No. 2002-06-B

OFFICE OF ECONOMICS WORKING PAPER
U.S. INTERNATIONAL TRADE COMMISSION

The Rise and Fall of the Most-Favored-Nation Clause

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June 2002

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December 2001

Abstract

The United States and other industrialized countries were once strong proponents of generalized, unconditional Most-Favored-Nation (MFN) treatment as a fundamental GATT rule. Today that support is much diminished, and industrialized countries routinely adopt policies that circumvent MFN. This paper develops a model of multilateral trade negotiations to illustrate some of the trade-offs large countries face in adopting MFN and how these trade-offs may change over time. Two large countries (the North) negotiate a trade agreement with each other and with a continuum of smaller countries (the South). Under unconditional MFN, northern tariff reductions must be extended to all southern countries regardless of whether or not the southern countries agree to reciprocate. This raises the cost to the North of inducing southern countries to join the agreement. On the other hand, MFN treatment, by ensuring access to the northern market, induces factors of production in the South to move into the export sector. This increases the gains to trade and also reduces political opposition to trade liberalization in southern countries, thereby reducing the cost to the North of inducing them to join the agreement. Over time, as capital accumulates in the export sectors of the South, the cost of MFN to the North rises relative to the benefits. Thus, the very success of MFN in promoting comparative advantage may cause the North to switch from being a net beneficiary to a net loser from MFN over the course to time.

I. Introduction

While the Most-Favored-Nation (MFN) clause has a long history in international trade agreements,[1] it is perhaps best known as a founding principle of the General Agreement on Tariffs and Trade (GATT). It states that "...any advantage, favor, privilege or immunity granted by any contracting party to any product originating in or destined for any other country shall be accorded immediately and unconditionally to the like product originating in or destined for the territories of all other contracting parties." What is remarkable (and sometimes controversial) about this clause is that it is general and unconditional—once a country becomes a member of the agreement, it is entitled to MFN treatment from all other members, regardless of its behavior.

The signing of the GATT in 1947 arguably represents the high water mark for the MFN clause; both in terms of its intended scope and the level of support it enjoyed from participating countries. The United States was an especially strong proponent of the general and unconditional wording of GATT's MFN clause (Gardner, 1956). Prior to 1923, the US had used a conditional form of MFN. Under conditional MFN, if a country grants a preferential tariff rate to another country, then it must extend the same rate to its MFN partners only if they "pay" for it with reciprocal tariff cuts. Under the unconditional MFN in GATT, no such reciprocity is required.

Since 1947, MFN has been steadily weakened. The first blow came in 1958 with the inclusion of Article 24, permitting customs unions and free trade areas. This was followed by the US-Canada auto pact in 1965 and the Generalized System of Preferences

[1] See Caplin and Krishna (1988) for a summary of the history of MFN.

in 1971. However, these were relatively minor exceptions compared to the experience since the mid-1970s.

In the Tokyo Round (1973-79), industrialized countries began to complain of a "free rider" problem—smaller countries opting out of trade-barrier reductions, while continuing to benefit, through MFN, from the trade-barrier reductions of the large countries. The US Congress, in particular, mandated in the 1974 trade act that the US apply conditional MFN to the Tokyo Round (Jackson, 1998, p. 170). As a result, several codes were negotiated as "plurilateral" agreements, applying to only to GATT members that signed them (Winham, 1986, p. 355). The Uruguay Round (1986-1994) side-stepped the free-rider problem by abolishing the GATT *per se* and requiring all countries to join a new agreement, the WTO, containing the GATT, GATS, TRIPs and TRIMs. Moreover, these new agreements contained numerous exceptions to MFN, notably in financial services and information technology.

Further weakening of large-country support for MFN can be seen in various unilateral and regional initiatives since the 1980s. The 1980s and 1990s saw a dramatic expansion in the use of discriminatory trade instruments, most notably VERs, anti-dumping and countervailing duties, and US Section 301. Managed trade in textiles and agriculture openly violates MFN. Also, the number and scope of regional trade arrangements has exploded in the last decade (see, e.g., Bhagwati and Panagariya, 1996).

All of this raises the main question to be addressed in this paper: what could account for the strong large-country support for unconditional MFN in the early GATT years, and why has it apparently evaporated? To answer this question we develop a model of some of the costs and benefits to large countries of unconditional MFN

(UMFN), relative to conditional MFN (CMFN), and how those costs and benefits change over time.

We consider a model in which two large countries (the North) negotiate a trade agreement with each other and with a continuum of smaller countries (the South). Under UMFN, northern tariff reductions must be extended to all southern countries regardless of whether or not the southern countries agree to reciprocate. This requirement eliminates one of the main "sticks" the North has for inducing southern countries to lower their trade barriers. As a result the North must offer more "carrots," in form of transfers.[2] In short, UMFN raises the cost to the North of inducing southern countries to join the agreement.

The main benefit of UMFN has to do with its effect on factor allocation in the South. We show that UMFN induces southern factors to move into the export sector, which both increases the gains to trade and makes southern countries more inclined to liberalize trade. This result follows from two key assumptions about the South. First, we assume that factors (both capital and labor) are mobile across sectors in the long run but sector-specific in the short run. Second, southern countries are subject to random shocks, not observable by the North, affecting the level of political pressure exerted by import-competing producers. In equilibrium, southern countries with high levels of political pressure will end up refusing to liberalize. Under UMFN, such countries continue to enjoy access to the northern market, whereas under CMFN they would not. This certainty of access to the northern market under UMFN helps to offset the uncertainty that factor

[2] Transfers are used in this model as a simple way of capturing bilateral exchange of concessions that are not directly affected by MFN. Alternatively, we could suppose that each southern country has some country-specific product that it exports to the North. In this case, the North could use market access in this good to induce the southern countries to liberalize, instead of offering transfers. This main point is that unconditional MFN takes away one of the North's tools, namely market access on those goods that are both traded between northern countries and exported by the South.

owners have about domestic political pressure, and this in turn makes them more willing to enter the export sector.

Finally, we consider how these costs and benefits change over time. We assume that capital moves slowly, whereas labor can be reallocated at the beginning of each period (trade negotiations take place within the period, after the labor allocation is fixed). Further, we assume that there is very little capital in the export sectors of the South initially. With a scarcity of export capital, southern exports are small and thus the free rider problem is also small. More precisely, the fact that UMFN deprives the North of its ability to deny market access, as an inducement to southern liberalization, is of little consequence when southern exports are low to begin with. Thus, the benefits of UMFN will tend to outweigh the costs, when export capital is low. Over time, as capital accumulates in the export sectors of the South, the free-rider cost of UMFN to the North rises relative to the benefit. Thus, the very success of UMFN in promoting factors to move in the direction of comparative advantage may cause the North to switch from supporting UMFN to supporting CMFN (or no MFN) over the course to time.

Before moving to the model, we briefly discuss the relevant literature, a more thorough review of which can be found in Horn and Mavroidis (2001). Caplin and Krishna (1988) were the first to formally demonstrate the MFN externality in the context of bilateral bargaining. They showed that, because bilateral tariff reductions between any pair of countries tend to bestow a positive externality upon third countries through MFN, country pairs tend to negotiate smaller tariff reductions than would be efficient. Ludema (1991) showed that the MFN externality is internalized through multilateral bargaining

(i.e., all countries are involved the bargaining), so long as no country is required carry through on an agreement that fails to obtain unanimous support.

McCalman (1997) examines MFN in the context of a principal-agent model, in which one large country designs a mechanism for several small countries, the latter having private information about their valuations of free trade. He shows, among other things, that the large country is always worse off under MFN than with no MFN, because MFN limits the large country's ability to extract rents from the small countries. This cost of MFN is similar to one we explore in the present paper.

The benefit of MFN modeled in this paper has antecedents in the work of Choi (1995), Coates and Ludema (2001) and Krishna and Mitra (2000). Choi (1995) shows that by committing itself to MFN, an importing country encourages the firms of its trading partners to invest more in new technology, because the latter know their investments will not be expropriated by discriminatory tariffs *ex post*. Coates and Ludema (2001) show that a large country that commits to a policy of unilateral liberalization encourages its trading partners to liberalize by reducing the political strength of their import-competing lobbies. Krishna and Mitra (2000) show a similar result.

Finally, a series of papers by Bagwell and Staiger (1999a,b) demonstrate how the GATT principles of reciprocity and nondiscrimination work together to produce trade agreements with a number of remarkable properties. The point of departure for the present analysis, as well as for most of the papers mentioned above, is that UMFN requires nondiscrimination even when reciprocity is violated and may even encourage countries not reciprocate. The question then is why would countries accept this apparent

derogation of reciprocity, and in particular, why would large countries have pushed for it under the circumstances prevailing in 1947?

The remainder of the paper is organized as follows. Section II sets up and analyses a model of multilateral trade negotiations under UMFN and CMFN, taking as given the sectoral allocation of factors in the South. Section III endogenizes southern production and examines the allocation of labor under the two regimes. Section IV presents some numerical simulations, comparing northern welfare under the two regimes. This section also discusses the allocation of capital over time and the possibility of a reversal of support for UMFN in the North. Section V concludes.

II. The Model

We consider a world divided into two regions, North and South. The North consists of two countries, A and B, each with a population of $N > 0$. The South consists of a continuum of countries, with total population equal to 2.

A. Pattern of Trade

Each country is assumed to import a single, country-specific good. Northern country i imports good i from northern country j (i, j = A, B, $i \neq j$) and from half of the southern countries. The southern countries import their goods from the North only, and, to preserve symmetry, we assume half of the southern imports are supplied by A and half by B. An example of this trade pattern is seen in figure 1.

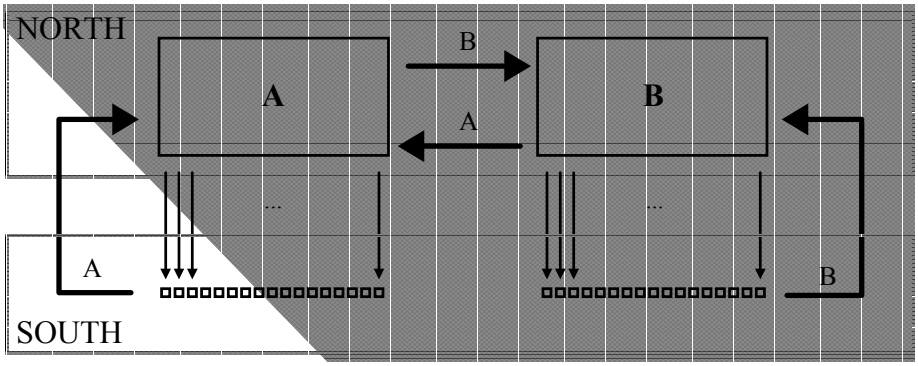

Figure 1: Pattern of Trade

The assumed pattern of trade has a number of features that are desirable for modeling the role of MFN in trade negotiations. First, MFN comes into play on northern imports. In particular, if countries A and B wish to make bilateral tariff reductions, they must extend those tariff reductions to the South under MFN. Second, as each country is the sole importer of a good, each country has some monopoly power in trade. Without a trade agreement, therefore, countries will adopt optimal tariffs that are inefficiently high. This provides the basis for a multilateral trade agreement. Third, while important in the aggregate, southern countries individually have a negligible effect on the welfare of other countries. This dramatically simplifies our model of negotiations, but it also promotes free riding on MFN. This is because any one southern country's decision free ride (i.e., refuse to liberalize) will not induce any other country to reevaluate the value of a multilateral tariff proposal, in contrast to the model of Ludema (1991).

Each country in the North has an import demand schedule of $M(P) = N(a - P)$, where $a > 0$ and P is the domestic price of imports. Northern countries also export to each other according to the export supply schedule $X(P^*) = NP^*$, where P^* is the domestic price of exports. These prices are related by, $P = P^* + \tau$, where τ is the

specific tariff that northern countries charge on imports from each other. Tariffs are assumed to be the same in each northern country.

Any southern country that receives MFN treatment from the North will be able to export to the North at price P^*. Any southern country that is denied MFN treatment faces a higher tariff from the North, τ^D, in which case it receives $P^* - (\tau^D - \tau)$ for its exports.[3]

To each southern country z, the North (either A or B) exports $Y(p^*(z))dz$ units of good z, where $Y(p^*) = Np^*$. Demand in southern country z is given by $D(p(z))dz$, where $D(p) = b - p$ and $b > 0$. Let $t(z)$ denote country z's specific tariff on imports from the North, and note that $p(z) = p^*(z) + t(z)$. For simplicity, we assume that southern consumers do not consume the other goods. Also, each southern country is endowed with ydz units of its importable good and xdz units of its exportable, where $0 < y < b$ and $0 < x < a$.

Equating supply and demand in each market produces equilibrium prices of

$$P^* = \frac{1}{2}\left(a - \tau - \frac{x}{N}\right) \tag{1}$$

for goods imported by the North and

$$p^*(z) = \frac{b - t(z) - y}{N + 1} \tag{2}$$

for goods imported by the South.

In addition to the goods described so far, we assume that each country is endowed with an ample supply of a freely traded, numeraire good, which enters linearly into the

[3]This assumes that A and B apply the same discriminatory tariff. Otherwise, a southern country could circumvent the discrimination by exporting to the northern country with the lower tariff.

utility function of every agent. We introduce this good merely to balance trade and serve as a medium for lump-sum transfers between countries.

B. Domestic Politics

Having specified the economy, we next consider the preferences of the governments. Each southern country receives an *i.i.d.* political shock θ, which is drawn of from a known probability density function $\phi(\theta)$. The political parameter measures the extra weight put on the income of import-competing producers in the government's objective function. This parameter may be thought of as emerging from an underlying political economy model, such as that of Grossman and Helpman (1994). In that case, θ would represent some combination of the government's taste for contributions and the degree of organization of the import-competing lobby.

The government objective function of a southern country of type θ is

$$w(\theta) = \frac{D(p)^2}{2} + py(1+\theta) + P^* x + t\left[D(p) - y\right], \tag{3}$$

in the case of MFN treatment. Without MFN treatment, it would be $w - x(\tau^D - \tau)$. For the North, we assume θ is equal to zero. Thus, the objective of a northern government is

$$W = \frac{1}{2N}\left[M(P)^2 + X(P^*)^2 + \int_0^\infty Y(p^*(\theta))^2 \phi(\theta) d\theta \right] + \tau M(P) + (\tau^D - \tau)x(1-\mu). \tag{4}$$

where μ is the fraction of the southern countries to which the North extends MFN treatment.[4]

[4]Expressions (3) and (4) assume that all type-θ countries behave and are treated the same way.

C. Multilateral Trade Negotiations

Trade negotiations are conducted in three steps: proposal, response, and implementation. First, the countries of the North meet to decide on a proposal. A proposal consists of three elements: a tariff on northern imports $\tilde{\tau}$; a tariff on southern imports $\tilde{t}$; and a lump-sum transfer from the North $\tilde{T}$, available to each southern country.[5] We assume that the proposal is chosen to maximize the total expected welfare of the North. Because of the symmetry of the model, this is equivalent to assuming that negotiations between A and B over their joint proposal is resolved by the Nash bargaining solution.

Second, the countries of the South respond by either accepting or rejecting. We assume that the countries respond simultaneously, although our results are robust to sequential response as well. The parameter θ differentiates the southern countries in their attitudes towards trade liberalization. In particular, countries with high θ are more likely to reject the North's proposal than are countries with low θ.[6]

Finally, any southern country that accepts the North's proposal implements $\tilde{t}$ on its imports, is subject to the MFN tariff $\tilde{\tau}$ on its exports, and receives the transfer $\tilde{T}$. Any southern country that rejects the North's proposal imposes its optimal tariff its imports but receives no transfer. The treatment of a rejecter's exports depends on whether MFN is conditional or unconditional. Under UMFN, the rejecting country

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[5]Equivalently, we could suppose that the North applies a tax/subsidy on its exports to the South.

[6]Note that the North offers a single, one-size-fits-all proposal, rather than full-blown mechanism (a menu of proposals conditional on reports of θ). This may be justified by assuming that it is costly to write, monitor and enforce a continuum of different trade agreements. Adopting a mechanism design approach (as in Feenstra and Lewis, 1991) would complicate the analysis rather severely but would not alter the basic results. The optimal mechanism would still involve countries with high θ failing to liberalize and receiving no transfers. The difference would be that the countries that do liberalize (those with intermediate and low θ) would each have a different tariff and transfer depending on their type.

would continue face $\tilde{\tau}$ on its exports. Under CMFN, the rejecting country would face whatever tariff the North chooses to impose. We assume the North imposes its optimal tariff in this case.

D. The Optimal Proposal: Unconditional MFN

To solve for the optimal proposal, we work backwards from the implementation stage. Under UMFN, the North extends $\tilde{\tau}$ to the southern rejecters, so the only issue for the implementation stage is finding the optimal tariffs that the southern rejecters impose on imports from the North. These can be found by differentiating (3) with respect to t, yielding an optimal tariff for a type-θ country of

$$\hat{t}(\theta) = \frac{b - y + \theta y(1+N)}{2+N}. \tag{5}$$

Next consider the response stage. For a country of type θ, the gain from rejecting a proposal is equal to $v(\theta,\tilde{t}) \equiv w(\theta,\hat{t}(\theta)) - w(\theta,\tilde{t})$ less the forgone transfer. Thus, a type-θ country would be willing to accept the proposal if and only if $\tilde{T} \geq v(\theta,\tilde{t})$. Using (3) and (5), we find

$$v(\theta,\tilde{t}) = \left[\frac{N(2+N)}{2(1+N)^2}\right]\left(\hat{t}(\theta) - \tilde{t}\right)^2. \tag{6}$$

which is an increasing function of θ, for all $\hat{t}(\theta) > \tilde{t}$. This implies three possible outcomes: (i) $\tilde{T} > v(\theta,\tilde{t})$ for all θ, in which case all countries accept the proposal; (ii) $\tilde{T} < v(\theta,\tilde{t})$ for all θ, in which case all countries reject the proposal; or (iii) there is a critical type $\tilde{\theta}$, defined by $\tilde{T} = v(\theta,\tilde{t})$, such that types $\theta < \tilde{\theta}$ accept and all types $\theta > \tilde{\theta}$ reject.

The North would never make a proposal that gives strictly positive surplus to all country types, as this would be dominated by one in which $\tilde{\theta} = \sup\theta$. So we can rule out (i). Moreover, the North would indifferent between an equilibrium of type (ii) and one in which $\tilde{\theta} = \inf\theta$. Thus, we can restrict attention to equilibria of type (iii) without loss of generality.

The optimal proposal can be found by maximizing the welfare of the North, net of expected transfers to the South, or $W(\tilde{\tau},\tilde{t},\tilde{\theta}) - \tilde{T}\Phi(\tilde{\theta})$, where $\Phi(\tilde{\theta})$ is the fraction of southern countries that accept the proposal. It is convenient to substitute $v(\tilde{\theta},\tilde{t})$ for the transfer. Thus, the optimal proposal is found by maximizing

$$W(\tilde{\tau},\tilde{t},\tilde{\theta}) - v(\tilde{\theta},\tilde{t})\Phi(\tilde{\theta}) \tag{7}$$

with respect to $\tilde{\tau}$, $\tilde{t}$, and $\tilde{\theta}$.

Differentiating (7) produces three first-order conditions:

$$W_{\tau}(\tilde{\tau},\tilde{t},\tilde{\theta}) = 0 \tag{8a}$$

$$\left\{w_t(\tilde{\theta}) - (N+1)^{-1}Y\left[p^*(\tilde{t})\right]\right\}\Phi(\tilde{\theta}) = 0 \tag{8b}$$

$$\frac{1}{2N}\left\{Y\left[p^*(\tilde{t})\right]^2 - Y\left[p^*(\hat{t}(\tilde{\theta}))\right]^2\right\}\phi(\tilde{\theta}) = v(\tilde{\theta},\tilde{t})\phi(\tilde{\theta}) + v_{\theta}(\tilde{\theta},\tilde{t})\Phi(\tilde{\theta}) \tag{8c}$$

Condition (8a) says that the tariff imposed by the North should maximize northern welfare only. The South's welfare does not enter into (8a), because a change in the northern tariff affects all southern countries equally, due to unconditional MFN, and thus has no effect on any southern country's response to the proposal. The tariff that satisfies (8a) turns out to be $\tilde{\tau} = x/N$.

Condition (8b) implies that the tariff imposed by the South should maximize the joint welfare of the North and the southern countries of type $\tilde{\theta}$. Any decrease in the

southern tariff increases the welfare of the North and reduces that welfare of the South for all $\theta \le \tilde{\theta}$. To hold $\tilde{\theta}$ constant, the transfer to all $\theta \le \tilde{\theta}$ must be increased by enough to compensate the type-$\tilde{\theta}$ country. In other words, the North internalizes the cost to the marginal country of reducing the southern tariff. The tariff that satisfies (8b) is $\tilde{t} = y\tilde{\theta}$.

Finally, condition (8c) equates the North's marginal benefit with the marginal cost of adding more countries to the agreement. The marginal benefit is the export surplus generated by the marginal countries switching from their optimal tariff $\hat{t}(\tilde{\theta})$ to the tariff proposed tariff $\tilde{t}$, as captured by the left-hand side of (8c). The marginal cost is equal to the transfers paid to the marginal countries, $v(\tilde{\theta},\tilde{t})\phi(\tilde{\theta})$, plus the increase in the transfer rate (necessary to induce the marginal countries to join) paid to all countries in the agreement, $v_\theta(\tilde{\theta},\tilde{t})\Phi(\tilde{\theta})$. Simplifying (8c) produces

$$\tilde{\theta} = \frac{b-y}{y} - 2(N+2)\frac{\Phi(\tilde{\theta})}{\phi(\tilde{\theta})}, \tag{9}$$

We assume that $\Phi(\tilde{\theta})/\phi(\tilde{\theta})$ is increasing, so as to guarantee that the second-order condition for (9) is satisfied. For the special case of a uniform distribution, $\theta \sim U[0,\overline{\theta}]$, there is a closed-form solution:

$$\Phi(\tilde{\theta}) = \frac{\tilde{\theta}}{\overline{\theta}} = \min\left(\lambda\frac{b-y}{y},1\right) \tag{10}$$

where $\lambda = \left[\overline{\theta}(5+2N)\right]^{1}$.

In any case, $\tilde{\theta}$ is a decreasing function of y. The reason is that an increase in y reduces the difference between the proposed tariff $\tilde{t} = y\tilde{\theta}$ and the optimal tariff $\hat{t}(\tilde{\theta})$, thereby reducing the marginal benefit (relative to the marginal cost) of adding countries to the agreement. This is an important point. In our model, the countries of the South

protect imports for two distinct reasons: monopoly power and domestic politics. These are reflected in the two components in the numerator of the optimal tariff equation (5). An increase in the South's endowment of y (its import-competing good) reduces the monopoly power component and increases the domestic politics component. Now from a global standpoint, there are potential Pareto gains from the removal (via a trade agreement) of the monopoly power component of protection but not the domestic politics component.[7] Thus, an increase in y takes away some of the potential Pareto gains from a trade agreement. As the monopoly supplier of trade agreements, the North responds to this by cutting supply.

E. The Optimal Proposal: Conditional MFN

Under conditional MFN, North chooses its optimal discriminatory tariff on imports from the rejecting countries in the South. As the southern countries supply their exports inelastically, it is optimal for the North to impose a tariff that is marginally prohibitive and thereby extract the entire producer surplus from the South, or $\hat{\tau}^D = P + \tilde{\tau}$.

Thus, a type-θ country would be willing to accept the proposal if and only if $\tilde{T} \geq v(\theta, \tilde{t}) - xP(\tilde{\tau})$. In other words, the transfer necessary to induce a country to accept the agreement is reduced, relative to the case of UMFN, by the value of the export revenue the southern country would lose by rejecting and facing the North's optimal tariff. The welfare of the North, net of expected transfers to the South, becomes $W(\tilde{\tau}, \tilde{t}, \tilde{\theta}) - \tilde{T}\Phi(\tilde{\theta}) + xP(\tilde{\tau})(1 - \Phi(\tilde{\theta}))$. Substituting in for the expected transfer gives

$$W(\tilde{\tau}, \tilde{t}, \tilde{\theta}) - v(\tilde{\theta}, \tilde{t})\Phi(\tilde{\theta}) + xP(\tilde{\tau}) \qquad (11)$$

[7] Bagwell and Staiger (1999) have made this point.

Comparing (11) with (7), we see that the main difference between UMFN and CMFN is that under CMFN the North internalizes the export revenue of the South. For countries that actually reject the North's offer, the North actually extracts the export revenue through its discriminatory tariff. For those countries that accept the offer, the North extracts the export revenue by making a smaller transfer (than under UMFN).

These observations lead to three important conclusions. First, maximizing (11) with respect to $\tilde{\tau}$ is equivalent to maximizing world welfare. Thus, $\tilde{\tau} = 0$ and members of the agreement have free access to the northern market. Second, maximizing (11) with respect to $\tilde{t}$ and $\tilde{\theta}$ produces the exact same results as under UMFN. In other words, the set of countries that join the agreement and the tariff they impose are the same under the two regimes. Finally, the North prefers conditional to unconditional MFN.

III. MFN and Factor Allocation in the South

In this section, we add a production structure to our model, so as to examine the effect of different regimes on the allocation of factors between sectors in the South. Suppose the southern countries are endowed with two factors of production, capital and labor, which may be allocated between the export and import-competing sectors. For now, we take the allocation of capital to be exogenous. The labor allocation is endogenous, but we assume that laborers must decide where to work *before* the start of negotiations and without knowledge of (or prior to the realization of) the θ's. Once the labor allocation is set, negotiations proceed as described in the previous section. Thus, short-run trade policy decisions are made with both factors sector specific.[8]

[8] This conforms to the empirical evidence of Magee (1980).

Let $x = f(k_x, \ell_x)$ and $y = g(k_y, \ell_y)$, where f and g are strictly concave and homogeneous of degree 1. Let the endowment of each factor be normalized to 1, and let k and ℓ be the shares of capital and labor, respectively, devoted the production of the export good. The equilibrium allocation of labor must satisfy,

$$\pi_x f_\ell = \pi_y g_\ell \tag{12}$$

where π_x and π_y are the expected prices of the export and import-competing goods, respectively, and f_ℓ and g_ℓ are the marginal products of labor.

The expected price in the import-competing sector is the price of southern imports evaluated at $\tilde{t}$, for $\theta < \tilde{\theta}$, and evaluated at $\hat{t}(\theta)$, for $\theta > \tilde{\theta}$, or

$$\pi_y = \left[p(\tilde{t})\Phi(\tilde{\theta}) + \int_{\tilde{\theta}}^{\infty} p(\hat{t}(\theta))\phi(\theta)d\theta \right] \tag{13}$$

Substituting the equilibrium values of $\tilde{t}$, $\hat{t}(\theta)$ and $\tilde{\theta}$ into (13) reveals that π_y is a function of y alone. The sign of $d\pi_y / dy$ is ambiguous; however, if $g_{\ell\ell}$ is sufficiently negative, then $\pi_y g_\ell$ will slope downwards.

The expected price in the export sector depends on the regime. Under UMFN, exporters receive the northern price with certainty, or

$$\begin{aligned} \pi_x^u &= P^*(x/N) \\ &= \frac{a}{2} - \frac{x}{N} \end{aligned} \tag{14}$$

Under CMFN, exporters receive the free trade price, if $\theta < \tilde{\theta}$, and zero, if $\theta > \tilde{\theta}$. Thus

$$\begin{aligned} \pi_x^c &= P^*(0)\Phi(\tilde{\theta}) \\ &= \left(a - \frac{x}{N}\right)\frac{\Phi(\tilde{\theta})}{2} \end{aligned} \tag{15}$$

Comparing (14) and (15) we see that $\pi_x^u > \pi_x^c$ if and only if $x\left(\frac{2-\Phi}{1-\Phi}\right) < aN$ and that $\pi_x^u - \pi_x^c$ is decreasing in both $\Phi(\tilde{\theta})$ and x. Thus, if either $\Phi(\tilde{\theta})$ or x is low (high) enough, UMFN will lead to a higher (lower) expected price in the export sector than will CMFN. The reasons are straightforward. A higher $\Phi(\tilde{\theta})$ means that a southern exporter has less chance of being the victim of discrimination under CMFN. A higher x means that, under UMFN, the North internalizes less of the world supply of its import good and hence chooses a higher northern tariff.

Another important fact is that $\Phi(\tilde{\theta})$ and x are positively related to each other, because both are negatively related to y (the former from equation (9) and the latter from of resource constraints). This means that for a low x, UMFN offers a greater incentive for factors to move into the export sector than does CMFN. The opposite may be true for sufficiently high x.

Figures 2 and 3 show the equilibrium allocations of labor for the two possible cases that can arise. As discussed above, the schedule $\pi_x^u f_\ell$ is steeper than $\pi_x^c f_\ell$, but their intersection (if one exists) can be either above or below $\pi_y g_\ell$. In the former case, the equilibrium share of labor in the export sector under UMFN is greater than under CMFN, or $\ell^u > \ell^c$, as illustrated in figure 2. This will generally occur when the level of k is low, as low k implies low x for all ℓ and thus $\pi_x^u f_\ell > \pi_x^c f_\ell$. The alternative case is illustrated in figure 3. This case will tend to occur when the level of k is high. The next section explores these relationships in detail, using a specific parameterization of the model.

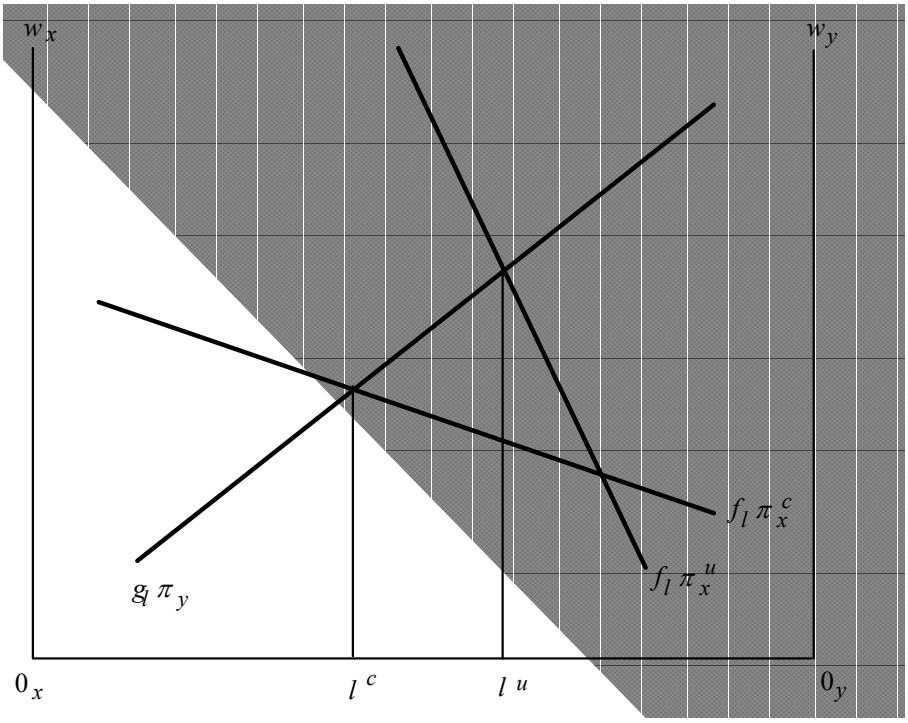

Figure 2. Output of the export good is higher under UMFN (low *k*).

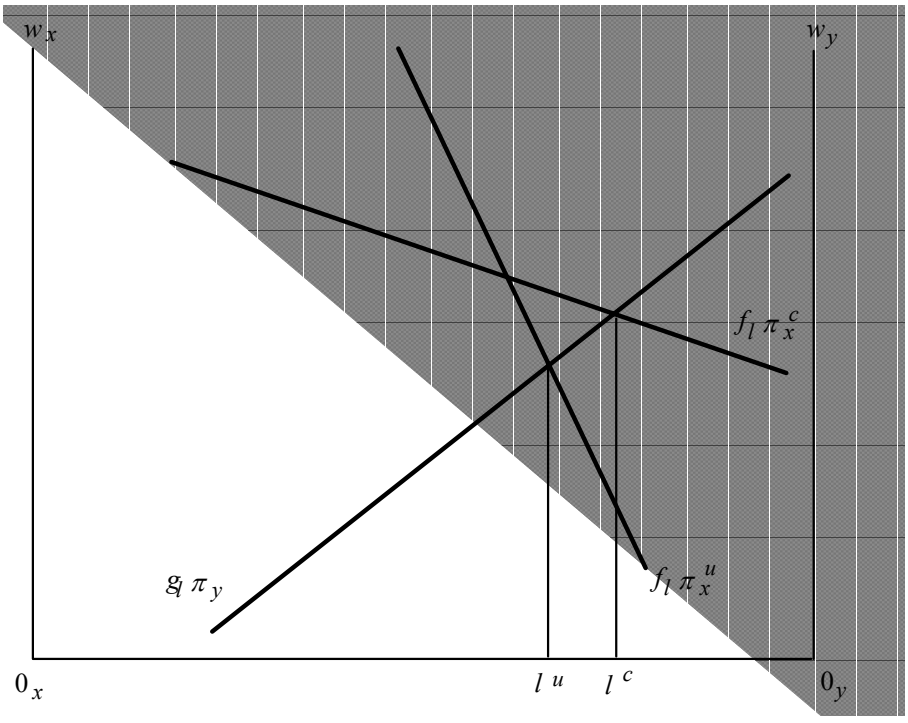

Figure 3. Output of the export good is higher under CMFN (high *k*).

IV. Welfare Comparisons of the Two Regimes

Northern welfare under each regime, defined in equations (7) and (11), depends on the assumed functional form of production and some key parameters. In order to find the equilibrium allocation of labor for different levels of capital, we assume identical Cobb-Douglas Production functions:

$$x = f(k_x, \ell_x) = k_x^{\alpha} l_x^{1-\alpha} \tag{16}$$

$$y = g(k_y, \ell_y) = k_y^{\alpha} l_y^{1-\alpha} \tag{17}$$

Using the marginal products of labor derived from equations (16) and (17) and replacing the expected price in the export sector π_x by first π_x^u and then π_x^c in equation (12) gives us two sets of equations, each depending on five key parameters: *a*, *b*, α, $\bar{\theta}$ and *N*. These two sets of equations are simulated for different values of the key parameters. This gives the equilibrium allocation of labor for each level of capital under UMFN and CMFN. These results are then used to calculate northern welfare under both regimes.

Throughout the analysis we assume values of 5 for both *a* and *b* and a value of 0.35 for α, the capital share of factor income.[9] Figures 4 through 6 show the values of welfare, the return on capital in both sectors and the allocation of labor to the export sector in the South at any given level of the capital stock under UMFN and CMFN using different assumptions about *N* and $\bar{\theta}$.

[9] Madison (1987) finds that capital share of income is about 30 percent. Englander and Gurney (1994) find that for the business sector of OECD economies, capital share varies between 0.3 and 0.4. Based on this evidence, Collins and Bosworth (1996) suggest using a uniform capital share of 0.35. However, they note that for developing economies, capital's share of income is higher.

Figure 4 shows the case of N=2 and $\bar{\theta}$ =2. In this case, at low levels of capital in the export sector the North prefers UMFN. However, once the capital stock in the export sector rises beyond some threshold level CMFN will be preferred. This special case provides us with a useful benchmark to explain the workings of our model.

The starting point is to find the equilibrium allocation of labor for each (exogenous) allocation of capital in the South, under both regimes. In the first panel of Figure 4, labor in the export sector is higher under UMFN than under CMFN for all levels of the capital stock shown. The gap between the two reaches its maximum at about k = 0.6. The reason the labor share of the export sector tends to higher under UMFN is because the expected price of exports is higher, due the certainty of access to the northern market that UMFN provides. The gap begins to shrink for high enough k, because as k and ℓ increase, output of the import-competing good y falls, increasing the share of countries that join the agreement. The more likely is membership in the agreement, the less valuable is the certainty of access provided by UMFN, and hence the lower is the gap in expected price between the two regimes.

The second panel of figure 4 shows the return on capital in both of sectors under both regimes, using the labor allocation determined in the first panel. The return on capital in the export sector is higher under UMFN than under CMFN, because of the higher expected price and the greater labor share under UMFN. Moreover, in this example, the return on capital in the import-competing sector is always higher than in the export sector under CMFN, whereas the reverse is true under UMFN. Over time, therefore, we would expect capital to flow into the export sector under UMFN, whereas under CMFN, capital would flow into the import-competing sector.

Finally, the third panel of figure 4 shows the welfare of North under both UMFN and CMFN with respect to the capital stock invested in the export sector in the South. When the level of capital invested in the export sector by southern countries is low, the welfare of the North is higher under UMFN than under CMFN, whereas for high enough *k*, CMFN is preferred. To understand this, recall that the cost of UMFN to the North is the southern producer surplus of the *x*-sector that the North extracts under CMFN. This works out to be the difference between the world welfare under free trade, and northern welfare under its optimal tariff,

$$\max_{\tau}\left(W + xP^{*}\right) - \max_{\tau} W \tag{18}$$

which is generally an increasing function of *x*. For this reason, the cost of UMFN rises as the capital stock in the *x* sector increases. The benefit of UMFN comes from the improvement labor in allocation that UMFN induces. As the labor effect of UMFN diminishes with high enough *k*, so does the benefit of UMFN to the North.

Taken together, the conclusions of figure 4 provide a possible explanation for the rise and fall of UMFN. Assume that, initially, the level of export capital in South is low. Both North and South now prefer UMFN. If UMFN is adopted, then the return to capital in the export sector exceeds that in the importing-competing sector, and southern investors move their capital into the export sector over time. As capital accumulates in the export sectors of the South, the cost of UMFN to the North rises relative to its benefits, and eventually, the North will want to switch to CMFN.

Figures 5 and 6 show how the results change for different levels of $\overline{\theta}$ and *N*, respectively. An increase in $\overline{\theta}$ increases political diversity among southern countries, as well as increasing the average value of θ. The main effect is to decrease the probability

that a southern country joins the agreement, because it reduces the marginal benefit to the North of adding more countries to the agreement, as discussed in Section II.D. With a lower probability of agreement, the factor allocation effect of UMFN, relative to CMFN, becomes more pronounced. However, with the increase in the average protection, the expected surplus of the import-competing sector is higher. As can be seen from the second panel of Figure 5, this produces an expected return to capital in the import-competing sector that is higher than that of the export sector, regardless of regime. Thus, we would expect the export sector in South to remain small over time, and North will always prefer UMFN to CMFN.

Finally figure 6 shows the effect of the increase in the population of the North. As the relative size of the North grows, the cost of UMFN, as measured by (18), diminishes. This increases the threshold level of capital investment in export sector at which the North switches to CMFN. Otherwise, the results are qualitatively the same as in figure 4. That an increase in the relative size of the North increases the North's preference for UMFN echoes Coates and Ludema (2001), which showed a similar relationship between relative size and unilateral liberalization.

V. Conclusions

This paper has presented an economic argument for why the large countries, like the United States, may have first insisted on the unconditional MFN clause in GATT 1947 only to nullify it by Century's end. The argument emerges from a model of the costs and benefits to UMFN, most of which can be found elsewhere in the literature. The main contribution of this paper is to model how they interact and change over time.

VI. References

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Figure 4: $a = b = 5$, $\alpha = 0.35$, $N = 2$, $\bar{\theta} = 2$

Figure 4A. Labor Share in Exports

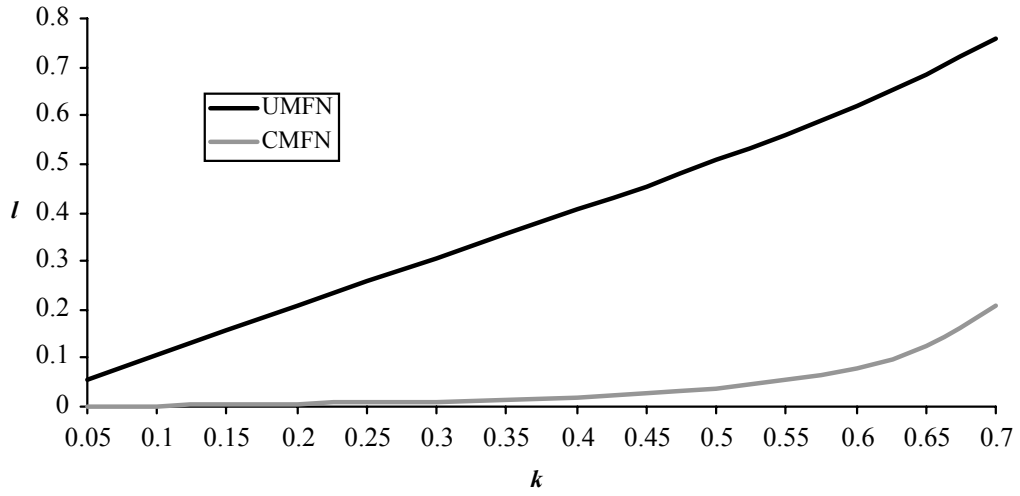

Figure 4B. Return on Capital

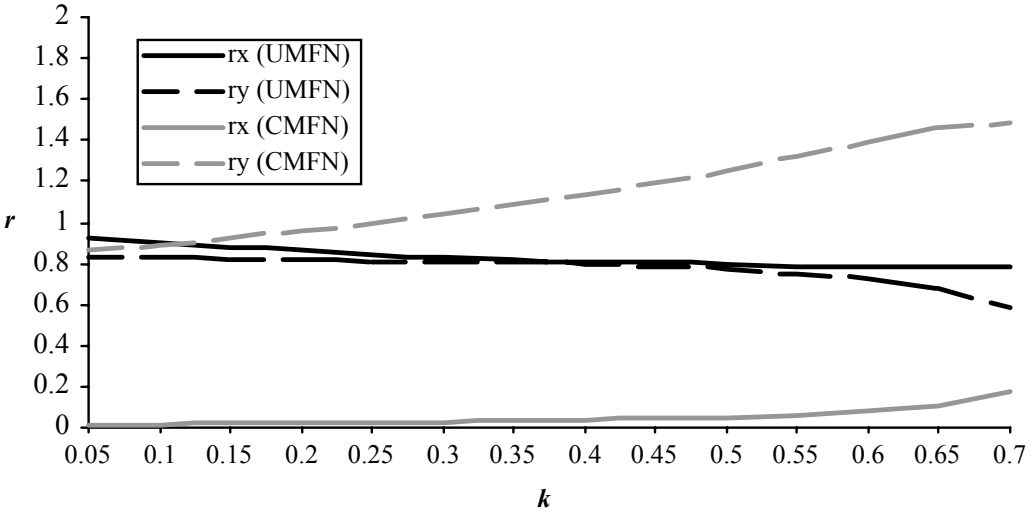

Figure 4C. Welfare of the North

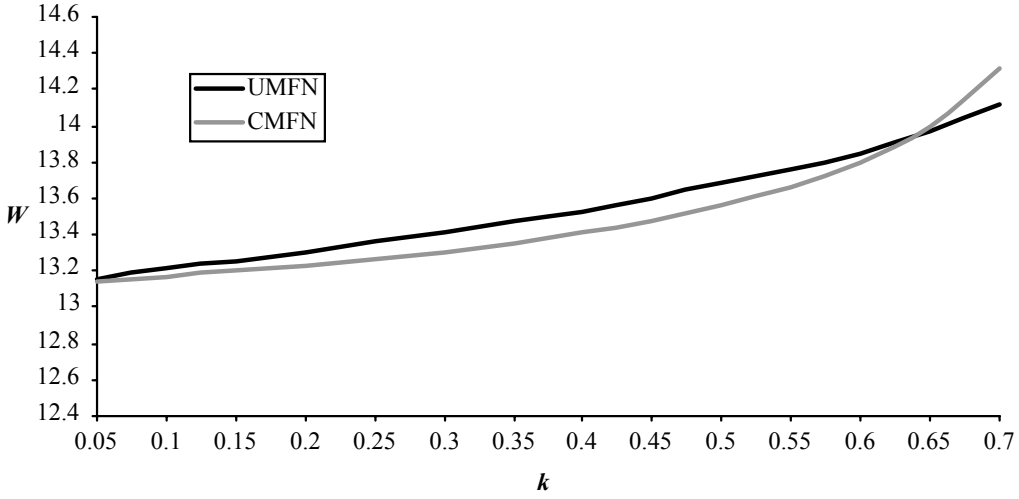

Figure 5: $a = b = 5$, $\alpha = 0.35$, $N = 2$, $\bar{\theta} = 3$

Figure 5A. Labor Share in Exports

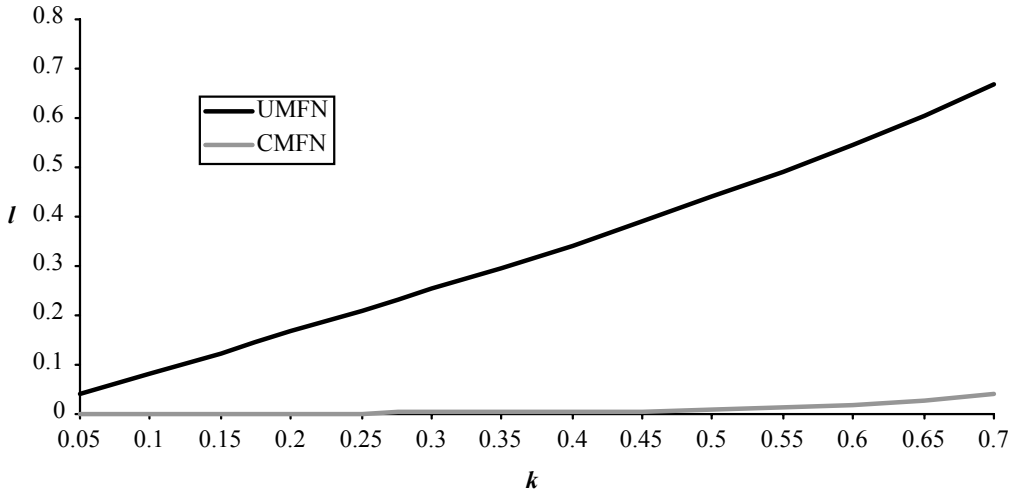

Figure 5B. Return on Capital

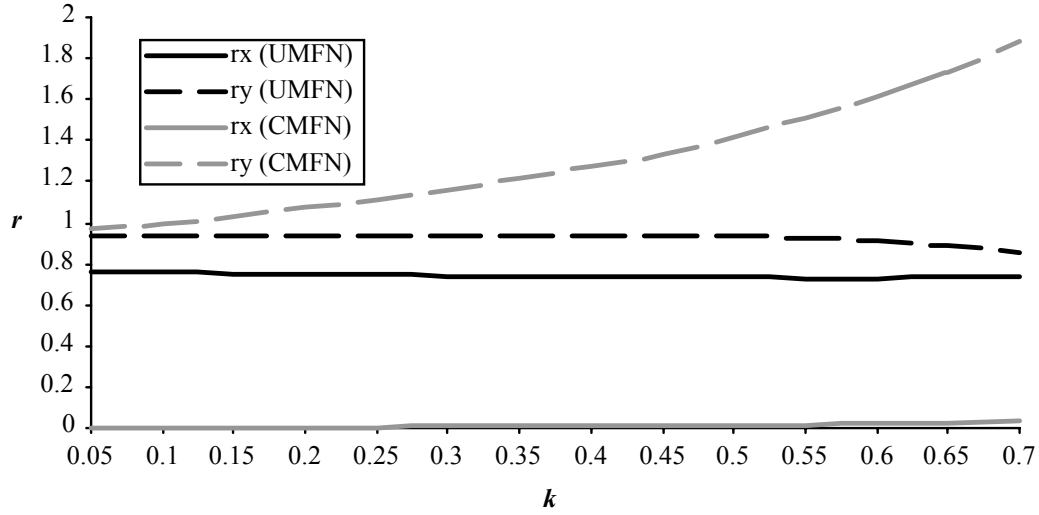

Figure 5C. Welfare of North

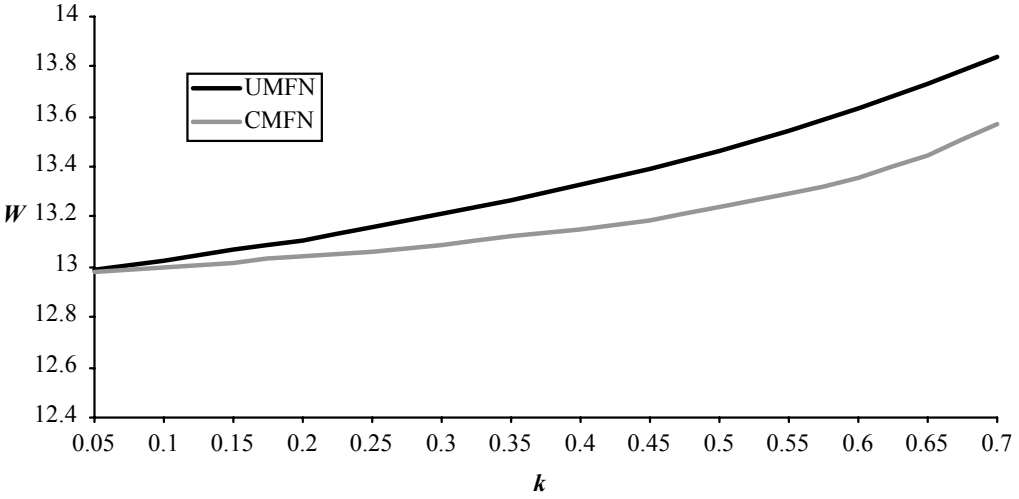

Figure 6: $a = b = 5$, $\alpha = 0.35$, $N = 3$, $\bar{\theta} = 2$

Figure 6A. Labor Share in Exports

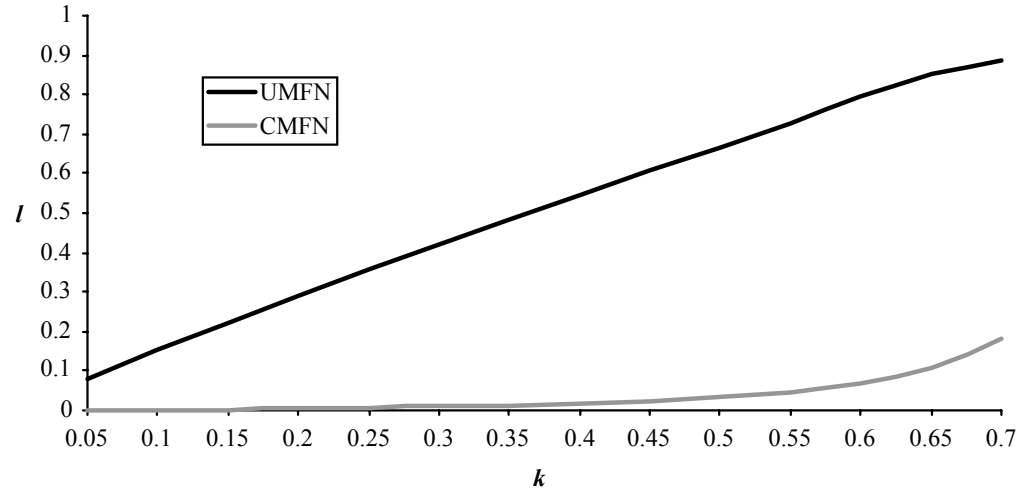

Figure 6B. Return on Capital

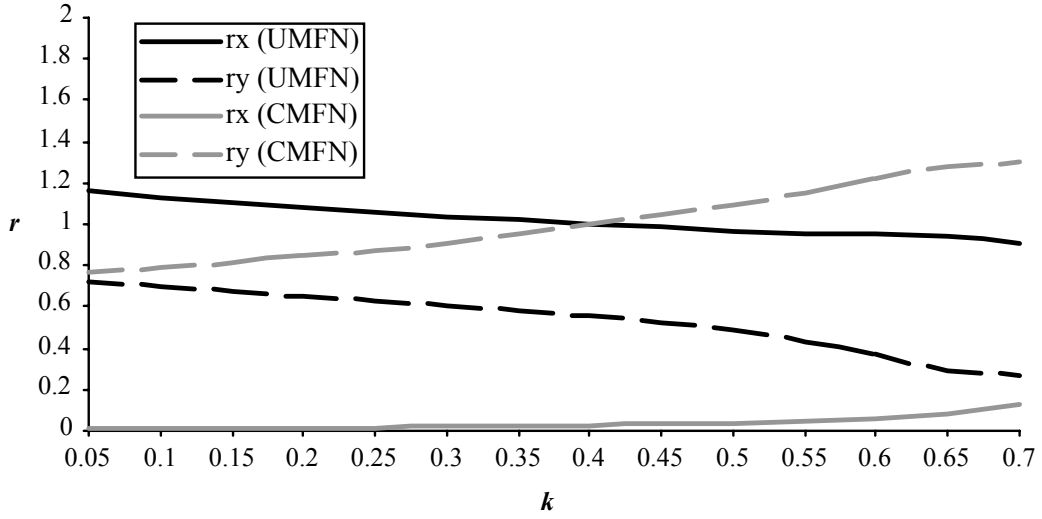

Figure 6C. Welfare of North