Endogenous Vertical Restraints in International Trade[1]

Horst Raff
Institut für Volkswirtschaftslehre
Christian-Albrechts-Universität zu Kiel
Wilhelm-Seelig-Platz 1
D-24098 Kiel
Germany
Tel.: +49 (0)431 880-1582
Fax: +49 (0)431 880-3150
Email: raff@econ-theory.uni-kiel.de

Nicolas Schmitt
Department d'Economie politique
Université de Genève
Blvd du Pont d'Arve 40
1211 Genève/Geneva 4
Switzerland
Tel: +41 (0)22 379 8285
Fax: +41 (0)22 379 8293
Email: Nicolas.Schmitt@ecopo.unige.ch

November 2003

[1]We would like to thank two anonymous referees and seminar audiences at the Universities of Alberta, British Columbia, Kiel, Helsinki and Virginia, Simon Fraser University, the Canadian Competition Bureau, the Norwegian School of Economics and Business Administration and participants at the Econometric Society Winter Meetings for helpful comments and suggestions. We acknowledge financial support from the Social Sciences and Humanities Research Council of Canada and the Alexander-von-Humboldt Foundation.

Abstract

This paper examines interbrand competition between a domestic and a foreign manufacturer who market their products through intermediaries. The contracts manufacturers offer these intermediaries are endogenous. In equilibrium contracts may specify exclusive territories (ET), depending on the degree of substitutability between products and the level and degree of transparency of trade barriers. Trade liberalization, through lower or more transparent barriers, may lead manufacturers to use ET, thereby substituting private anti-competitive arrangements for government-imposed barriers. This substitution may decrease competition and welfare, and thus create a role for competition policy in a freer trade environment.

JEL Classification: F13, L42

1 Introduction

This paper investigates the vertical relationship between manufacturers and intermediaries in an international trade environment. This relationship is typically governed by contracts, so-called vertical restraints, that deal with the potential problems and conflicts that arise in the distribution chain. The vertical restraint that we focus on is an exclusive territory (ET) clause. ET implies that a manufacturer uses an exclusive intermediary (hereafter called a retailer) in a given country or region. It is well known that ET may have anti-competitive effects, and the European Union has traditionally viewed ET as a means by which manufacturers restrict trade, thereby undermining the forces of economic integration. But ET may also raise efficiency, for instance, by eliminating free riding among retailers in the provision of customer services.[1]

In our model, the choice of ET is determined by the following trade-off. The benefit of adopting ET is that it helps reduce interbrand competition between domestic and foreign manufacturers. The cost of an ET contract is that it exposes risk-averse retailers to the uncertainties associated with international trade. Uncertainties arise naturally when firms do business with foreign partners due, among other things, to exchange-rate volatility, a lack of familiarity with foreign producers and their products, unforeseen legal, promotional and shipping costs. Another key source of these uncertainties is the seemingly random nature of many trade barriers.

Trade policy, by changing the level or the variance of trade costs, is shown to have non-trivial effects on the trade-off between reducing price competition and insuring retailers, and hence on the equilibrium choice of ET. In particular, we identify conditions under which trade liberalization leads to an increased use of ET in equilibrium, by which manufacturers counteract a reduction in government barriers to trade with a private anti-competitive arrangement. We also demonstrate that the adoption of ET may have worse effects than the initial trade barrier so that interbrand competition and welfare may decrease with trade liberalization. The paper hence identifies circumstances under which competition policy may have a clear role to play in a freer trade environment. This line of research is important since we know very little about vertical restraints in international

[1] Antitrust authorities in the United States have traditionally focused on the efficiency enhancing aspect of ET and have regarded ET as essentially harmless. The EU has moved away from a per se prohibition of ET following the European Commission's (1998) Green Paper.

trade and about how the choice of restraint interacts with trade policy.[2] This lack of knowledge is unfortunate, not least since the effect of vertical restraints on international trade is of considerable interest to policymakers. In particular, competition authorities have suspected for a while that the anti-competitive aspects of vertical restraints may assume greater importance as markets become more integrated.[3] One purpose of this paper is to start investigating the interaction between trade liberalization and the use of vertical restraints, and to examine whether these arguments are valid.

This paper is linked to the literature in the following way. To the best of our knowledge, Fargeix and Perloff (1989) are the first to examine trade in which a manufacturer (in their case, however, only the domestic one) sells through an agent. They are interested in how trade liberalization affects this agent's incentive to provide customer services, and hence treat contracts as exogenous.[4] The present paper is, however, closely linked to the literature in Industrial Organization on vertical restraints. The effect of uncertainty on a monopolist's choice of contract is analyzed in Rey and Tirole's (1986) classic paper on endogenous vertical restraints. Rey and Stiglitz (1995) study the anti-competitive effect of ET in a symmetric duopoly. One contribution of our paper is to integrate these two approaches and to extend the analysis to allow for asymmetries between firms and equilibrium contracts.

2 The Model

Consider a domestic manufacturer (h) and a foreign manufacturer (f) who produce imperfectly substitutable goods for sale in the domestic market. The production technology exhibits constant

[2] The fact that the role of ET in international markets is not yet well understood is also acknowledged by Deacon (1995). He writes in reference to Europe that the "partially complete nature of the internal market has never been satisfactorily analyzed in the economic literature (in particular with respect to territorial exclusivity provisions) [..]."

[3] For instance, the former European Commissioners in charge of trade and competition policy have asserted that: "*[..] the incentive for firms to engage in anti-competitive behavior impeding market access (such as [..] vertical restraints) increases with the reduction of tariffs and other barriers*" (Brittan and Van Miert (1996, p.4)). Similarly, Debra Valentine (1997), the Assistant Director of the International Antitrust Division at the U.S. Federal Trade Commission, has argued that: "*... as government barriers to market integration disappear, we can expect that private anticompetitive practices will assume increased importance. And vertical restrictions will be an important and complicated issue for competition enforcers.*"

[4] Another recent paper in which manufacturers use agents is Richardson (1999). But in this paper, too, contracts are exogenous.

marginal cost; we normalize this cost to equal zero. The demand function for product i is given by

$$D^i(p_i, p_j) = 1 - p_i + bp_j, \quad i, j = h, f; \quad i \neq j, \tag{1}$$

where parameter b reflects the degree of product substitutability. If $b = 0$, the products are not substitutable and each producer acts as a monopolist; if $b = 1$, demand depends only on the price difference (but goods still are not perfect substitutes).

To distribute their products to consumers both manufacturers require the services of intermediaries. In keeping with tradition, we refer to these intermediaries as retailers, even though their activities may also cover other distribution stages. We assume that there are many competitive retailers serving the home market.[5] Under ET, a manufacturer picks one of these retailers to be his exclusive agent; we refer to the home (foreign) manufacturer's exclusive retailer as retailer h (f). We assume that manufacturers can commit to the choice of contract and that this choice, once made, is observed by all firms.

We limit the choice of contracts to ET and no ET. To make sure that manufacturers cannot discriminate among retailers or propose other contractual arrangements (e.g. retail price maintenance), we follow the vertical-restraints literature [see, for instance, Rey and Tirole (1986) and Rey and Stiglitz (1995)] in assuming that manufacturers observe only the amount supplied to retailers and whether a given retailer carries a product, but do not observe the quantity sold by the retailers, their profit and retail prices. Moreover, the manufacturers cannot refuse to deal *ex post*. They can, however, set a franchise fee, since manufacturers observe whether the product is carried by a retailer. Hence, a contract always specifies a wholesale price w_i and a franchise fee F^i $(i = h, f)$.[6]

The retail activity itself is costless. Retailers carrying the domestic product only pay the wholesale price and a franchise fee. Retailers carrying the foreign product also incur a trade cost of t per unit, which reflects transport costs and trade barriers. Another difference between retailers carrying the domestic product and those distributing the foreign product is that the latter are subject to random shocks. These shocks may reflect uncertainty about local demand for foreign

[5] Alternatively, we could assume that the home market is divided into a finite number of 'territories', such as federal states or metropolitan areas, and that each 'territory' has a large number of competitive retailers. This would have no effect on our results.

[6] ET, in itself, does not require a franchise fee. However, Rey and Stiglitz (1995) show that it is a dominant strategy for the manufacturers to adopt such a franchise fee along with ET and thus we consider this case only.

goods or about the trade cost. Whether we have stochastic demand or stochastic trade costs does not matter for our results: the effect on the relevant firms' best-response functions is the same. For simplicity and because we find that it captures the non-transparent nature of many trade barriers, we let t be a random variable. In particular, we assume that t is distributed uniformly over the interval $[t^e - v, t^e + v]$. The variance of t, σ_t^2, is equal to $v^2/3$; so v measures the 'degree of uncertainty' about t, whereas t^e allows us to track changes in the expected level of trade barriers, keeping the degree of uncertainty constant.[7] Similar to Rey and Tirole (1986), we assume that (i) manufacturers and retailers face uncertainty—in our case about t—at the contracting stage, (ii) retailers observe the realization of t before choosing the retail price but manufacturers do not, and (iii) manufacturers are risk neutral, whereas retailers are risk averse.[8] For analytical tractability, we also assume that retailers are extremely risk averse; what this implies will be discussed below. The assumption that the realization of t is not observed by the manufacturers is important: it implies that manufacturers cannot specify contracts conditional on the realization of t and hence have no direct means of insuring retailers.[9] In this respect note that trade barriers often are product-specific and, insofar as retailers (or wholesalers) act as importers of the foreign products they sell, manufacturers are not likely to know the realization of these barriers.

The strategic interactions between the manufacturers and between them and their retailers can be summarized by a three-stage game. In the first stage, each manufacturer chooses which contract to have with its retailer(s). Manufacturers have two options: assign ET or, alternatively, sell to retailers without such a clause. In the second stage, manufacturers choose their wholesale prices and franchise fees. In the third stage, retailers learn the realization of t and choose their retail prices accordingly, and consumers then make their purchase decisions.

[7] Trade liberalization may have an impact on both the level and the variance. It is well known that non-tariff barriers (quotas, VER, anti-dumping policies) have increased during the post-WWII tariff liberalization period. It is thus quite possible that t^e has decreased but v has increased during this period.

[8] The asymmetry in risk aversion seems reasonable in industries with large, internationally diversified manufacturers and relatively small local intermediaries.

[9] What is important for our results is that manufacturers cannot write complete insurance contracts. Exchange-rate movements, which otherwise act in a similar way as changes in trade barriers (see Feenstra (1989)), fit our interpretation of t only to the extent that one cannot perfectly hedge such movements. See Rose (2000) and Frankel and Rose (2002) for results along these lines and Anderson and Marcouiller (2002) for an empirical study linking trade insecurity and trade flows.

3 Equilibria

3.1 Wholesale and Retail Prices

To characterize the subgame-perfect equilibria of this game we invoke backward induction and solve the game from the end. That is, we first consider the economic choices at the retail stage for given wholesale prices and contractual arrangements, then derive wholesale prices for each contract combination, and finally examine the equilibrium choice of contracts.

Retailers face two potential types of competition, intrabrand competition from other retailers representing the same manufacturer and interbrand competition from retailers selling the other manufacturer's product. The degree of inter- and intrabrand competition depends on the manufacturers' choice of contract. If a manufacturer does not use ET, intrabrand competition among his retailers leads them to adopt marginal-cost pricing, and drives their profit to zero. The retail price of the product supplied by the manufacturer under no ET is simply $p_h = w_h$ or $p_f = w_f + t$, depending on whether the manufacturer is domestic or foreign.

If a retailer has been granted an exclusive territory, he faces the following maximization problem:

$$\max_{p_i}(p_i - w_i - t_i)(1 - p_i + bp_j) - F^i, \tag{2}$$

where $t_f = t$ and $t_h = 0$. The first-order condition for this problem is

$$1 - 2p_i + bp_j + w_i + t_i = 0. \tag{3}$$

This condition defines retailer i's best-response function $p_i = (1 + w_i + t_i + bp_j)/2$. This function is upward sloping, and i's price response is increasing in his wholesale price and the trade barrier he faces.

There are four possible sets of equilibrium retail prices, depending on each manufacturer's choice of contract. As we have already seen, retailer i's price if manufacturer i does not impose ET is $p_i = w_i + t_i$ regardless of j's choice. If manufacturer i uses ET but j does not, then retailer i's equilibrium price is obtained by using $p_j = w_j + t_j$ in (3). If both manufacturers have chosen ET, (3) defines a pair of best-response functions for retailers i and j, and the equilibrium retail prices are obtained by solving this system. Below, we will write retailer i's price as $p_i(w_i, w_j, t)$ for $i = h, f$, where it is implicitly understood that this price also depends on the contracts chosen by the two manufacturers.

The fact that retailers are risk averse has no effect on their choice of price, since this choice comes after they have observed the realization of t. But it may affect their decision of whether to represent a manufacturer, since this choice is made before they learn the value of t. We have to distinguish between two cases. First, if the manufacturer imposes ET, he exposes his exclusive retailer to risk. Ex post, the realization of t is only observed by the retailer. This means that the manufacturer cannot make the franchise fee and the wholesale price contingent on the realized value of t. The retailer's ex-post profit therefore varies with this value, and he must be compensated for taking on the associated risk if he is to accept the manufacturer's contract. The assumption of extreme risk aversion allows us to capture this compensation, or risk premium, in an analytically tractable way.[10] In particular, this assumption implies that the retailer only accepts the manufacturer's contract, if doing so leaves him with a non-negative profit under the "worst" realization of t. Letting t_i^v denote the worst possible realization of t for retailer $i = h, f$, it is easily shown that $t_f^v = t^e + v$ and $t_h^v = t^e - v$. Using (2), we then observe that under ET the highest franchise fee the manufacturer is able to charge (assuming that the retailer's payoff from his best outside alternative is normalized to zero) is

$$F^i(w_i, w_j, t_i^v) = (p_i(w_i, w_j, t_i^v) - w_i - I_i t_i^v)\,(1 - p_i(w_i, w_j, t_i^v) + b p_j(w_i, w_j, t_i^v))\,, \tag{4}$$

where $I_f = 1$ and $I_h = 0$.

Second, if the manufacturer does not grant ET, then intrabrand competition guarantees that his retailers earn zero profits for every realization of t; they simply pass on any cost to the consumer and hence are fully insured against unforeseen variations in t. In order for the retailers to be willing to represent the manufacturer in this case the franchise fee must be zero.

Next, consider manufacturer i's choice of wholesale price. His problem is to find the w_i that maximizes his expected profit, consisting of the expected wholesale profit and the (possibly zero) franchise fee:

$$\max_{w_i} w_i\,(1 - p_i(w_i, w_j, t^e) + b p_j(w_i, w_j, t^e)) + F^i(w_i, w_j, t_i^v). \tag{5}$$

Manufacturer i's best-response function together with its counterpart for j defines the equilibrium wholesale prices for each possible pair of contract choices. A pair of contract choices can then

[10] Our results only depend on the fact that under ET a manufacturer must pay his retailer a risk premium, and not on the specific form that this risk premium takes under the assumption of extreme risk aversion.

be written as (ET,ET), (ET,NET), (NET,ET) or (NET,NET), where the first entry refers to the domestic manufacturer's contract. We denote the equilibrium wholesale prices and corresponding manufacturer profits in the four possible subgames following the manufacturers' choice of contracts by $w_i^{kl} \equiv w_i^{kl}(t^e, t_i^v, t_j^v)$, and $\Pi_i^{kl} \equiv \Pi_i^{kl}(w_i^{kl}, w_j^{kl}, t^e, t_i^v, t_j^v)$, where $i, j = h, f$ and k, l=ET,NET.

Before turning to the choice of contracts we may state the following result:[11]

Proposition 1 *The use of ET by one or both manufacturers leads to higher expected equilibrium retail prices than in the case where no one uses ET. Moving from a situation where only one manufacturer uses ET to one where both use ET raises expected equilibrium retail prices.*

What is the intuitive explanation for this anticompetitive effect of ET? Suppose at the start that both manufacturers adopt no ET. Then their retailers are fully insured and simply pass on increases in wholesale prices or trading costs to consumers. In effect, wholesale prices are set as in a standard one-shot oligopoly problem. Now let manufacturer i adopt ET, thereby decoupling the choice of retail price from that of the wholesale price and giving market power to his retailer. This has two effects. First, the fact that retailer i has an upward-sloping best-response function allows manufacturer j to exploit a strategic effect: by raising his wholesale and hence retail price he can induce retailer i to increase his retail price, too. Second, the fact that ET exposes i's retailer to risk forces manufacturer i to raise his wholesale price: this reduces the fixed portion of the retailer's payment (i.e. the franchise fee) and boosts the variable portion, thereby shifting some of the risk back to the manufacturer. Both effects contribute to higher equilibrium retail prices. If manufacturer j now also adopts ET, equilibrium retail prices rise even more, as the strategic and the insurance effect work on both manufacturers.

3.2 Contracts

The manufacturers' choice of contract may be represented by the following strategic-form game, where the payoffs correspond to the manufacturers' profits under the four possible contract combinations:

[11] A proof is available from the authors upon request.

		Foreign Manufacturer	
		ET	NET
Domestic Manuf.	ET	$\Pi_h^{ET,ET}, \Pi_f^{ET,ET}$	$\Pi_h^{ET,NET}, \Pi_f^{ET,NET}$
	NET	$\Pi_h^{NET,ET}, \Pi_f^{NET,ET}$	$\Pi_h^{NET,NET}, \Pi_f^{NET,NET}$

Which contract a manufacturer selects depends on a trade-off between the insurance property of the contract and its effect on interbrand competition. The use of ET tends to reduce competition (i.e. increase retail prices). However, since this contract has inferior insurance properties relative to NET, a manufacturer uses ET only when the gain from decreased interbrand competition outweighs the risk premium that he has to 'pay' the risk-averse retailer. The model includes three factors that influence this trade-off: the degree of product substitutability (measured by demand parameter b), the degree of uncertainty of trade barriers (measured by v), and the expected level of these barriers (t^e). We proceed by fixing b and examining which combinations of t^e and v would make a manufacturer indifferent between ET and NET, given a contract choice by his rival. This gives us four "indifference curves", two for each manufacturer (i.e., the domestic (foreign) manufacturer being indifferent between ET and NET when the other manufacturer has either ET or NET), that define regions inside which a manufacturer prefers a specific contract given the contract used by the other manufacturer. Nash equilibrium contract combinations can then be associated with specific regions formed by these curves.

Consider first the case where b is high so that the domestic and the foreign products are relatively good substitutes ($0.868 < b < 1$). Only two contract combinations may occur in equilibrium, namely (ET, ET) and (NET, ET). This case is illustrated by Figure 1, which shows the equilibrium contracts that arise for different values of t^e and v for $b = 0.9$.[12] The line separating the two equilibrium regions is h's indifference curve when f has ET. It is downward sloping for the following reason. Suppose we are on h's indifference curve and t^e falls. This has two effects: first, it exposes h to tougher competition from his foreign rival, which h could soften by adopting ET. Second, it reduces h's market share and hence also the risk premium h has to leave his retailer under ET. Both effects imply that h prefers ET unless there is an offsetting increase in v. Therefore h's indifference curves

[12] We consider parameter values for which all contract combinations yield non-negative expected profits for manufacturers and retailers. In addition we let $t^e \geq v$ to make sure that trade barriers are non-negative for all realizations of t.

must have a negative slope in (t^e, v) space where h selects ET below the indifference curve and NET above. (ET, ET) appears when t^e and v are not too high, because then price competition is tough and both h and f adopt ET to reduce it. If t^e and v are both high, the domestic manufacturer is protected from foreign competition and hence chooses NET to insure his retailers. The foreign manufacturer's best response is always to adopt ET (and so its indifference curve is not shown), as the high trade barrier limits the retailer's risk premium, thus reducing the cost of using ET.

[Insert Figure 1 about here]

Second, over the range $0.8 \leq b < 0.868$, (NET, NET) may arise in addition to (ET, ET) and (NET, ET). This is illustrated by Figure 2, which shows the equilibrium contracts for $b = 0.8$. Combination (NET, NET) arises if t^e and v are relatively high. In this case, the foreign manufacturer, too, has to insure his retailers. The curve between regions (ET, ET) and (NET, ET) is again h's indifference curve when f has ET. The curve separating (NET, NET) from the other regions is a combination of f's indifference curves when h has ET (below A) and when h has NET (above A).[13] Above this curve, adopting NET is a dominant strategy for f. We have ommitted from the figure h's indifference curve when f has NET, since it lies below region (NET, NET); hence when f has NET it is also a best response for h to adopt NET. To understand the slope of f's indifference curves, consider a reduction in t^e starting from a point on the indifference curve. There are two opposing effects: first, as f's market share grows, the risk premium f's retailer earns under ET rises. This requires lowering v to keep f on the indifference curve so that f's indifference curve would have a positive slope. Second, a reduction in t^e raises competition, which would imply that v would have to be increased to keep f indifferent between ET and NET; this corresponds to a negative slope of the indifference curve.

[Insert Figure 2 about here]

For $b < 0.8$, the area in which (NET,NET) occurs expands at the expense of the area in which one or both firms adopt ET, reflecting the reduction in price competition that occurs when the goods become poorer substitutes. In addition, it can be shown that all four possible contract combinations may arise in equilibrium.

[13] These two curves virtually coincide below A, the point where they cross h's indifference curve.

It is worth noting that when we adopt extreme values for b and v, we obtain results that are consistent with the literature. If there is no uncertainty about trade barriers ($v = 0$) and products are substitutes, ET is a dominant strategy for each manufacturer as in Rey and Stiglitz (1995). This result holds in our model regardless of the level of the trade barrier. If $b = 0$ (so that the firms are monopolists) and cost is uncertain, NET is a dominant strategy for each manufacturer as in Rey and Tirole (1986).

4 The Effects of Trade Liberalization

The results in the previous section show that changes in both the expected level of trade barriers (keeping v fixed and changing t^e) and the degree of transparency (holding t^e fixed and changing v) may lead to a shift in equilibrium manufacturer-retailer contracts. These shifts give rise to discrete changes in wholesale and retail prices, which, in turn, have consequences for trade and welfare. This section explores how these changes interact with the traditional effects of trade liberalization, focusing on changes in t^e.

We define domestic welfare in an ex-ante sense as the (risk-neutral) representative consumer's expected utility, assuming that his expected income, M, consists of the expected profits that he obtains from the domestic firms. When looking at ex-ante social welfare, it is important to make sure that the firms' participation constraints are satisfied [see, for instance, Mas-Colell, Whinston and Green (1995), ch. 23]. This means that ex ante the representative consumer is not able to collect more than the profits the firms themselves expect to receive. He therefore obtains the risk-neutral domestic manufacturer's total expected profit, but only zero profit from the risk-averse retailers.[14]

Trade liberalization affects expected welfare in two ways. First, holding contracts fixed, a decrease in t^e reduces equilibrium prices. Since t^e represents a resource cost, this raises expected domestic welfare. This is, of course, the standard pro-competitive effect of trade liberalization [see,

[14] Under ET manufacturers set their franchise fees so as to extract the profits obtained by retailers under the 'worst' realization of t; so retailers expect to receive zero profits. However, since the probability that t takes on this value is virtually zero, retailers earn pure profits ex post. Our formulation of ex-ante social welfare is also in line with the Industrial Organization literature [see Rey and Tirole (1986)]. For further details on ex-ante and ex-post welfare see Holmstrom and Myerson (1983).

for instance, Helpman and Krugman (1989)]. Second, reducing t^e even infinitesimally may lead to a switch in contracts and hence to a discrete change in welfare. This welfare change comes from two sources: first, the contract choice affects equilibrium prices; second, it alters the allocation of risk between agents. If a manufacturer adopts ET, we know from Proposition 1 that equilibrium retail prices increase, thus leading to a deadweight loss. ET also transfers risk to the risk-averse retailers, which represents another loss of domestic welfare. We may hence state the following result:

Proposition 2 *The adoption of ET reduces domestic welfare.*

The two effects described in the previous paragraph may offset or reinforce each other. If trade liberalization leads one or both manufacturers to switch to ET, manufacturers may be able to counteract the price decline normally associated with trade liberalization. The reduction in welfare from the switch in contracts may offset the welfare improvement from the decrease in t^e. On the other hand, if trade liberalization leads to a switch in contract away from ET then the welfare-improving effect of trade liberalization is magnified. To illustrate this, consider the case where $b = 0.8$ so that the equilibrium contracts are given by Figure 2. If v is small, the domestic manufacturer eventually reacts to the decrease in t^e by adopting ET while the foreign manufacturer keeps ET. This change in contract causes a jump in equilibrium retail prices. Hence, at this switch, manufacturers are replacing trade barriers with private anticompetitive arrangements. If v is high, it is the foreign manufacturer who moves from ET to NET, whereas the domestic manufacturer retains NET. Equilibrium retail prices drop at the point where the switch occurs. Trade liberalization in this case boosts competition in two ways, namely via the traditional pro-competitive effect and by inducing manufacturers to stop using ET. The discrete jumps in expected domestic welfare that occur when the equilibrium contracts change can be seen in Figure 3, which plots welfare as a function of t^e and v for $b = 0.8$. Figure 3 shows that moving from (NET, ET) to (NET, NET) leads to a discrete improvement in expected welfare. When trade liberalization instead leads to (ET, ET), there is a discrete drop in expected welfare. The figure also indicates that the effects on expected domestic welfare of changes in contracts may be quite large compared to the effects of even significant trade liberalization; this is reflected by the fact that the surfaces for any given contract combination are relatively flat, whereas the discrete jumps when contract changes occur are relatively big. For instance, it can be shown that for $v = 0.2$ the fall in expected welfare that

occurs when the domestic firm switches from NET to ET is so large that even complete trade liberalization cannot offset the associated expected welfare loss.

[Insert Figure 3 about here]

When will trade liberalization induce a manufacturer to use ET? Note that if $0.868 < b < 1$, then any change in contract induced by trade liberalization will lead the domestic manufacturer to adopt ET. Hence it is exactly when products are good substitutes and trade liberalization would potentially have the biggest effect on price competition, that the domestic manufacturer will react by adopting an anti-competitive contract. This reaction by manufacturers persists for lower b as well, provided that v is sufficiently small so that they do not have to worry much about the cost of insuring their retailers. We may summarize this result as follows:

Result: *If either products are good substitutes* $(0.868 < b < 1)$ *and/or barriers to trade are sufficiently transparent* (v *small*)*, any change in contract associated with trade liberalization is anti-competitive.*

5 Conclusions

In this paper, manufacturers pursue two objectives: they want to insure their risk-averse retailers against the effects of uncertain barriers to trade, and they want to minimize interbrand competition. The first objective can be accomplished by creating intrabrand competition between retailers. The second objective can be achieved by the use of exclusive territories. This creates a trade-off: while exclusive territory clauses are very efficient at decreasing interbrand competition, they have poor insurance properties. Trade-related uncertainty directly affects the foreign manufacturer. But it also has an indirect effect on the domestic manufacturer via interbrand competition between retailers. Hence the domestic manufacturer, too, faces a trade-off in his use of exclusive territories.

In this setting, trade liberalization tends to make exclusive territories more attractive to manufacturers if domestic and foreign products are relatively good substitutes and the degree of trade uncertainty is not too high. The consequence is immediate: welfare, and even imports, may decrease with trade liberalization as the mechanism just described induces manufacturers to replace trade barriers with private anti-competitive arrangements. On the other hand, if domestic and

foreign products are relatively poor substitutes and trade uncertainty is high, trade liberalization will tend to reduce the use of exclusive territories. In this case, the switch in contracts to retailer competition gives an additional boost to trade volume and welfare.

We conclude that, in this model, a concern expressed by anti-trust authorities in Europe and the United States is at least partly justified: trade liberalization may induce manufacturers to use private anti-competitive arrangements, such as exclusive territories. Hence, this paper has a clear general message: trade policy is not a substitute for competition policy and, if anything, antitrust authorities must be more vigilant when barriers to trade fall.

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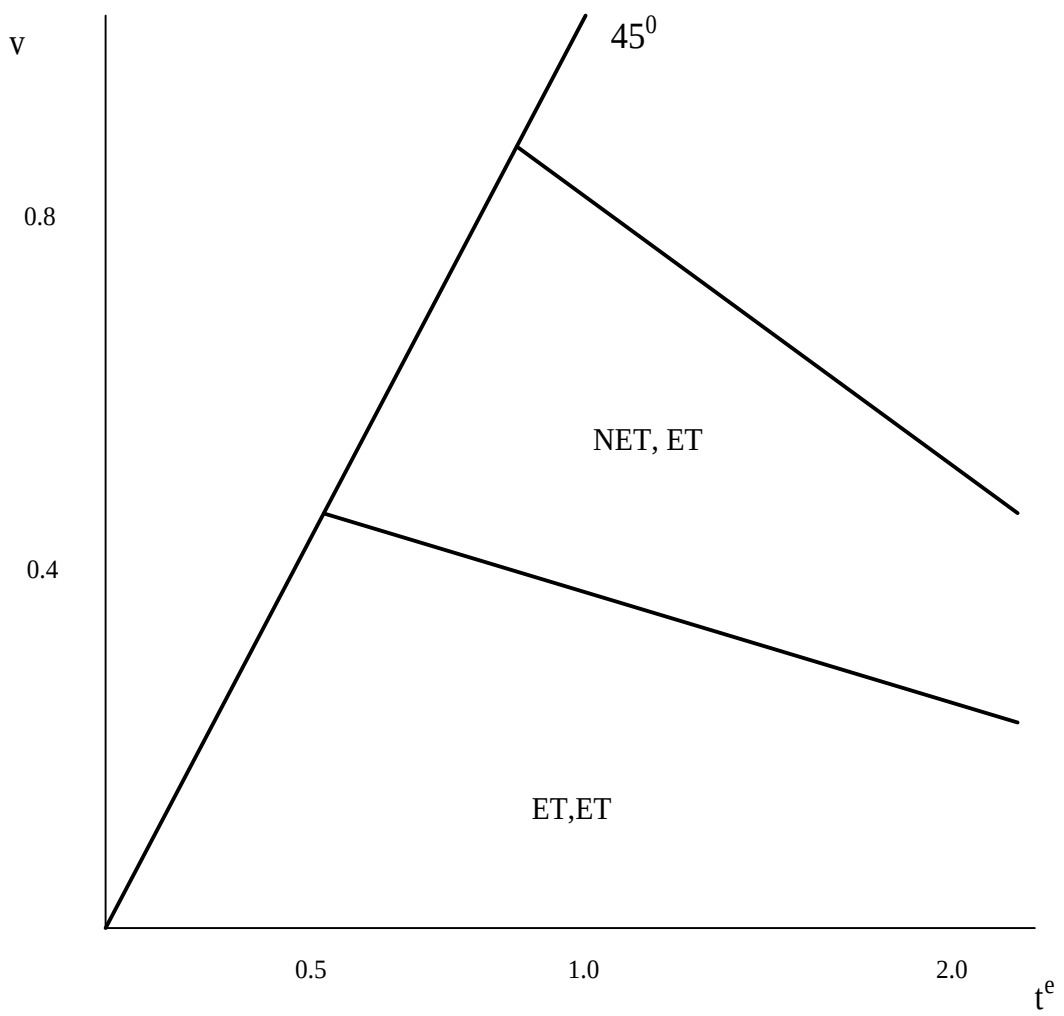

Figure 1: Contracts for b=0.9

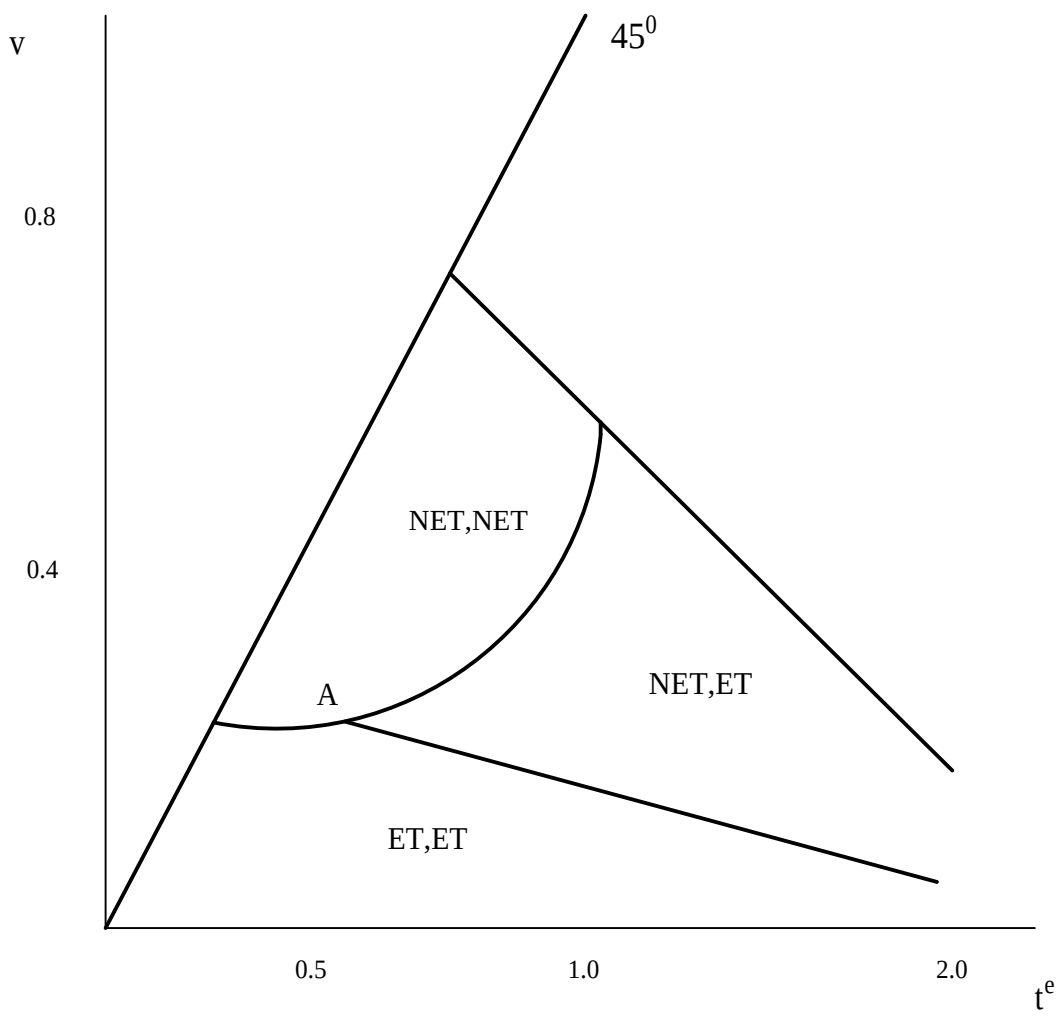

Figure 2: Contracts for b=0.8

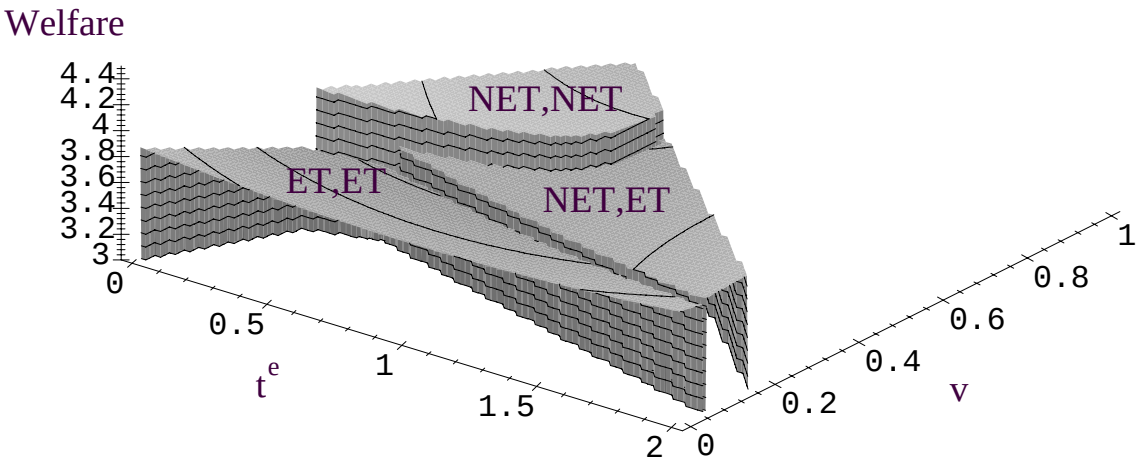

Figure 3: Domestic Welfare (b=0.8)