L_0, \alpha, \beta, A$ and P . We can use $e(K)$ and $h(L)$ to measure changes of the representative capital and labor owners welfare due to changes in the parameters.

In equilibrium, we can rewrite (9a) and (9b) as

$$e(K) = (K_0 - K_e) \frac{K_e T_e (Q)^{-m} + L_e S_e (Q)^{-m}}{K_e T_e + L_e S_e} A^f \quad (13a)$$

$$h(L) = (L_0 - L_e) \frac{K_e T_e (Q)^n + L_e S_e (Q)^n}{K_e T_e + L_e S_e} A^g \quad (13b)$$

It is clear from (13a) and (13b) that the Stolper-Samuelson theorem holds because any rise in Q , the relative price of the labor-intensive good, is beneficial to labor and harms capital. From (11)

it can be seen that a rise in the capital-labor ratio, $\frac{K_0}{L_0}$ will have equal but opposite effects on the

tariff and subsidy. Thus, the sum of protection in the economy does not change, but the amount of the distortion (i.e. the difference between P and Q) is affected.

III. Analysis

There are three major conclusions of the MBY model on which this paper draws. First, any change in the capital-labor ratio has equal, but opposite effects on the tariff and subsidy. Second,

⁵ See Magee, Brock and Young, 1989, pg. 345 for a formal derivation of the equilibrium levels of distortions and contributions.

an equal increase in m and n , the elasticities of real returns with respect to commodity price Q , will decrease the level of distortion proposed by each party, yet increase the amount of resources donated by labor and capital to those parties. Third, if one factor is more sensitive to price changes (e.g. $m > n$) then it will devote more resources to politics than the other factor, and its party will opt for a more extreme policy. We explore the consequences of these results on the welfare of each factor, along with the change in welfare due to an increase in technology in one sector.

A change in the capital-labor ratio will affect both S_e and T_e . It follows directly from (11) that S_e rises and T_e falls with the square root of the capital-labor ratio. What is more interesting is that in this model the probabilities of election do not change with the capital-labor ratio, and although the amount of contribution by capital and labor, K_e and L_e change, the proportion of resources devoted to politics, $K_0 - K_e$ and $L_0 - L_e$ do not. The intuition can be made clear by an example where we have an increase in the capital endowment. Here, a victory by the capital party is now more advantageous to capital because the subsidy is higher, but a loss is less damaging because the tariff is lower. In the Cobb-Douglas model, these two effects nullify each other and there is no change in the probabilities of election. Thus, the net effect of an increase in the capital-labor ratio is that Q falls, capital is better off and labor is worse off than before.

If we see a change in the production function parameters so that the factor intensities in the two industries draw closer together so that $(\alpha - \beta)$ shrinks, then m and n will both increase. For expositional purposes we assume $m = n$.⁶ The increase in the price elasticities of real returns can have an effect on utility in three ways. First, there is a direct effect on Q^{-m} and Q^n , the increase

⁶ This will always happen if we assume that the production functions are symmetric and that $\delta = \gamma = .5$.

in m and n will help capital and hurt labor. Essentially, the elasticities of real returns act to magnify any Stolper-Samuelson effects.

There will also be indirect effects on K_e , L_e , S_e and T_e , and on A^f and A^g . From (12) it follows that $\partial c / \partial m < 0$ and from (11) that $\partial K_e / \partial c < 0$ thus $\partial K_e / \partial m > 0$. Therefore, the increase in m will cause K_e to rise. The decrease in n has a similar effect on L_e . In a sense, each factor contributes more to try to increase their level of protection because they are now more price sensitive. These effects are certainly detrimental to their respective factors because they devote more resources to politics. It can also be shown that the increase in m and n causes each party to decrease the amount of distortion it proposes.⁷

The increase in $(\alpha - \beta)$ also causes f to decrease and g to increase, therefore A^f will fall and A^g will rise if the capital intensive good has superior technology (i.e. $A > 1$). Any increase in technology in sector one will cause more of good one to be produced in equilibrium. This means that capital, the factor used intensively in sector one, is more in demand so its return will go up, while the return to labor goes down. The exponents on the technology parameter, f and g accentuate this result.

It is possible that we will find one factor to be more price-sensitive. For example, if $m > n$ then following MBY, capital proposes more extreme policies and contributes more resources to politics. This follows directly from (10-12). Capital is more price sensitive so they devote more resources to manipulate this price. The combined effect is that the pro-capital party's electoral

⁷ For a formal proof, see Magee, Brock and Young, 1989, pg.350-1.

odds are diminished. The net result is that capital owners are worse off if their factor return is more sensitive to changes in price.

The last possible change in a model parameter is in technology. It is clear from (10) that any increase in A will increase indirect utility for capital and decrease indirect utility for labor if A is greater than unity. This occurs because production in sector one will increase with an increase in its production technology. Since the production of good one is relatively capital-intensive, the demand for capital will rise as sector two releases its factors of production at a lower capital-labor ratio than sector one requires. The subsequent increase in demand for capital and decrease in demand for labor cause the return to capital to rise and the return to labor to fall.

IV. Choosing a Common Market

The importance of using this model to look at the decision of a country to join a common market can be made clear by examining the following case. We review the potential effects of our exogenous variables on the return to each factor if the country joins a common market. We look at how these effects determine which, if any, factors will be in favor of joining the common market.

In this example, the potential member country is capital abundant relative to the rest of the world, but labor abundant relative to the rest of the common market in question. A good illustration of this would be if Poland were deciding whether to join the EU. We assume the country has similar technology to the common market in sector two but inferior technology in the capital-intensive sector. If the country joins the market then they would have access to all its technologies. The production parameter on capital in sector one for the common market is larger than that for the nation in question (i.e. $(\alpha-\beta)$ will grow if the decision is to join). We assume that the country

initially has net subsidy. We define a net subsidy to be when the ratio S_e/T_e is greater than one so that $Q = Q_2/Q_1 = (P_2/P_1)(S_e/T_e)$ is less than the world price ratio. We first examine the non-political effects of the model and then review how the existence of political forces alters the outcome.

In our model, rather than focusing only on the possible changes in each parameter, we want to compare the factor returns in a single country with those of the potential common market. For example, we would want to measure the returns to capital and labor in Poland, and then compare them to the factor returns in the EU after assuming Poland to be a part of the EU. The appropriate picture would examine the returns per capita to each factor in the initial situation, and then contrast that with the returns per capita to each factor for a much larger market with completely different prices (those existing in the EU). This approach ignores the possible advantages and disadvantages that come from the dynamics of joining a common market in order to focus on the returns to each factor. A good review of some of the dynamic effects can be found in Baldwin (1989) and Brada and Mendez (1988).

If we remove the political effects of the model, the only changes caused by the union occur because of the changes in the production functions and technology. The integration could then be treated as an influx of capital and labor. Consequently, according to the Rybczinski Theorem, the capital-labor ratios in the two industries would remain unchanged because there would be an increase in sector one output and a decrease in output for sector two. We would see no change in factor prices if it weren't for the change in commodity prices that are due to the political effects of the model. It must be emphasized that this classical result is only a small part of the analysis. It is the change in commodity prices from the political effects that makes the decision to join a

common market different for each factor than in a classical model. We discuss this at greater length shortly.

1. After the merger, the joining country will have increased technology in production of the capital-intensive good. It will see a change in its production function parameters and consequently a change in the elasticities of real factor returns (m and n). In this case the elasticities will both decrease because as α and β grow farther apart the elasticities of substitution shrink. Therefore, any small change in price will now cause less substitution between industries. This results in a smaller change in the factor demands due to the price change, and thus the factor returns are less price sensitive. If there exists a net subsidy before the integration then this effect, which is essentially a magnification of the Stolper Samuelson Theorem, will harm capital and help labor.
2. Possibly the most important distinction between analyzing the decision to join a common market and simply looking at comparative static effects in one country, is that the joining country will have access to the technology in the common market. If we assume $A > 1$, then the change in production parameters also has an effect on f and g , which in turn affects how technology influences the returns to capital and labor. In our example, since α and β become less alike, g grows and f gets smaller. This makes capital worse and labor better off than before.
3. Abstracting from other effects, the rise in technology itself in the capital sector improves capital's welfare and diminishes the utility of labor. This result, which is evident in equation (10), occurs because there will be an increase in the production of good one and a decrease in the production of good two. The demand for capital, which is used intensively in the

production of good one, will rise while the demand for labor decreases. This in turn causes the return to capital to rise and labor's return to fall.

Keep in mind that we have only reviewed the effects of integration caused by the change in the capital-labor ratio, in technology, and in the price elasticities of real returns assuming that there are no political forces at work. We now turn to the political effects of the model. The major difference between examining comparative static effects in one country, as is done in the MBY model, and reviewing the consequences of joining a common market is that here the change is very large. The factors of production, and the lobbies and parties that represent them, in a sense, lose their identity as they join the common market. The factors, lobbies and parties of the joining country will face the existing capital-labor ratio in the common market, and will become subject to the common market's political situation with the added change that the joining country makes by supplementing its own capital and labor.

4. In this endogenous policy model, the change in the capital-labor ratio alone makes capital better off than before because, as explained earlier, the average capital owner still donates the same proportion of capital to politics⁸, the party has the same long-run odds of success and Q has moved in their favor. In general equilibrium, the larger demand for redistribution to capital from the rise in the capital-labor ratio outweighs the diminishing returns effect of the neoclassical model. *In a sense, when there is an increase in the relative amount of capital, not only will labor have more capital with which to work, but also capital will have more capital with which to vote.*

⁸ The capital contribution will increase due to the change in the price elasticities of real returns as explained below. Here we are focusing only on any changes caused by the change in the capital-labor ratio.

5. Since both the tariff and subsidy fall by equal amounts, the commodity price does not change. However, each factor is affected by the commodity price indirectly because of the change in elasticities. The fall in value of the elasticities decreases capital's indirect utility through Q^{-m} , and has the opposite effect for labor.

6. If we assume $m = n$, the rise in $(\alpha-\beta)$ will cause both m and n to decrease equally, resulting in equal increases in the amount of protection proposed by each party. At the same time, the proportion of resources devoted by each party will decrease, which certainly raises the welfare of both factors.⁹

We summarize the effects on the changes in factor returns for our example in the chart below. If we assume that the effects of the price elasticities of real returns are small then capital owners in this country will be in favor of joining the common market. In contrast labor would be in favor of joining the union if the technology change were small and the difference in capital-labor ratios had little effect. In any case, a factor's decision will depend on the parameters of the model.

⁹ Note that although in our example we did not assume that m does not equal n for one country, this is a possibility. If m and n are equalized after the merger then each factor will be affected. Here, in order to separate from capital-labor ratio effects we assume that ratio to be one. If $m > n$, then initially capital proposes more extreme policies and contributes more resources to politics. When m and n are equalized, the relative decrease in m causes the ratio of subsidy to tariff and the ratio of capital resources to labor resources contributed to politics to fall. The commodity price falls so if we assume the country had an initial net subsidy then the country as a whole is better off. Labor must be better off in the common market because the proportion of resources each laborer devotes to politics remains the same and Q falls. The welfare effects on capital are ambiguous because capital contributes proportionately less to politics but the price change is not in their favor.

Change in exogenous variable	Subsequent change in endogenous variable	Direction of change in welfare for capital owners	Direction of change in welfare for labor owners
Increase in capital-labor ratio	(4) Q falls	+	-
Increase in $(\alpha-\beta)$	(5) Eqm. Subsidy falls Eqm. Tariff falls	No change	No change
	(6) Capital contribution falls	-	No change
	(6) Labor contribution falls	No change	-
	(1) S-S thm magnified	-	+
	(2) f falls and g rises	-	+
Increase in technology (A)	(3) A rises	+	-

We are now in an excellent position to compare the differences between the results of this model and one which does not consider the political market. Note that without any political effects, only the last three lines in the above chart would be relevant. If we saw no increase in technology in sector one or a small equal increase in technology in both sectors then without paying attention to political forces we would expect labor to be in favor of joining the common market and capital to be against the unification. It is essential that we keep in mind that players are maximizing their own welfare in both economic and political markets because, as can be seen from the example above, if we add in the political effects labor's decision and even more likely capital's decision may be reversed. It should also be noted that if the free-rider problem is not assumed away then any difference in the level of free-riding between the country in question and the common market could also affect each factors decision of whether or not to merge.

V. Comments and Conclusion

The decision of whether or not a given country will join a free trade area depends on many variables, not the least of which must be the prosperity of that country's constituents. Therefore,

the return to each factor of production plays an integral part in determining whether or not a nation will join a common market. We found that there are three major variables that affect the returns to each factor. First, we show that the capital-labor ratios before and after the potential merger are vital in determining which factors will be in favor of joining the common market. Second, the production parameters (i.e. the ratio of factor intensities) play an equally important role in the decision to join the FTA. Last, if there exists the potential for a large change in production technologies, this will also play a crucial role.

Perhaps most importantly, it has been shown that it is essential to recognize that both economic and political forces have effects on each factors decision of whether or not to join an FTA. We show that by taking into consideration the existence of political markets the expected position found in more classical models, taken by each factor on whether or not to join an FTA, may be reversed.

Our model deals strictly with the case of a common market where both trade in goods and factors of production are completely free within the free trade area. A study of the outcomes in a customs union where the flow input factors is restricted between member countries would be a difficult yet interesting extension. It would also be informative to view the common market as a large country so that it can influence the world price ratio. Also, there are far more practical restrictions on subsidies than on tariffs, so a good avenue for further investigation would be to restrict the subsidy in our model to be zero. Still, this model goes a long way in beginning to answer the question of which factors will be in favor of joining an FTA in a framework that explains the initial existence of trade barriers.

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