Firms Behaving Badly: International Regulation of Anticompetitive Behavior *

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Keywords: international competition policy, antitrust, destructive competition, sabotage, regulation

JEL codes: F13, L4, K21

printdate: March 25, 2008

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1 Introduction

Until quite recently, antitrust has been a national affair, with a limited number of operational regimes actually in place. The one notable exception has been the extension of a single European regime for the regulation of competition across most West and Central European states, and administered by the European Commission (EC). Beyond this, coordination or conflict across regimes was simply not an issue. However, there has since been an explosion of antitrust regimes, roughly coincident with the explosion of antidumping regimes and adoption of other rules and norms linked to the implementation of World Trade Organization agreements. We have moved from a handful to over 100 regimes now in place and operational. (Shenefield 2004). With the struggle of Microsoft and Apple against cases in the EU, the U.S., Korea, and Australia, we have seen different national regimes take different approaches to the same problem. In Europe, countries in the EU orbit assign competition policy to Brussels. However, national interests inside Europe then compete within the EC as policy is set.

In the U.S., individual states piled into the US case, with different states ultimately taking different positions. The U.S. case itself proved susceptible to politics, as the treatment of the case changed with the switch-over from the Clinton to the Bush Administration. (Niels and ten Kate 2004, Gilbert and Katz 2001, Morgan and McGuire 2004).

This paper explores the discriminatory application of antitrust policy in an international setting, where national competition authorities may treat firms differently depending on export posture and nationality of ownership. While there has been recent attention in the literature to the application of domestic regulatory policy to foreign firms given WTO obligations (Horn 2006) and to international merger policy (Horn and Levinsohn 2001, Neary 2007), this literature does not focus explicitly on anticompetitive behavior, which is at the heart of current international regulatory disputes like the treatment of Microsoft and of Apple in the EU, and the breakdown of the U.S. state-level case against Microsoft in the U.S. The approach taken in this paper involves taking firm sabotage of rivals as a representative form of anticompetitive behavior, along the lines of Salop and Scheffman (1987). It explores discriminatory regulation of anticompetitive behavior in this setting, and also implications for mergers and merger policy when nationality of firms matters. This contrasts with the current international merger literature, where the focus is on concentration. The analysis of the regulation of anticompetitive behavior by firms in multiple jurisdictions highlights the potential for conflicting interests across borders to drive different regulatory responses to the same anticompetitive behavior. The scope for strategic application of antitrust rules, and for sustainable cooperation in policing anticompetitive behavior, is also examined.

The basic approach followed in this paper involves firms that both engage in direct production, and sabotage their rivals' production costs. In the literature, raising the costs of rivals can take a number of forms, including vertical integration, negative campaigning or lobbying, and exclusion agreements. (Beard et al 2001, Krattenmaker and Salop 1986, Salop and Scheffman 1987,1983, Amegashie and Runkel 2005). As

formalized in this literature, sabotage can serve as a useful reduced form representation of a number of firm strategies that are anticompetitive by nature.[1] Our interest here is in the interaction between consumer surplus, profits, and nationality in such cases.

The paper is organized as follows. Section 2 develops the basic model. This is followed, in Sections 3, 4, and 5, by discussion of merger policy, fines and/or other punishment for sabotage, and the role of politics. Section 6 concludes. A number of results stand out. Mergers may prove beneficial because of the destructive nature of non-price competition, where mergers serve to internalize sabotage costs. This introduces a tension between consumer benefits and efficiency, with resulting scope for conflicting positions on mergers by competition authorities depending on the nationality of firms. While symmetric firms will prefer enforced regulation of behavior to the unregulated Nash equilibrium, asymmetries either in firm cost structure or relative size of consumer markets may also lead to a divergence of interests on the part of competition authorities. In addition, like capacity, the potential to sabotage a higher-cost rival can prove a prohibitive barrier to entry. On the political economy side, the framework developed here provides formalized insight into why inter-regime (e.g. U.S. vs. EU) or intra-regime (e.g. California vs. Oregon, or France vs. Germany) positions may vary on policing anticompetitive behavior due to location of industry. Even without selective or biased enforcement of anti-sabotage rules, it is the case that unbiased enforcement can itself serve strategic purposes linked to shifting producer and consumer rents across borders. This follows from selecting which remedies to pursue on an unbiased basis. Indeed this is why, in theory, the EU has centralized competition policy – to preclude yet another arena for beggar-thy-neighbor international economic policy.

[1] A recent example of direct sabotage is the investment by Microsoft, both through licensing payments and through investments by major individual Microsoft stakeholders in SCO, a company whose business plan was primarily focused on suing major vendors of Linux (a competing operating system viewed as a threat to Microsoft's Windows operating system). (Preimesberger 2004). The SCO litigation forced Linux hardware vendors not only to incur legal defense costs, but also to indemnify customers until the SCO case was settled. In the more distant past, the model developed here can also be used to characterize competition between spice conglomerates in the 16th Century, when Dutch and British companies both built ships to carry spice, and also built ships to sink the boats of their rivals. See Milton (1999).

2 The model

Sabotage is adopted here as a representative reduced form for a broad range of anti-competitive behaviors, as discussed above. Our goal is to develop a framework for the following sections, where we explore the desirability for regulation of such behavior on the part of foreign firms by local competition authorities and the related implications of nationality of firms for international regulation of firms and the scope for the strategic application of competition policy. We focus here on the interaction of two firms engaged both in direct production, and in the sabotage of the production activities of the competing firm through actions aimed at altering the competitor's cost structure. To keep the analysis parsimonious, the model developed involves linear demand and cost structures. Since the points raised involve proof by example and emphasize possible properties for equilibrium policy space, this offers the advantage of tractability without being critical to the observations made.

2.1 The basic set-up

Assume two countries, home and foreign. They are indexed by h and f. Inverse demand functions are linear, with price p_r a function of quantity q_r.

$$p_r = a_r - b_r q_r \quad r = h, f \tag{1}$$

We abstract away from trade policy, and are interested in interactions between regulatory regimes in two countries linked through trade. As such, we work with an integrated market where total demand q is the combined demand in the home and foreign markets.

$$\begin{aligned} p &= a - bq \\ & a = (a_h b_f + a_f b_h)(b_f + b_h)^{-1} \\ & b = (b_h b_f)(b_f + b_h)^{-1} \end{aligned} \tag{2}$$

Total quantity in the integrated market is the total supply from firms $i = 1, 2$, and identically is equal to the sum of home and foreign demand. We can therefore rewrite the demand-side equilibrium conditions for the market as follows.

$$\begin{aligned} q &= q_1 + q_2 \\ &= q_h + q_f \qquad (3) \\ p &= a - b(q_1 + q_2) \qquad (4) \end{aligned}$$

Firms are engaged in a repeatable two-stage game. This involves sabotage in the first stage, and production and sale in the second stage. We focus on the non-cooperative Nash equilibrium (though we will later discuss some aspects of the cooperative – no sabotage – equilibrium as well when we turn to regulation). Profits π_j are defined as revenue pq_j less production costs and sabotage costs, where sabotage costs are assumed to be quadratic in the level of sabotage.[2] We assume that costs can be mapped to the price p_z for input bundle z.[3] In formal terms, stage 2 profits for firm i given that the firm has realized sabotage g_j from firm j will be:

$$\pi_j = pq_j - p_z q_j c_j \left(1 + g_k\right)\big|_{j,k=1,2,\, k\neq j} \qquad (5)$$

In equation (5), c is a technical coefficient for unit input costs, q is firm quantity, and g is sabotage by the rival firm that causes in an increase in the technical input requirement parameter c. We solve for the set of SPNE solutions by backward induction.

[2]It seems reasonable to assume that sabotage costs are increasing in level of realized sabotage. This would follow, for example, from paying to secure input supply, and would follow directly from increased difficulties with marginal increases in damage to the total cost structure of the competition. One could, of course, go beyond the structure we use here and introduce counter-sabotage, or scale/scope economies in sabotage, or even increasing own-costs as a result of sabotage. It is worth noting that with pure linear sabotage costs, in a system where all else is also linear as here, we can get reaction curves in sabotage space such that there is no sabotage, or completely destructive (i.e. repeated escalation of) corporate warfare.

[3]We do not explicitly include discount rates here, but obviously we can simply view our coefficients as including a discounting of relevant stage costs.

Cournot quantities in the second stage will be:

$$q_j = \left(a + p_z c_k(1+g_j) - 2p_z c_j(1+g_j)\right)(3b)^{-1}\big|_{j,k=1,2,k\neq j} \tag{6}$$

Turning then to the first stage, given second stage quantities, we note first that total input needs z at unit cost p_z per unit of z, inclusive of quantities in the second stage, will be

$$z_j = c_j\left(q_j\left(1+g_k\right) + \alpha_j g_j^2\right)\big|_{j,k=1,2,\,k\neq j} \tag{7}$$

while profits will be

$$\pi_j = pq_j - p_z z_j\big|_{\,j=1,2}. \tag{8}$$

We can substitute equations (7) into equations (8) and solve for reaction curves in sabotage space. This gives us equations (9) and (10).

$$g_1 = -\frac{c_2\left(-2p_z c_1 g_2 + p_z c_2 - 2p_z c_1 + a\right)}{p_z c_2^2 - 9c_1\alpha_1 b} \tag{9}$$

$$g_2 = \frac{c_1\left(p_z c_1 - 2p_z c_2 g_1 - 2p_z c_2 + a\right)}{9c_2\alpha_2 b - p_z c_2^2} \tag{10}$$

Figure 1 graphs equations (9) and (10) for a set of coefficients that will be used in numeric examples and numerically-based proofs in the sections that follow.[4] We can solve explicitly for the solution values for g_j and use these in turn to solve for equilibrium quantities using equations (6). This gives us the equilibrium solutions for

[4]The coefficient values in Figure 1 are $a = 10, b = 0.1, c_1 = 1, c_2 = 1, \alpha_1 = \alpha_2 = 4, p_z = 1$.

sabotage and production.

$$g_j = \left. \frac{c_k \left(6c_k\alpha_k b p_z c_j - 3c_k\alpha_k b a + p_z c_j^2 a - p_z^2 c_k c_j^2 - 3p_z c_k^2 \alpha_k b\right)}{p_z^2 c_j^2 c_k^2 + 3p_z c_k^3 \alpha_k b - 27 c_j \alpha_j b^2 c_j \alpha_j + 3c_k^3 \alpha_k b p_z} \right|_{\substack{j,k=1,2 \\ k \neq j}} \tag{11}$$

$$q_j = \left. \frac{3c_j\alpha_j \left(6c_k\alpha_k b p_z c_j - 3c_k\alpha_k b a + p_z c_j^2 a - p_z^2 c_k c_j^2 - 3p_z c_k^2 \alpha_k b\right)}{p_z^2 c_j^2 c_k^2 + 3p_z c_k^3 \alpha_k b - 27 c_j \alpha_j b^2 c_j \alpha_j + 3c_k^3 \alpha_k b p_z} \right|_{\substack{j,k=1,2 \\ k \neq j}} \tag{12}$$

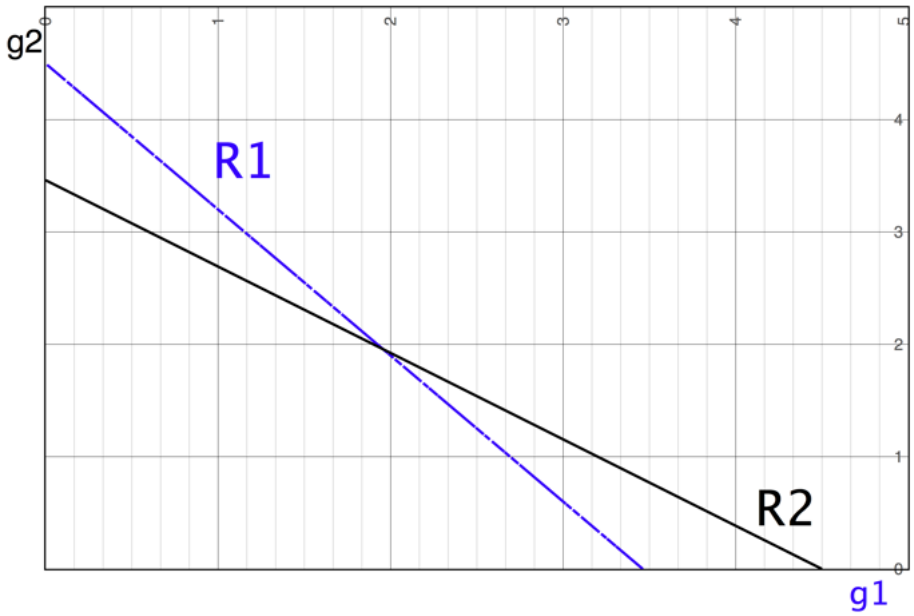

Figure 1: Reaction curves in sabotage space

2.2 Properties of equilibrium in the basic model

We now turn to developing the properties of the basic model, before then focusing on regulation of firm behavior in the sections that follow. Consider first the relative effort a firm will devote to actual production, and to sabotaging of the production efforts of the competitor. From our equilibrium solution values for q and g, we can show that these are a function of the underlying structure of own and competitor costs. We start

by defining ψ as the ratio or sabotage effort to direct production effort:

$$\psi_j = \frac{g_j}{q_j} = \frac{c_k}{3c_j\alpha_j}\bigg|_{j,k=1,2,k\neq j} \tag{13}$$

If we then look at relative sabotage intensity for our two firms, using ψ as our metric,

$$\Psi_{j,k} = \frac{\psi_j}{\psi_k} = \frac{c_k^2\alpha_k}{c_j^2\alpha_j} \tag{14}$$

ψ is an index of bad behavior. From (14 can make the following observations.

Observation 1 *The relative importance of anticompetitive behavior (sabotage of the competitor) for a firm is inversely related to own production and sabotage costs, but directly related to the cost of production for the competing firm.*

Observation 2 *With identical sabotage costs but variations in production costs, the larger firm – which will be the lowest cost firm – will also be the firm with the greatest share of its overall activity devoted to anticompetitive behavior.*

Observation 3 *With identical production costs but variations in sabotage costs, the firm with lower sabotage costs will also be the firm with the greatest share of its overall activity devoted to sabotage.*

Observations 1-3 follow directly from differentiation of (14).

$$\frac{\partial\Psi_{1,2}}{\partial c_2}\bigg|_{\alpha_1=\alpha_2} = \frac{2c_2}{c_1^2} > 0 \tag{15}$$

$$\frac{\partial\Psi_{1,2}}{\partial \alpha_2}\bigg|_{\alpha_1=\alpha_2} = \alpha_1^{-1} > 0 \tag{16}$$

What we have is a situation where when firms vary in size because one has a cost advantage, the larger firm will engage in relatively more anticompetitive behavior than the smaller firm. This follows from the fact that the larger firm has more market power,

and so is able to better internalize the benefits linked to investment in a reduced supply response from the competing firm. Hypothetically speaking, if we had, for example, a dominant supplier of computer operating systems, this dominant supplier would be more badly behaved vis-á-vis the competing supplier, while the smaller supplier of operating systems would focus more of its efforts on actual production rather than on anticompetitive behavior.

We can go past these basic observations. Similar to the set of well-known results where capacity commitments can act as a barrier to entry (Spence 1977, Dixit 1980), it is possible, depending on the cost of sabotage, for the larger firm to completely drive the smaller firm out of the market by the threat of sabotage, such that the actual equilibrium is monopoly. The monopoly outcome follows directly from the opportunity to sabotage, and so offers an alternative avenue, outside predatory pricing, for a firm to drive out the competing firm. This is summarize in the following observation:

Observation 4 *With asymmetric costs, the big firm may be able to credibly force the small firm out of the market, meaning we then have a monopoly following from threat of sabotage.*

Observation 4 is proven by example in Figure 2.[5] In the figure, we have full symmetry except that firm 2 has production costs 5% higher than firm 1. We then vary symmetric sabotage costs along the horizontal axis. As sabotage costs fall, then from equations (12) sabotage will rise. There is a breakpoint beyond which firm 1 is able to drive firm 2 out of the market. This means there is a range below the breakpoint where the threat of sabotage is sufficient to give firm 1 a monopoly in the market, as the two-player equilibrium induces guaranteed losses for the smaller firm.

3 Nationality and Pro-competitive Mergers

We turn next to merger policy. While there has been rapid expansion of the legal literature, there is a relatively small corresponding economics literature on the theory

[5]The coefficient values in Figure 2 are $a = 10, b = 0.1, c_1 = 1, c_2 = 1.05, \alpha_1 = \alpha_2 = 0..10, p_z = 1$.

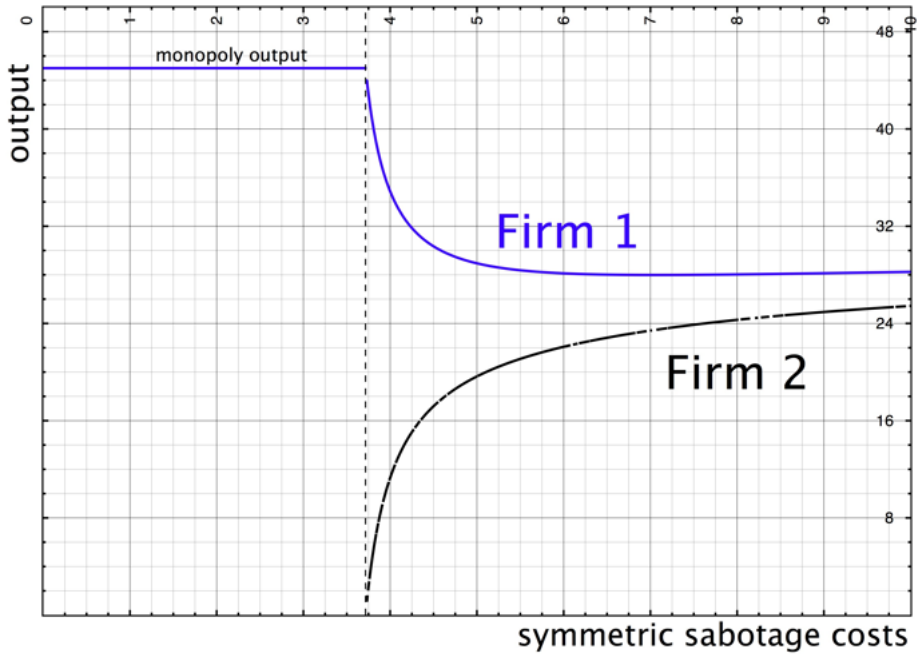

Figure 2: The ability to force the other firm out through threat of sabotage

of international merger policy. This includes Head and Ries (1997), Horn and Levinsohn (2001), Hoekman and Mavroidis (1994), Francois and Horn (2007), and Neary (2007).[6] The emphasis in this literature is on the negative impact that mergers may have on consumer welfare because of increased concentration. This may be offset by the potential to shift higher profits to the home (regulating) country. In this literature, there may also be scope for scale effects to partially offset concentration aspects of merger.

Here, we actually have a different mechanism at play. Because we are working with a world where firms actively drive up the costs of competing firms, there is scope for welfare gains from encouraging firms to merge. Basically, this is a second-best alternative to policing anticompetitive behavior directly. If the sabotaging firms merge, the sabotage behavior stops. This makes the surviving firm more profitable, as it focuses its efforts on its own production rather than on attacks on its rivals. We

[6]There is also a nascent literature on market access and MFN treatment as defined in the WTO, including Horn and Movroidis (2001) and Horn (2006). However, this literature is not concerned with differential application of competition policy as is relates to national treatment.

start with the following observation:

Observation 5 *In an integrated market, mergers may increase welfare if they bring an end to otherwise destructive anticompetitive behavior. This is driven by loss of profits.* [7]

Observation 5 is demonstrated by numeric example in Figure 3.[8] In the figure, we have mapped total welfare W as a function of profits π and consumer surplus CS. Firms are symmetric for this example in terms of production and sabotage costs.

$$W = \pi_1 + \pi_2 + CS|_{duopoly} \; W = \pi_1 + CS|_{monopoly} \tag{17}$$

In the Figure 3 we are varying sabotage costs along the horizontal axis. As sabotage costs fall, sabotage levels go up and firm profits fall as a result. What can be seen in the figure is that there is a breakpoint in sabotage costs and implied sabotage levels, below which overall welfare is higher with monopoly than it is with oligopoly. Note that what happens in this case is that the increase in profits that follows from reducing competition in product space more than offsets losses to consumers. In terms of a closed economy, the implications are relatively straightforward. If we are unable to police anticompetitive behavior directly, a pro-merger policy may also be a preferred pro-competitive policy in terms of total welfare, because it shuts-down destructive anti-competitive activities. The situation gets more interesting, in an analytical sense, when we introduce nationality. To keep things simple, we will assume that both firms are in the home country h, while consumers are evenly split between home h and foreign f. Competition authorities seek to maximize an objective function W that is a weighted sum of consumer surplus CS and producer surplus PS. While in the antitrust literature the weights γ are usually assumed to all be one, they may vary because of political economy factors, as in the literature on trade policy. (See Hillman

[7] There are similarities to the war of attrition literature. See Bulow and Klemperer (1999). However, in the present context it is not necessarily the case that firms drop out. The bar fight equilibrium, as defined in the next section, may leave both parties standing to fight in repeated rounds.

[8] The coefficient values in Figures 3 and 4 are $a = 10, b = 0.1, c_1 = 1, c_2 = 1, \alpha_1 = \alpha_2 = 3.75..30, p_z = 1$.

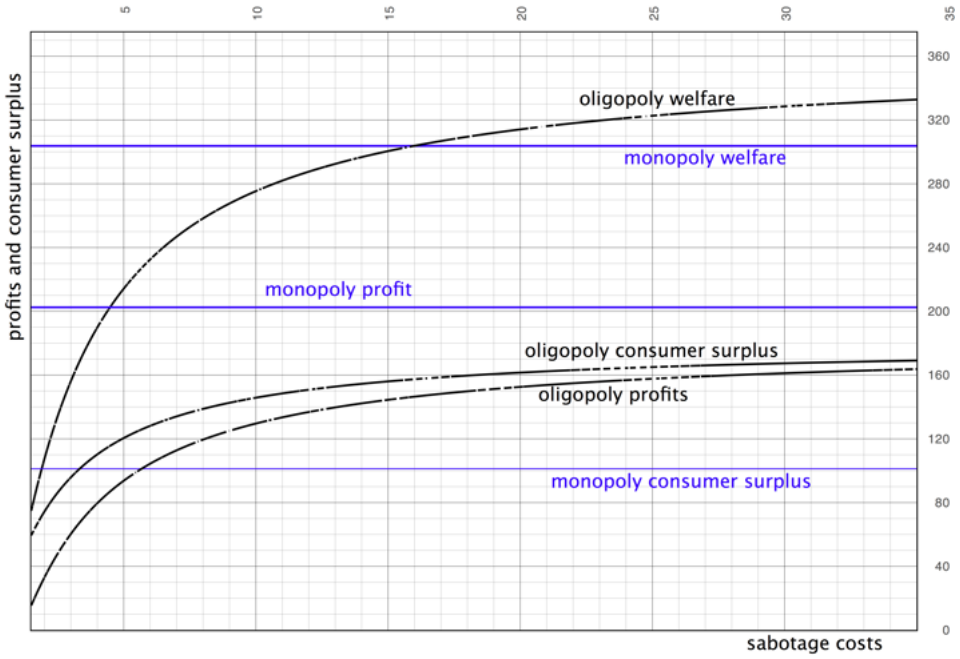

Figure 3: pro-competitive mergers

1982,1989,2003 and Grossman and Helpman 1994.)

$$\textit{duopoly} \tag{18}$$

$$\begin{aligned} W_{h,d} &= \gamma_{h,\pi}\pi_{h,d} + \gamma_{h,\pi}\pi_{2,d} + \gamma_{h,CS}CS_{h,d} \\ W_{f,d} &= \gamma_{f,CS}CS_{f,d} \end{aligned}$$

$$\textit{monopoly} \tag{19}$$

$$\begin{aligned} W_{h,m} &= \gamma_{h,\pi}\pi_{f,m} + \gamma_{h,CS}CS_{h,m} \\ W_{f,m} &= \gamma_{f,CS}CS_{f,m} \end{aligned}$$

For the discussion that follows, we will assume welfare maximizing competition authorities, such that $\gamma = 1$. In this case, it should be clear from Figure 3 that national preferences for a merger may diverge. Our example is enough to make the point that while it will not necessarily happen, it is quite possible that one country will prefer a

merger, while the other will oppose it. A similar finding can be found in the literature stressing the direct impact of mergers on market power. This point follows directly from Observation 5, and is summarized in the following corollaries.

Corollary 1 *When both firms are domestic, national regulators may favor mergers that harm domestic consumers for efficiency reasons related to profits. The more export-oriented the industry, the less important consumer surplus and the more likely mergers will be favored. This suggests an empirical relationship between export orientation and the tendency to approve or block home mergers.*

Corollary 2 *When both firms are foreign, national regulators may oppose mergers even if they are globally welfare improving. This suggests an empirical relationship between nationality of firms and the tendency to approve or block mergers.*

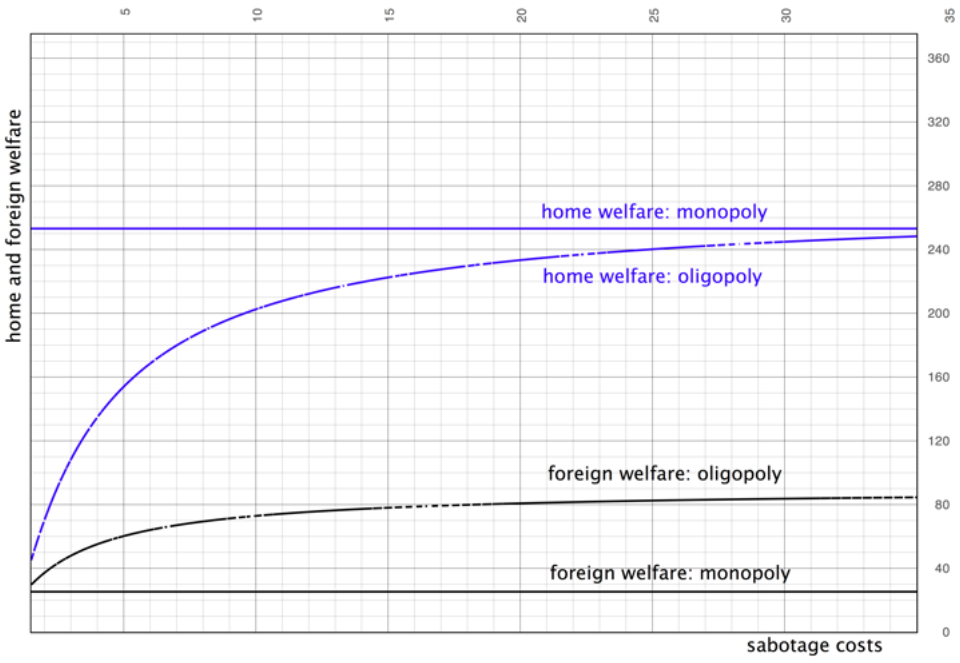

Figure 4: Nationality and pro-competitive mergers

We provide numeric examples of corollaries 1 and 2 using Figure 4. In the figure, we have the same basic equilibrium illustrated in Figure 3. The critical difference is that

following equations (18) and (19), we have assigned all profits to the home country, so that home welfare is a combination of consumer surplus and profits while foreign welfare is a function of consumer surplus alone. What follows is a clear welfare ranking for h and f, where the rankings are in conflict. The critical difference here is the addition of sabotage effects. Even if a country would otherwise oppose a merger in the absence of sabotage, it may support it where it serves to limit destructive competition on the part of firms. In cases where a country would support a merger anyway due to profit shifting (in effect due to terms-of-trade gains), the pro-competitive aspects of the merger, in the sense of a limiting effect on destructive competition, will reinforce this effect. In addition, if the foreign country received at least some profits in addition to consumer benefits, we can construct cases where the pro-competitive effects of merger are enough to tip the balance from opposing the merger to supporting it.

4 Barfights: Regulating Destructive Competition

4.1 symmetric firms and demand

We turn next to the direct regulation of anticompetitive behavior of firms. We start with the cleanest case – pure symmetry in production costs for a type-h and type-f firm and symmetric populations of identical type-h and type-f consumers. In this pure symmetric case, the firms are better off if we limit sabotage. In a sense, the equilibrium with sabotage given full symmetry is comparable to a bar fight with balanced opponents – a "barfight equilibrium". Neither side really wins, and both sides are better off if the fight does not get started in the first place or if it ends early.

Consider Figure 5, [9] where we have mapped profits for firms 1 and 2 against the costs of engaging in sabotage, indexed by the cost coefficient α. Note first that in the symmetric case, there is a ridge line that maps increasing profits for both firms as a function of symmetric increases in sabotage costs. While not shown, there is a

[9] The coefficient values in Figure 5 are $a = 10, b = 0.1, c_1 = 1, c_2 = 1, \alpha_1, \alpha_2 = 3.75..10, p_z = 1$.

corresponding increase in consumer welfare as well along this ridge line. This leads to the following observations.

Observation 6 *With split ownership (type-f and type-h firms) of cost-symmetric firms, all consumers and all firms gain from joint, uniform penalties on sabotage that increase α symmetrically across both firms.*

Observation 7 *There is scope for global welfare improvement through an agreement to jointly police anticompetitive behavior. This depends on the parameter space. Side payments may be required.*

The figure also illustrates the scope for gains from selective enforcement by competition authorities. Assume that enforcement can be translated into an increase in the sabotage cost coefficient α. It can be seen in Figure 5 that enforcement against one firm will tend to raise the profits of the other firm. Clearly we have conditions where, even in the absence of external penalties, with an appropriate discount rate firms may be able to sustain a cooperative equilibrium where they do not sabotage using Nash reversion as the threatened punishment. (Mas-Colell et al 1995, Ch12 AppendixA). We therefore can make the following observations.

Observation 8 *With split ownership (type-f and type-h firms) of cost-symmetric firms, in a repeated game context national competition authorities have a short-run incentive to police foreign firms more strictly because of the impact on the profits of domestic firms.*

Observation 8 relates to the regions of asymmetric sabotage costs in the figure. This could follow from uneven enforcement of fines, for example, linked to sabotage. Even in the case of symmetry, where there is clearly scope for a joint agreement to benefit both sides, the same prisoner's dilemma problem exists as with the firms themselves. There are short-run benefits to be the cheater, from Figure 5, as profits are higher for the home firm. What does this bode for cooperative, consistent, international competition policy? When we expect symmetric firms to drop into their Nash reversion strategies as

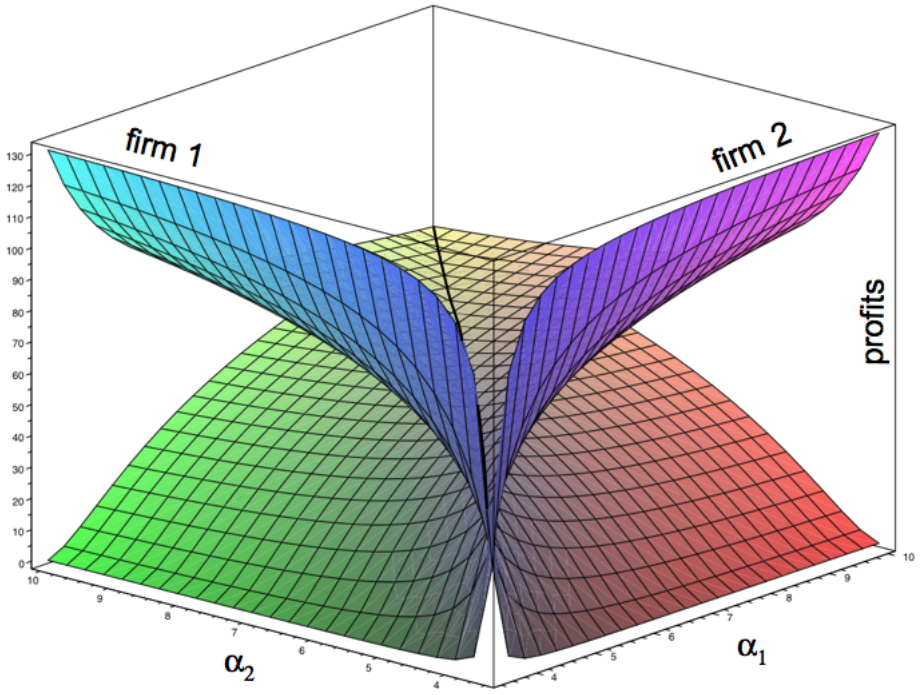

Figure 5: Profits with symmetric sabotage costs

α changes asymmetrically, what we have from observation 8 is the possibility for short-term gain from a deviation from a cooperative, symmetric enforcement regime, even though the symmetric enforcement regime implies higher welfare over time. Depending on discount rates, the threat of a non-cooperative set of strategies involving non-enforcement of anti-sabotage fines or punishment through raising α may be enough to sustain a cooperative regime. In other words, one can certainly construct conditions sufficient for a cooperative set of national competition policies to be sustainable.

Asymmetries in terms of firm cost, ownership, or consumer base can lead to a strategic competition policy being preferred by one country such that the non-coopeartive equilibrium is clearly a dominant option. We examine such possibilities in the next subsection.

4.2 Asymmetries in firm properties or demand

We turn now to the incentives for policing anticompetitive behavior when nationality plays an explicit role, either because firms differ systematically between countries h and

f in terms of cost, or because one country has a disproportionate share of consumers relative to total production. We know from Figure 3 that under duopoly, we can have cases where home and foreign welfare are both increasing in sabotage costs α. In such a case, home h and foreign f competition authorities would agree that aggressive policing, in the form of a realized increase in the sabotage cost coefficient (for example through fines) will improve welfare in both countries. Indeed, from Figure 5 and observation 6, firms may themselves prefer external enforcement, when it is balanced. At the same time, there will also clearly be cases where national interests do not coincide, and where a non-cooperative policy regime is more likely. We consider two cases here.

First, consider, the case illustrated in Figure 2. Recall that this was a case with asymmetric firms in production cost space. Assume that firm 1 is a type-h firm, and firm 2 is a type-f firm. Also assume that consumers are split evenly between the two countries. For sufficiently low values of α, the non-coopeartive equilibrium will involve a home country monopoly, with the home firm monopoly able to keep the foreign firm out of the market because the sabotage equilibrium is one of guaranteed losses for the type-f firm. As such, foreign consumers are forced to buy from the home monopoly, and the monopoly rents from foreign sales accrue to the home firm. Hypothetically speaking, this could again involve our imaginary computer operating system monopolist, based in the home country and selling in the foreign country. What if the foreign competition authority raises α enough to induce entry by the foreign firm? This could be done, for example, by declaring large fines on the home country operating system monopoly for any anticompetitive behavior. With a sufficient increase in α, the foreign competition authority is able to induce the foreign producer to (re-)enter the market, as destructive competition vis-á-vis the home monopolist is less of an issue. The result is an increase in consumer surplus, and a shift in profits from home to foreign. Clearly, this benefits the foreign country. The home country may be hurt, if profits fall by more than the increase in consumer surplus. Indeed, unless sabotage is sufficiently precluded by the competition policy regime, then because the two firms

will otherwise engage in destructive behavior, we may have a drop in global welfare and home welfare, even as foreign welfare rises.[10]

Observation 9 *Country-j competition authorities may benefit from having a credible policy of policing anticompetitive behavior by a type-i (foreign) firm even when there is only one firm and no actual sabotage taking place, if this breaks the threat equilibrium such that a profitable producer then emerges. Consumers will then gain in this scenario, even if the protected firm is foreign. Things are even better for country j if this second firm is a type-j firm.*

Observation 10 *With cost asymmetries, it may be that policing anticompetitive behavior is globally welfare reducing because it favors the market position of the less efficient firm, while at the same time being nationally welfare improving if it is the home of the less efficient firm.*

We offer proof of Observations 9 and 11 through example, using Figure 6.[11] The figure provides a numeric example where the foreign country is home to the high cost firm. Basically, in the range of low sabotage costs but positive production for both firms (i.e. to the right of the monopoly range from Figure 2), the foreign country gains from rising sabotage costs in a range where the home country is hurt because of increased competition to its own firm. At the same time, the expanded presence of the small, inefficient firm implies a range where world and home welfare are falling in sabotage costs (identical in this case to stricter fines or other penalties from the competition authorities) while foreign welfare in increasing.

As a second example, consider symmetric firms engaged in destructive competition (a barfight equilibrium), as indicated in Figures 3 and 4. We can go beyond our discussion of merger policy in Section 3. Indeed we will have a relatively rich set

[10] While not explored here, seemingly innocuous national production subsidies can also lead to a monopoly outcome because of the interaction with anticompetitive behavior. Such production subsidies, in conjunction with sabotage options, may drive the foreign firm out of the market. As such, we have yet another case where domestic commitment to subsidize production might be an effective entry barrier to the foreign firms.

[11] The coefficient values in Figure 6 are $a = 10, b = 0.1, c_1 = 1, c_2 = 1.05, \alpha_1 = \alpha_2 = 3.75..30, p_z = 1$.

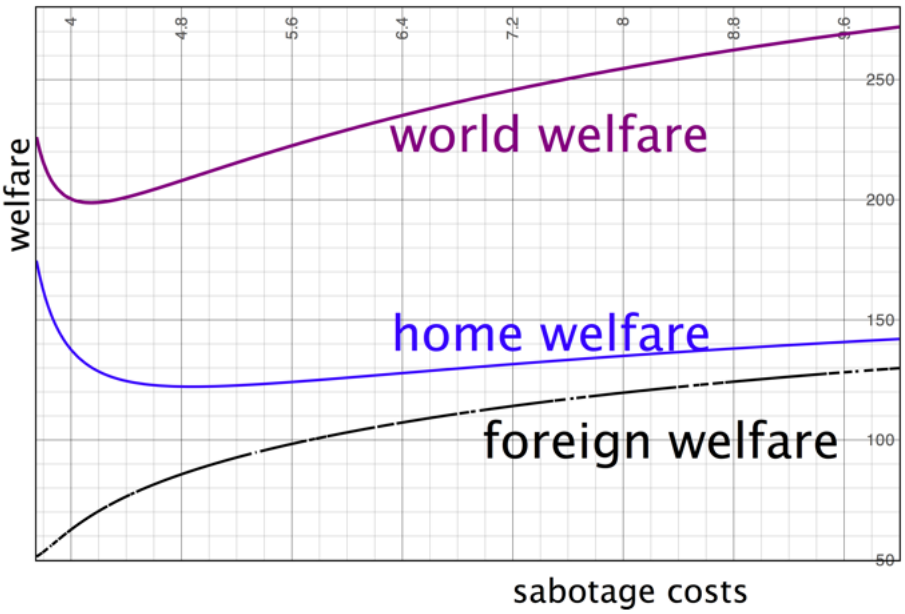

Figure 6: National and global welfare with asymmetric national firms

of preferences for national competition authorities in terms of both mergers and the policing of anti-competive behavior. Recall that in the example covered in Figures 3 and 4, both firms are type-h firms, while consumers are split between type-h and type-f consumers. In this case, while the home competition authority will favor merger over policing of anticompetitive behavior, the foreign competition authority will try to block a merger in the other country (as the EU did in the GE-Honeywell merger) while opting instead for more rigorous enforcement through fines or related penalties that drive up the sabotage cost coefficient α while keeping both players in the market. We summarize these points, based on the numeric examples in Figures 3 and 4, by the following observations.

Observation 11 *National competition authorities in consumer countries, or countries where a relatively large share of domestic firm output is sold domestically, are more likely to favor policing the anticompetitive behavior of firms directly, favoring an increase in α over the alternative of a pro-competitive merger.*

Observation 12 *With split ownership (type-f and type-h firms), competition authorities in the high cost country, all other things equal, will favor relatively strict punishment (through increases in α) for anticompetitive behaviour. The low cost country may prefer relatively less enforcement (as in the case where this leads to a home monopoly).*

5 Firm Lobbying and Competition Policies

So far discussion has focused on welfare maximizing competition authorities. Following Helpman (1995) and Hillman (2003), we note that many lobbying models can be represented by the now standard political support function. The political weight terms γ in equations (18) and (19) can be a reflection of lobbying. (See Faccio 2006.) How does this affect our basic results? The primary effect is an increase in the importance placed on profits. As profits already drive our results, many of our basic results remain unchanged, qualitatively. In terms of actual equilibrium policy sets, we can expect government policies that favor profits relative to consumer surplus gains. Hence, for example, in Figures 3 and 4 there will be a wider range of competition costs where mergers are favored over policing of sabotage. In addition, with a greater weight on profits, where side payments are required to reach an agreement (as in Figure 4), these payments need to be larger when politics are introduced.

We can also look at the political weights in terms of state positions under a unified competition regime. A recent example is the EU Member State positions in the EU anti-trust case against Microsoft, and the position of various US states in a combined state-level antitrust case against Microsoft. (See Gilbert and Katz 2001 and Niels and ten Kate 2004). Controlling for consumer effects, the cynical view is that the position of various US states reflected the relative political weight of Microsoft at the state level. In a sense, this is a version of the nationality case covered above. While the EU position on Microsoft vis-a-vis the US position on Microsoft similarly may relate to nationality as spelled out above in previous sections, the Bush administration decision

to drop a substantial amount of the case reflects shifts in internal political weights.

6 Conclusions

As the scope of companies shifts from national to global, we observe disagreement across regulatory regimes in the setting of competition policy. This includes the EU blocking of the U.S. approved GE-Honeywell merger, and the subsequent divergence between the U.S. and most other authorities on the treatment of Microsoft. Such cases demonstrate that antitrust policy has become yet another arena offering the potential for beggar-thy-neighbor economic policy decisions and fundamental disagreements that preclude the international coordination of policy. In this paper a model is developed where firms engage in anticompetitive behavior, as represented by sabotage. Because multinational firms sell into multiple markets, they fall prone to multiple competition regimes. The model has been used to examine the regulation of such firms by national authorities. The bottom line of this analysis is that nationality matters. Indeed, even if national competition authorities are focused on national welfare maximization, with asymmetries across countries (big and small firms, exporting and importing countries) there is scope for basic disagreement with non-cooperative outcomes in policy space. This is similar to the results we have from the trade policy literature. When we introduce political weighting to the mix, such that industry profits carry disproportionate weight relative to consumers, the scope for non-cooperative outcomes widens. Basically, on an industry level, we can expect that fundamental disagreement may be a characteristic of the equilibrium policy set. Like trade policy, the hope for globally welfare improving approaches to competition may therefore require either side-payments or a balance of potential cases such that differences in demand and firm structures and nationality mean different rules will otherwise be followed in different cases.

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