On the anticompetitive effect of exclusive dealing when entry by merger is possible∗

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Abstract

We extend the literature on exclusive dealing by allowing the incumbent and the potential entrant to merge. This uncovers new effects. First, exclusive dealing can be used to improve the incumbent’s bargaining position in the merger negotiation. Second, the incumbent finds it easier to elicit the buyer’s acceptance of exclusivity. Third, despite allowing the more efficient technology to find its way into the industry, exclusive dealing reduces welfare because (i) it may trigger entry through merger whereas independent entry would be socially optimal and (ii) it may deter entry altogether.

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I Introduction

Exclusive dealing provisions are contracts between a buyer and a seller that prohibit the buyer from trading with other (typically rival) sellers. The possible anti-competitive effect of such contracts, which has been at the centre of several prominent antitrust cases both in the US and in Europe, is one of the most controversial issues in antitrust.

In the U.S., the courts treated exclusive dealing (ED from now and onwards) harshly for many years. The justification for this treatment was that if a buyer signs an exclusive contract, all other sellers are foreclosed from competing for that buyer’s business. Hence, exclusive contracts can easily lead to the exclusion of competitors and to monopolization. Beginning in the 1950s, this view was attacked by the so-called “Chicago-school” scholars on the grounds that excluding rivals by means of exclusive contracts is not profitable for the seller. This view has been very influential and has led U.S. courts to adopt an opposite benevolent stance towards ED. However, since the mid-1980s a number of authors have shown that the courts’ traditional concern was not ill-founded and they have formally established that, under specific circumstances, an incumbent firm can profitably use exclusive contracts to deter entry of a more efficient rival. See, for instance, Aghion and Bolton (1987), Spier and Whinston (1995), Rasmusen et al. (1991), Segal and Whinston (2000a), Bernheim and Whinston (1998), and Fumagalli and Motta (2006). This triggered the U.S. courts to take the anti-competitive effects of ED more seriously in several recent cases (such as those mentioned in footnote 1 above).

A common feature of this recent literature is the assumption that the new firm can enter the market only by establishing an independent plant. Then, when the presence of the ED forecloses access to the buyers, thereby making independent entry unprofitable, the more efficient firm is forced to stay out of the market. However, it is natural to think that a more advanced technology can find other channels for finding its way into the market. A merger, or a licensing agreement, with the incumbent are examples of such channels.

The beer industry provides some insightful anecdotal evidence on the relation between ED and mergers. Establishing exclusive dealing arrangements with independent distributors is a strategy commonly adopted by incumbent firms to create strong distribution networks, which represent a relevant competitive advantage against rivals. To overcome such a barrier, new entrants have sometimes resorted to mergers and acquisitions. For instance, in 2003 Interbrew, a large Belgian brewer, acquired 70% of K.K. Brewery, the leading beer maker in Zhejiang Province in China. Other Western brewers (such as Anheuser-Busch and SAB-Miller) were also using acquisitions to get into the second largest market in the world. For foreigners, this push was a second attempt. In the 1990s, several of them failed to break into the market: they tried to do it alone but they could not compete successfully without access to local distribution networks.

Another example is the development in the US beer industry in the 1990s, as described by Tremblay and Tremblay (2005), where strong incumbents strengthened their exclusivity deals
with distributors as a reaction to the growth of micro breweries in order to induce exit and takeovers: “...in the 1990s Anheuser-Busch and Miller started financial incentive programmes that encouraged distributors to exclusively carry their own regular and speciality brands in effort to squeeze out rival craft and contract products (...).” This induced some successful micro brewers to sell part of their shares to the incumbents. Indeed, according to Kurt Widmer, the founder of the Widmer brewery, “... selling a 31% share of his company to Anheuser-Busch, by providing access to their best-in-the-industry distribution system, was the only way to avoid killing the company and have the chance to expand (...).”

More generally, that incumbents’ relation to customers affects the entry mode in new markets is supported by the literature on foreign direct investments which documents that multinational firms tend to enter into foreign markets via M&As rather than through greenfield investments in order to have access to strategic assets such as local distribution networks.

Allowing the entrant to merge with the incumbent, thereby providing an alternative channel for efficient entry to take place, raises the question of whether ED can still be used by an incumbent firm for anti-competitive purposes. In this paper, we address this question, which - to the best of our knowledge - has not been studied yet.

We construct a model where the entrant might enter the industry either via independent production or through a merger: in the latter case, the merged entity will employ the entrant’s more efficient technology in the incumbent’s existing plant. Note that the merger could also be interpreted as a licensing agreement or a transfer of technology: the incumbent buys the efficient technology from the entrant, which will not operate independently in the market. (Throughout the paper, we shall mostly use the term “mergers”, but it should be clear that we could just as well talk of licensing agreements.) We also introduce an Antitrust Agency which can approve or reject the merger proposal (or the licensing agreement).

We show that the consideration of mergers (or licensing agreements) uncovers three new effects of ED. First, exclusive dealings help the incumbent in its bargaining over the terms of the acquisition. Under exclusivity, if the negotiation collapsed, independent entry would not be possible and the incumbent would receive its monopoly profits. Instead, absent exclusivity, if the negotiation collapsed, independent entry would occur and the incumbent would receive zero profit. Therefore, the incumbent’s disagreement payoff is larger under ED and it extracts a larger total payoff from the negotiation. In a sense, ED facilitates the extraction of rents from the more efficient entrant, similarly to what happens in Aghion and Bolton (1987) where, however, rents are extracted through liquidated damages, i.e. penalties established in the exclusive contract to be paid in case of breach of contract.

Second, contrary to the “Chicago School” critique, when mergers (or licensing agreements) are possible, the incumbent can profitably induce the buyer to accept exclusivity. In the standard “Chicago School” model, mergers are not allowed. Then, signing the contract deters entry altogether, while independent entry occurs if the contract is rejected. It follows that the incum-
bent should compensate the buyer for paying the monopoly price instead of the incumbent’s marginal cost (which is the price prevailing under independent entry) in order to elicit his acceptance. Due to the monopoly deadweight loss, the incumbent’s gain from entry deterrence (the monopoly profits) is insufficient to profitably offer this compensation and the ED will not be signed in equilibrium. Allowing for mergers in the “Chicago school” setting makes it profitable to elicit the buyer’s acceptance for two reasons. First, there are cases (depending on the entrant’s marginal cost) where the merger will occur irrespective of whether the ED has been signed: here, the buyer would require no compensation to sign exclusivity. Second, there are cases where the merger will occur only when exclusivity has been signed (independent entry occurring otherwise). In this case, inducing the buyer to sign exclusivity is facilitated by the fact that the merger makes the incumbent more efficient: on the one hand, the buyer will pay a lower price than if he had to buy from the less efficient monopolist; on the other hand, the incumbent will extract part of the merger surplus. Relative to the standard “Chicago-school” type model without mergers, the buyer will demand a lower compensation to sign exclusivity, and the incumbent will have higher gains from it.

Third, we show that—despite the possibility of a merger (or licensing agreement), which indeed allows the more efficient technology to find its way into the industry and makes inefficiencies in production less of a concern—exclusive dealing is still welfare-reducing. This occurs for two reasons. First, there are cases (once more depending on the entrant’s marginal cost) where exclusive deals trigger an inefficient entry mode: in equilibrium, entry occurs through a merger rather than by independent entry, which entails an allocative inefficiency since the merger removes competition and increases the market price. The intuition for this result is that the Antitrust Authority cannot but authorize the merger in the presence of ED, while it blocks the merger and implements independent entry when no exclusive contract has been signed. The reason for this is that in the former case, the merger replaces an inefficient monopoly with a more efficient one (which is welfare beneficial), while in the latter case, the merger replaces independent entry with a monopoly (which is welfare detrimental). Second, there are also cases where ED deters entry altogether. This effect can arise in the case of uncertainty, where the incumbent and the buyer decide on exclusivity before knowing the actual cost of the entrant. In this case, the buyer might end up ex ante accepting an exclusive contract with a compensation that turns out to be too small ex post (that is, after the technology of the entrant has been revealed). Efficient entry is deterred by “a mistake” of the buyer who asks too small a compensation, much in a similar way as in Aghion and Bolton (1987) where entry is deterred by “a mistake” of the incumbent which sets too large a penalty on breach of contract.

Our results lead to the following policy implications. First, the intensity of upstream competition matters when analyzing ED. The fact that upstream firms can merge, thereby removing competition, enables the incumbent to elicit the buyer’s acceptance, which harms welfare. In a similar vein, Farrell (2005) shows that when upstream sellers compete in quantities rather than
in prices (as assumed in the Chicago school argument), the incumbent can induce the buyer to sign the exclusive contract, thereby deterring entry. The intuition is that if the buyer expects that absent exclusivity the entrant and the incumbent will not be fierce competitors, then he will request a small compensation for accepting the exclusive contract. Hence, weak upstream competition facilitates anti-competitive exclusive dealing.

Second, antitrust authorities should be aware of the fact that the welfare detrimental effect of ED does not only stem from foreclosure. Indeed, our analysis shows that ED can harm welfare also through its impact on merger (or licensing) decisions. Hence, antitrust authorities should take into account that the policy concerning exclusive contracts and the policy concerning horizontal mergers (licensing agreements) are related. Differently stated, exclusive contracts and horizontal mergers (licensing agreements) should not be evaluated in isolation, but when assessing the anti-competitive effects of ED, antitrust authorities should anticipate the effect it may exert on the subsequent merger (or licensing) decisions.

The paper is organized in the following way. Section II describes the basic model and our main results. Section III discusses a number of extensions to the basic model. Section IV concludes.

II The model

We consider an incumbent firm (denoted as firm I) which supplies a good to a single buyer,\textsuperscript{13} incurring a constant marginal cost $c_I = 1/2$. The buyer’s demand is given by $q(p) = 1 - p$.

The incumbent faces a threat of entry by a more efficient firm $E$, whose marginal cost of producing the same homogenous good is $c_E \in [0, 1/2)$. The entrant can choose between two modes of entry. (1) It can set up an independent firm paying a fixed sunk cost $f > 0$. If independent entry occurs, the entrant and the incumbent compete à la Bertrand. To highlight the potential anti-competitive effects of an exclusive deal contract, we assume independent entry to be profitable:

$$(c_I - c_E)q(c_I) - f > 0, \quad (A1)$$

which requires that the entrant is sufficiently more efficient than the incumbent, i.e. $c_E < c^d_E(f)$ where $c^d_E < c_I$ is the value of $c_E$ that ensures that A1 holds as equality. We impose an upper bound on fixed entry costs and we require $f$ to be lower than the monopoly deadweight loss:

$$f \leq CS(c_I) - CS(p^m(c_I)) - \pi^m(c_I) = 1/32 \quad (A2)$$

where $p^m(c)$ and $\pi^m(c)$ denote, respectively, the monopoly price and the monopoly profits of a firm with marginal cost $c$, and $CS(p)$ denotes the surplus enjoyed by the buyer if paying the price $p$.\textsuperscript{14} (2) Alternatively, the entrant can merge with the incumbent. In this case, the firm resulting from the merger will adopt the entrant’s more advanced technology. For simplicity, it is here assumed that adapting the existing plant to the entrant’s technology is costless. (Section III.i will discuss the case of costly technology adoption.)
Firms planning to merge must notify an Antitrust Agency (denoted AA) of the project, which decides whether to authorize or block the merger. The AA’s decision is taken in order to maximize total surplus, measured by the sum of consumer and producer surplus. (Section III.iii will discuss the case where the AA’s objective function is consumer surplus.)

In case of a merger, the incumbent and the entrant negotiate over the distribution of the realized surplus. We do not adopt any specific bargaining protocol. We simply assume that bargaining is efficient and that the involved parties agree on the merger if each player receives at least its disagreement payoff. A share \( \beta \in [0, 1] \) of the realized net surplus is appropriated by the incumbent \((1 - \beta)\) by the entrant. For instance, if the entrant can make take-it-or-leave-it offers to the incumbent, then \( \beta = 0 \). If the two firms share the gain from trade equally, then \( \beta = 1/2 \).

Prior to the entry decision, the incumbent offers the buyer an ED contract. At the time of contracting, the firms’ costs are common knowledge. (Section III.i will deal with the case where there exists uncertainty about the entrant’s marginal cost.) The exclusive contract specifies a compensation \( x \) that the incumbent commits to pay to the buyer if he signs the deal, but it does not include any commitment to prices.\(^{15}\) Moreover, this Section assumes that the exclusive dealing contract cannot be breached, which is equivalent to assuming that the remedy for breach consists of specific performance.\(^{16}\) (Section III.iv will analyse the case where contract breach can be remedied upon the payment of expectation damages.)

Finally, we assume that the exclusivity provision cannot be renegotiated. This assumption is adopted by most of the literature on anti-competitive exclusive dealing. The existence of transaction costs may explain why renegotiating the exclusive contract may be too costly. For instance, it may require legal services, or it may involve lengthy procedures and uncertain court decisions (which might imply that the buyer will be left without consuming the good until the court’s judgment has been made or the new agreement has been found). Moreover, the negotiation activity itself may involve substantial effort, time and resources and be quite costly.\(^ {17}\)

Transaction costs may also exist in mergers or licensing agreements, but whereas the merger deal is negotiated by the incumbent and the entrant, renegotiating an exclusive contract would also involve the buyer, or more likely many small buyers. For instance, in the US beer industry, many exclusive deal contracts involve large producers and small bars and restaurants, or distributors.\(^ {18,19}\) When buyers are small and many, the transaction cost of renegotiating a contract for each single buyer may become too high. Furthermore, the existence of asymmetric information constitutes an additional reason why renegotiation may not occur. In particular, it seems reasonable to assume that the incumbent could better evaluate the entrant’s technology than a small or unsophisticated buyer. The merger deal, taking place between two suppliers, might in this sense involve less asymmetric information than the renegotiation of exclusivity.\(^ {20}\)

To summarise, the timing of the game is as follows (see also Figure I):

1. At date 1, the incumbent offers the buyer an exclusive dealing contract. The buyer decides
Figure 1: Time-line

whether to sign the contract.

2. At date 2, the entry decision is taken (and the AA decides, if applicable).

3. At date 3, active firms simultaneously name prices.

We look for subgame perfect Nash equilibria and we solve the game backwards.

Product market interaction (date 3) If no entry occurred at date 2, the incumbent charges the monopoly price $p^m(c_I)$.

If independent entry occurred, date-3 prices depend on whether the buyer accepted exclusivity. If the buyer agreed to purchase only from the incumbent, the entrant cannot sell the good and the buyer pays the monopoly price $p^m(c_I)$. Instead, if the buyer did not sign the exclusive contract, competition between the entrant and the incumbent takes place. With linear demand and $c_I = 1/2$, $p^m(c_E) \geq c_I$ for any feasible value of $c_E$. Hence, in equilibrium, the more efficient entrant sells the good charging the price $c_I$ (we get rid of equilibria supported by weakly dominated strategies).

Finally, if entry by merger occurs, the new firm monopolizes the market and supplies the buyer charging the monopoly price $p^m(c_E)$, irrespective of whether the buyer signed the exclusive contract.

Let us analyze the entrant’s decision at date 2, starting from the decision of the AA about a proposed merger project.
II.i Entry decision (date 2)

At date 2, the entrant decides among the merger, independent entry and staying out of the market. In making this choice, it anticipates the decision of the AA about the merger project.

Decision of the Antitrust Authority.

The decision of the AA depends on the market outcome that would arise if the merger were blocked which, in turn, crucially depends on whether the exclusive contract has been signed.

(i) Exclusivity has been accepted. In this case, independent entry is unprofitable since the unique buyer is constrained to purchase from the incumbent and entry costs will remain uncovered ($\pi_E = -f < 0$). This implies that should the merger be prohibited, the entrant would remain out of the market, and the incumbent’s monopoly would persist. Instead, if the merger is allowed, the entrant’s more advanced technology is adopted and a more efficient monopolist replaces the existing one, thereby increasing both industry profits ($\pi^m(c_E) > \pi^m(c_I)$) and consumer surplus ($p^m(c_E) < p^m(c_I)$). Therefore, under exclusivity, the merger is always allowed:

$$\pi^m(c_E) + CS(p^m(c_E)) > \pi^m(c_I) + CS(p^m(c_I)) \quad \text{for any } c_E < c^d_E.$$  

(ii) Exclusivity has been rejected. In this case, independent entry is profitable. The buyer is not constrained by any exclusivity obligation and competition between the incumbent and the entrant takes place if the latter establishes an independent plant. Moreover, assumption A1 ensures that buyer’s demand suffices to cover the entry costs. Hence, if the merger is prohibited, independent entry occurs. This implies that, in evaluating the merger project, the AA must trade off the cost in terms of increased market power (the merger removes competition between the entrant and the incumbent and the new firm charges the monopoly price $p^m(c_E) \geq c_I$) with the benefit in terms of fixed costs saving (the merger involves no fixed costs). The latter dominates if the entrant is sufficiently efficient since this limits the price increase caused by the merger. Formally, the merger is allowed if (and only if):

$$\pi^m(c_E) + CS(p^m(c_E)) > (c_I - c_E) q(c_I) + CS(c_I) - f.$$  

Condition (1) is satisfied if (and only if) $c_E < c^r_E(f) \equiv 1/3 - 1/3 \sqrt{1 - 24f}$. The threshold $c^r_E(f) \in [0, c^d_E]$ for any $f$, and it is identified by the $c_E$ ensuring that (1) holds as equality.\textsuperscript{21}

Decision of the entrant

We can now move backwards and study the entrant’s decision.

It turns out that the entrant and the incumbent are always willing to merge - irrespective of exclusivity - because the merger increases the industry surplus. Under exclusivity, the merger replaces an inefficient monopolist with a more efficient one; absent exclusivity, the merger removes
competition and entails a saving in fixed costs. Hence, the merger occurs whenever the AA approves the proposal.

Section II.i has shown that under exclusivity, the AA always endorses the merger proposal. Hence, entry by merger always occurs. Each firm’s payoff is given by its disagreement point payoff plus its share of the net realized surplus:

\[
\pi^s_I = \pi^m(c_I) + \beta [\pi^m(c_E) - \pi^m(c_I)]
\]

(2)

\[
\pi^E = (1 - \beta) [\pi^m(c_E) - \pi^m(c_I)] \geq 0
\]

(3)

with \(\beta \in [0, 1]\). Note that the incumbent’s disagreement payoff amounts to the monopoly profits, since the entrant would stay out of the market if the negotiation should break down.

In contrast, absent exclusivity the AA approves the merger if (and only if) the entrant is sufficiently efficient \((c_E < c^*_E)\). When this is the case, firms’ payoffs are given by:

\[
\pi^{r,m}_I = \beta [\pi^m(c_E) - ((c_I - c_E)q(c_I) - f)] \geq 0
\]

(4)

\[
\pi^{r,m}_E = \beta [(c_I - c_E)q(c_I) - f] + (1 - \beta)\pi^m(c_E) > 0.
\]

(5)

Note that the incumbent’s disagreement payoff now amounts to zero, since independent entry would occur if the negotiation were to fail.

When instead the efficiency gap between the entrant and the incumbent is not sufficiently large \((c_E \geq c^*_E)\), the merger is blocked and independent entry occurs. The incumbent’s payoff is 0 while the entrant earns \(\pi^{r,i}_E = (c_I - c_E)q(c_I) - f > 0\).

The entry pattern is summarized by Lemma 1 and Figure 2.

**Lemma 1.** : At date 2, 

- If the buyer signed the exclusive deal, the entrant merges with the incumbent for any \(c_E\).
- If the buyer rejected the exclusive deal, the entrant merges with the incumbent if \(c_E \in [0, c^*_E)\). Otherwise, the merger is blocked and independent entry occurs.

Lemma 1 highlights that exclusive deals affect the entry pattern by triggering the merger instead of independent entry (when \(c_E \in (c^*_E, c^*_E)\)). The reason is that the AA is more lenient towards the merger in the presence of the exclusive agreement, since the alternative to the merger is the persistence of the former (inefficient) monopolist whereas in the absence of exclusivity, the alternative to the merger is independent entry, which is more desirable for society.

### II.ii Contracting decision (date 1)

We now study whether the buyer and the incumbent agree on exclusivity. We will compare the minimum compensation that the buyer requires to accept exclusivity, i.e. the one that makes him indifferent between signing and rejecting the contract, with the incumbent’s gain from having
If ED signed

\[ p = p^m(c_E) \]

\[ \pi^r = \pi^m(c_I) + \beta [ \pi^r(c_E) - \pi^m(c_I)] - x \]

If ED rejected

\[ p = p^m(c_E) \]

\[ \pi^{m,r} = \beta [ \pi^m(c_E) - (c_I - c_E)q(c_I) + f] \]

\[ p = c_I \]

\[ \pi^{r,I} = 0 \]

The ED is signed in equilibrium

\[ \Delta W = 0 \]

\[ \Delta W < 0 \]

Figure 2: The entry pattern, the equilibrium choice and the welfare effects (W denotes total welfare)

the contract signed. The ED will be signed in equilibrium if the latter is larger. For this purpose, it proves helpful to distinguish the following two cases.

Case 1: Large efficiency gap between the entrant and the incumbent \((c_E < c^*_E)\).

In this case, the exclusive contract is always signed in equilibrium since the merger occurs irrespective of exclusivity. Hence, the buyer anticipates that he will end up paying the price \(p^m(c_E)\) irrespective of his decision and is willing to sign the contract behind any (weakly) positive compensation \(x \geq 0\). In turn, the incumbent is willing to offer a strictly positive compensation to have the contract signed: by making independent entry unprofitable, having the contract signed increases its disagreement payoff and allows it to extract a larger total payoff from the negotiation for the merger. The first term on the right-hand side of equation (6), which shows the maximum compensation the incumbent is willing to offer, pinpoints this effect.

\[ x_I = \pi^r_I - \pi^{r,m}_I = [\pi^m(c_I) - 0] + \beta [ (c_I - c_E)q(c_I) - f - \pi^m(c_I)] \]

\[ = (1 - \beta) \pi^m(c_I) + \beta ((c_I - c_E)q(c_I) - f) > 0. \]  

By showing that exclusive deals make the incumbent a “tougher bargainer” in the subsequent merger negotiation, this analysis uncovers a new reason why exclusive deals benefit the incumbent. In a sense, the exclusive contract represents a coalition between the incumbent and the buyer at the expense of the entrant. This role is similar to that played by exclusive deals.
when the exclusivity provision can be breached by paying stipulated damages. In that case, the incumbent has an incentive to set the damages in such a way that (independent) entry is accommodated and that it appropriates the entire surplus the more efficient producer brings to the market.

This result echoes the discussion of predation when mergers are possible. In reply to McGee’s (1958) well-known critique that it would be more profitable for the incumbent to take over the rival rather than preying upon it, Telser (1966) and Yamey (1972) argued that predation and merger might well be complementary strategies: by engaging in predatory behavior, the incumbent might induce an entrant to sell its assets at a lower price, an argument later formalized by Saloner (1987) and Persson (2004). Similarly to these papers – although obviously with completely different mechanisms – we also find that ED will help the incumbent in its bargaining over the terms of the acquisition.

Case 2: Small efficiency gap between the entrant and the incumbent \((c_E \geq c_E^*)\).

In this case, the AA approves the merger only in the presence of the exclusivity provision. Hence, the buyer anticipates that he will be better off if he rejects the contract, because his rejection will cause independent entry instead of the merger and he will have to pay the price \(c_I\) instead of \(p^m(c_E) \geq c_I\). The minimum compensation that the buyer requires to accept exclusivity is then strictly positive and amounts to the surplus lost paying a larger price:

\[
x_B = CS(c_I) - CS(p^m(c_E)) > 0.
\]

In contrast, by triggering the merger instead of independent entry, the ED strictly benefits the incumbent. Under independent entry, it should compete with the more efficient entrant and its payoff would be 0, whereas when the merger occurs it obtains part of the profits generated by the new firm. Hence, the maximum compensation the incumbent is willing to offer is given by:

\[
x_I = \pi_I - 0 = \pi^m(c_I) + \beta [\pi^m(c_E) - \pi^m(c_I)] > 0.
\]

Is the incumbent’s benefit from having the contract signed sufficiently large to profitably compensate the buyer? The following Lemma shows this to be the case if (and only if) the cost difference between the entrant and the incumbent is sufficiently large.

**Lemma 2. Profitability of eliciting the buyer’s acceptance.**

(i) For any \(\beta \in [0, 1]\) there exists a threshold level of the entrant’s marginal cost \(c_E^*(\beta) \in (c_E^r, c_E^d)\) such that \(x_I > x_B\) if (and only if) \(c_E < c_E^*(\beta)\).

(ii) The threshold \(c_E^*(\beta)\) is strictly increasing in \(\beta\).

**Proof.** See Appendix A.

The intuition for this result is that the lower \(c_E\) the lower the monopoly price charged by the merger entity and thus, the lower the loss suffered by the buyer when he signs the contract.
(i.e. $x_B$ is decreasing in $c_E$). On top of this, the lower $c_E$ the higher the profits generated by the merged entity and the higher the value of the merger. This makes the incumbent’s benefit from having the contract signed larger (i.e. $x_I$ is increasing in $c_E$) since it captures a share $\beta$ of the surplus created by the merger. It follows that, when $c_E$ is sufficiently low, it is profitable for the incumbent to elicit the buyer’s acceptance.

Moreover, note that the larger $\beta$, i.e. the larger the incumbent’s share of the net realized surplus, the larger the incumbent’s maximum compensation $x_I$. Hence, the more likely that the exclusive contract is signed in equilibrium.

Summing up the analysis, we can state the following result which is also illustrated by Figure 2.

**Proposition 1.** The equilibrium of the game exhibits the following features:

- When $c_E \in [0, c_E^*(\beta))$, the exclusive contract is signed and firm $E$ enters by merging with the incumbent.
- When $c_E \in [c_E^*(\beta), c_d^*(\beta))$, the exclusive contract is rejected and firm $E$ enters by establishing an independent plant.

There are two issues worth discussing. The first is the role of mergers in getting the ED signed. More precisely, in a setting where the possibility of mergers is not taken into account (as in the standard Chicago School setting), the exclusive contract is never signed in equilibrium. In that case, having the contract signed deters entry altogether, while independent entry occurs if the contract is rejected. Hence, the incumbent should compensate the buyer for the loss suffered when paying the monopoly price $p^m(c_I)$ instead of the price $c_I$ prevailing under (independent) entry. Due to the monopoly deadweight loss, the incumbent’s gain from entry deterrence (the monopoly profits) is strictly lower than the buyer’s loss so that the incumbent cannot profitably elicit acceptance.

Instead, when mergers are allowed for, there exist situations where the ED is signed. This occurs for two reasons. First, the fact that mergers are an entry option decreases the minimum compensation the buyer requires to agree upon exclusivity. As has been shown in the above analysis, either the buyer anticipates that the merger occurs irrespective of his decision so that he will not suffer any loss when signing (i.e. $x_B = 0$); or the buyer anticipates that signing triggers the merger instead of independent entry. In this case, the buyer will still pay the monopoly price instead of the competitive price $c_I$, but the technology transfer creates a more efficient incumbent and the buyer will pay a lower monopoly price. In other words, the buyer must be compensated for the loss caused by the price increase $p^m(c_E) - c_I$, which is lower than the price increase $p^m(c_I) - c_I$ suffered when mergers are not a feasible option. Second, the fact that mergers are an entry option increases the incumbent’s benefit from the contract being signed. The reason

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is that when the merger occurs, the incumbent extracts part of the realized net surplus, which reinforces the previous effect.

The second issue concerns the welfare effects of exclusive deals. In particular, exclusive deals are welfare neutral when the merger occurs irrespective of whether the exclusive deal contract is signed (i.e. when \( c_E < c^*_E \)). The buyer is equally well off in either case and exclusive deals only affect the distribution of total welfare, making it more favorable for the incumbent. Instead, exclusive deals are welfare detrimental when they trigger the merger instead of independent entry (i.e. when \( c_E \in (c^*_E, c^*_E) \)). This follows from the fact that absent exclusivity, the AA would block the merger and implement independent entry. Instead, in the presence of the exclusive deal contract, the AA cannot but approve the merger, even though total welfare would be higher under independent entry. Consequently, we can state the following result:

**Proposition 2.** Banning exclusive deals would be (weakly) welfare beneficial.

Note that the detrimental effect does not stem from the fact that exclusive deals foreclose entry and prevent the adoption of the more advanced technology, but from the fact that, by distorting the AA’s decision, they trigger an inefficient entry mode.

This result highlights the fact that anti-trust authorities should be aware of the important link between the policy concerning exclusive deals and the policy concerning mergers. Differently stated, exclusive deals and mergers should not be evaluated in isolation, but when assessing the anti-competitive effects of exclusive deals, antitrust authorities should not only focus on their foreclosure potential, but should anticipate the effect that exclusive deals may exert on merger decisions.\(^{24}\)

One might wonder whether allowing for merger remedies (i.e. approving the merger subject to conditions) can help remove the inefficiency in the AA’s decision. However, in the presence of the exclusive deal contract, approving the merger provided that exclusivity is cancelled does not implement independent entry. The only way of inducing independent entry is to block the merger and dissolve exclusivity. This would not represent a merger remedy, but would be equivalent to banning exclusive deals.

Similarly, imagine that at the beginning of the game, the AA announces that it will allow mergers involving exclusive deals only if exclusivity is breached. This announcement will affect the contracting stage by reducing the incumbent’s gain from having the contract signed. In particular, it is still the case that having the contract signed will trigger the merger instead of independent entry, but it will not improve the incumbent’s position in the merger negotiation. Eliciting acceptance would be unprofitable. Likewise, the incumbent could not profitably induce the buyer to sign if the AA could credibly commit to block mergers that would be anti-competitive in the absence of exclusive deals. However, all these policies are equivalent to a ban on exclusive deals.
III Extensions

In this section we discuss a number of extensions to the model of Section II.

III.i Uncertainty about the entrant’s marginal cost.

Section II assumes that when the incumbent and the buyer take their decisions on exclusivity, they can perfectly anticipate how efficient the entrant will be. This assumption may be questionable and it may seem more realistic to assume that, at the contracting stage, only the distribution function of the entrant’s marginal cost is common knowledge. Appendix B solves a variant of the model where we assume the entrant’s marginal cost to be uniformly distributed over the interval $[0, 1]$. Most of the results obtained in the deterministic setting of Section II remain valid. The only difference is that with uncertainty, the exclusive deal contract is always signed in equilibrium as stated by the following Proposition:

**Proposition 3.** When there exists uncertainty about the entrant’s marginal cost at the contracting stage and it is common knowledge that the entrant’s marginal cost is uniformly distributed, the buyer always signs the exclusive deal.

**Proof.** See Appendix B.

The reason is that under uncertainty, the buyer computes how much to require as compensation by averaging over the entire range of possible realizations of the entrant’s marginal costs. Thus, he takes into account that there also exist cases where the merger occurs irrespective of his decision, so that his loss from accepting exclusivity is zero. This reduces the average compensation the buyer requires and makes it profitable for the incumbent to always elicit acceptance.

Similarly to the deterministic case, for some realizations of the entrant’s marginal costs the fact that the ED is signed is irrelevant for the entry pattern, but for other realizations it will induce the AA to approve the merger even though independent entry would be socially optimal. It follows that from an *ex-ante* perspective, total welfare would be higher if exclusive deals were prohibited.

**Proposition 4.** When at the contracting stage there exists uncertainty about the entrant’s marginal cost and it is common knowledge that the entrant’s marginal cost is uniformly distributed, banning exclusive deals would increase total expected welfare.

**Proof.** See Appendix B.

III.ii Costly mergers.

Section II assumes mergers to be costless. Let us now consider the case where adapting the incumbent’s plant to the entrant’s more advanced technology entails a fixed cost.
If such a cost is sufficiently low, no additional result is obtained with respect to the model of Section II. Instead, new insights arise if the technology transfer is sufficiently costly. In particular, it turns out that exclusive deals may deter entry altogether. The intuition is that, under exclusivity, the entrant and the incumbent are not necessarily willing to merge. If their cost difference is sufficiently low, the (small) increase in monopoly profits produced by the merger is insufficient to dominate the (large) cost associated with the technology transfer and the industry surplus will decrease. Hence, under exclusivity, the entrant remains out of the market. Instead, in the absence of exclusivity, firms would like to merge, but the AA blocks the project and independent entry occurs.

However, if the entrant’s marginal cost were common knowledge at the contracting stage, the incumbent would not be able to elicit the buyer’s acceptance. The buyer would anticipate that his decision to sign deters entry, while independent entry occurs if he rejects to sign. In order to sign he would require a compensation that the incumbent could not profitably offer (in other words, the Chicago school argument applies).

In contrast, the ED is signed in equilibrium if there exists uncertainty about the entrant’s marginal cost. Once more, uncertainty makes the buyer take into account also the realizations of the entrant’s marginal cost where his loss from accepting exclusivity amounts to zero (because the merger occurs irrespective of his decision) and the ones where his decision to sign triggers the merger instead of independent entry, in which case the loss he suffers from exclusivity is lower than in the case where his decision to sign leads to foreclosure. This reduces the average compensation required by the buyer and makes it profitable for the incumbent to elicit acceptance.

Note that ex-post, when the entrant’s technology realizes, the compensation received may turn out to be smaller than the loss actually suffered. Hence, efficient entry ends up being deterred (or the entry mode ends up being inefficient) by “a mistake” of the buyer who asks too small a compensation, in a similar vein as in Aghion and Bolton (1987) where entry is deterred by “a mistake” of the incumbent, which sets too large a contractual penalty for breach of contract.

III.iii Consumer surplus as the AA’s standard.

There has been a long debate among economists on whether the objective of competition policy should be to maximize the total surplus or rather the consumer surplus and whether, in practice, Antitrust Agencies and the Courts pursue one objective or the other. Therefore, it is important to note that our results do not change if we assume that the AA evaluates mergers on the grounds of consumer surplus only.

Under exclusivity, the AA would always approve the merger also if it adopted a consumer surplus standard, since the merger creates a more efficient monopolist and the buyer ends up paying a lower price. Hence, entry by merger would occur.

Instead, absent exclusivity, the AA would always block the merger as it cares about the
increase in market power only and does not take into account that the merger entails a fixed cost saving. In this case, independent entry would occur.

Thus, the difference with respect to Section II is that the case where the merger occurs irrespective of the ED (and the buyer signs behind a zero compensation) does not arise. But the result stated in Lemma 2 still applies and the ED is signed in equilibrium if (and only if) the entrant is sufficiently efficient (i.e. if $c_E < c^*_E(\beta)$).

### III.iv Remedy for breach: expectation damages

This Section assumes that between date 2 and date 3, if independent entry takes place, the buyer can breach exclusivity with the payment of *expectation damages* to the incumbent (which are damages that put the incumbent in the position in which it would have been had the contract been fulfilled). Once the damages are paid, the buyer is free to choose between the two suppliers.

We show that under expectation damages ED may still harm welfare by inducing an inefficient entry mode, but the inefficiency now does not stem from a distortion of the AA’s decision. Rather, total welfare decreases because ED makes the upstream firms less willing to merge: in equilibrium independent entry (followed by breach) occurs but total welfare would have been higher if entry by merger had occurred.

#### Solution of the model

It is easily seen that this new setting independent entry is profitable even if the exclusive dealing contract has been signed, because the entrant anticipates that exclusivity will be breached. More precisely, if independent entry has occurred and the buyer has breached exclusivity, the incumbent and the entrant compete to supply the buyer. So, the more efficient entrant ends up selling to the buyer charging the price $c_I$. Anticipating this, the buyer decides to breach exclusivity (by the monopoly deadweight loss, his payoff when he pays the damages and obtains the good at price $c_I$ is larger than his payoff when he complies with exclusivity and pays the monopoly price: $CS(c_I) - \pi^m(c_I) > CS(p^m(c_I))$). In turn, this implies that independent entry will give firm $E$ profits equal to $(c_I - c_E)q(c_I) - f > 0$.

Let us now analyse how the fact that independent entry can occur irrespective of exclusivity affects the other decisions.

**Entry decision.** Differently from the case where breach is not possible (or is remedied by specific performance), ED has no impact on the decision of the AA. The reason is that irrespective of exclusivity, if the merger is blocked independent entry occurs, the good is sold at price $c_I$ and total welfare amounts to $CS(c_I) + (c_I - c_E)q(c_I) - f$. Then, irrespective of exclusivity, the merger is allowed if (and only if) condition (1) is satisfied, i.e. if $c_E < c^*_E(f)$. 

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However, exclusive dealing still affects the entry decision because it makes the upstream firms less willing to merge. The intuition is the following. With and without exclusivity the alternative to the merger is independent entry. The entrant earns the duopoly profits, but the incumbent’s payoff is zero when the ED is absent, while it receives the damages and its payoff amounts to $\pi^m(c_I)$ when exclusivity has been agreed upon. This makes the merger less attractive. More precisely, absent exclusivity there is always scope for the merger while under exclusivity, there is scope for the merger if (and only if):

$$\pi^m(c_E) > (c_I - c_E)q(c_I) - f + \pi^m(c_I)$$

which is satisfied if (and only if) $c_E > c^m_E(f) \equiv \sqrt{1-16f}/2$, where $c^m_E(f) \in (0, c^d_E)$ for any feasible value of $f$. Note the difference as compared to the case where breach is not possible. In that case, independent entry cannot occur under exclusivity and the alternative to the merger is the persistence of the more inefficient monopolist. Hence, there is always scope for the merger, also in the case of exclusivity.

Taking into account that, under exclusivity, whenever firms are willing to merge the AA blocks the project (i.e. $c^m_E(f) > c^d_E(f)$ for any feasible value of $f$), the entry pattern results as follows:

**Lemma 3.** At date 2,

- If the buyer signed the exclusive deal, the entrant enters independently for any $c_E$.
- If the buyer rejected the exclusive deal, the merger occurs if $c_E \in [0, c^d_E)$. Otherwise, the merger is blocked and independent entry occurs.

**Contracting decision and welfare effects**  Lemma 3 highlights that when the efficiency gap between the incumbent and the entrant is small ($c_E \geq c^d_E$), independent entry occurs irrespective of exclusivity. In both cases, the buyer pays $c_I$ for the good, but under exclusivity it must pay the damages to the incumbent. Hence, the joint welfare of the buyer and the incumbent is the same, with and without exclusivity. If the contract is signed, it is welfare neutral.

Instead, when the efficiency gap between the incumbent and the entrant is large ($c_E < c^d_E$), ED does affect the entry pattern and triggers independent entry (followed by breach) instead of the merger. The buyer pays a lower price if he accepts exclusivity ($c_I$ instead of $p^m(c_E)$), but he also owes the damages to the incumbent. The minimum compensation required by the buyer to accept exclusivity then amounts to:

$$x_B = CS(p^m(c_E)) - CS(c_I) + \pi^m(c_I)$$

while the maximum compensation the incumbent is willing to offer amounts to the damages minus the surplus the incumbent extracts from the merger negotiation (which occurs when there
is no ED):

\[ x_I = \pi^m(c_I) - \beta [\pi^m(c_E) - (c_I - c_E)q(c_I) + f] \]

Appendix C shows that the contract is signed in equilibrium when the incumbent’s share of the surplus generated by the merger is sufficiently low (i.e. when \( \beta < \beta^* \)). When this is the case, total welfare decreases because an inefficient entry mode arises: the entrant enters independently, but welfare would be higher under the merger.

**Proposition 5.** When breach is remedied by expectation damages, banning exclusive deals would be (weakly) welfare beneficial.

**Proof.** If \( c_E \geq c_E^* \), independent entry would occur with and without ED. Therefore, ED (which may arise by indifference) would be welfare neutral. If \( c_E < c_E^* \), two cases may arise. If \( \beta \geq \beta^* \) (see Appendix C), the exclusive contract is not signed in equilibrium. If \( \beta < \beta^* \), the exclusive contract is signed in equilibrium, and will induce independent entry (and breach). Since in the region \( c_E \in [0, c_E^*] \) the entrant is very efficient, absent the ED the AA would prefer the merger to independent entry, because it would induce a higher level of welfare. Hence, by leading to the inefficient entry mode, ED is welfare detrimental.

**IV Conclusion**

This paper extends the existing literature on ED by allowing a more efficient producer to enter the market either by setting up a new venture or by merging with the incumbent firm (or, equivalently, by licensing its more efficient technology to the incumbent).

First, we identify a new rationale for ED provisions: they allow the incumbent to extract a larger surplus in the subsequent merger with the potential entrant. Consequently, a prediction of this paper is that, ceteris paribus, firms which lock a considerable proportion of buyers by using exclusivity provisions would gain more in merger deals (or, under the alternative interpretation, pay less in technology transfer agreements).

Second, we show that relative to the standard “Chicago-School” type model without mergers, the buyer will demand a lower compensation to sign exclusivity and the incumbent will have higher gains from it. Hence, contrary to the “Chicago School” critique, the incumbent can *profitably* elicit the buyer’ acceptance when mergers are possible.

Third, we show that exclusive deals are welfare detrimental – despite the existence of the merger option, which allows the more efficient technology to find its way into the industry. The reason is the following. First, the presence of exclusive deals may distort the AA’s decision so that in equilibrium, the merger will be approved, even though total welfare would be higher under independent entry. Second, exclusive deals might in some circumstances deter entry altogether.

This paper deals with exclusive contracts, but we suspect that similar effects will arise when an incumbent firm takes other actions aimed at making captive consumers, so as to make it
more difficult for them to switch to new entrants. Examples of such actions could be decisions to
make a product/network incompatible with other products/networks; strategies which increase
artificially switching costs of consumers, and non-compete clauses in managerial contracts.
Appendix A

Discussion on condition (1).

Condition (1) can be rewritten as follows:

\[ f > CS(c_I) - CS(p^m(c_E)) - [\pi^m(c_E) - (c_I - c_E)q(c_I)] \]

The l.h.s. indicates the savings in fixed costs. The r.h.s. indicates the difference between the buyer’s loss and the firms’ gain when moving from duopoly to monopoly (hereafter denoted as \( g(c_E) \)). Note that \( g(c_E) > 0 \) for any \( p^m(c_E) > c_I \). Taking the derivative of the r.h.s. with respect to \( c_E \) one obtains:

\[ \frac{dg(c_E)}{dc_E} = q(p^m(c_E)) \frac{dp^m(c_E)}{dc_E} - [-q(p^m(c_E)) + q(c_I)]. \]

From \( q' < 0 \), it follows that \( \frac{dp^m(c_E)}{dc_E} > 0 \) and \( q(p^m(c_E)) \leq q(c_I) \). In other words, both terms are increasing in \( c_E \) so that the slope of the difference between them has no obvious sign.

The properties of our model that guarantee that condition (1) is satisfied if and only if \( c_E \) low enough are the following:

(i) the interval to which \( c_E \) belongs is wide enough to ensure the existence of an admissible value of \( c_E \) (denoted as \( \hat{c}_E \)) such that \( p^m(\hat{c}_E) = c_I \). In our model \( \hat{c}_E = 0 \). Note that \( p^m(\hat{c}_E) = c_I \) implies that, at \( c_E = \hat{c}_E \), both the buyer’s loss and the firms’ gain when moving from duopoly to monopoly are equal to zero and condition (1) is satisfied (i.e. \( f > g(\hat{c}_E) = 0 \)); also, at \( c_E = \hat{c}_E \), the buyer’s loss increases faster and \( g(c_E) \) is increasing (i.e. \( \frac{dg(c_E)}{dc_E} \bigg|_{c_E=\hat{c}_E} > 0 \)).

Then, by continuity, condition (1) is satisfied for \( c_E \) close enough to \( \hat{c}_E \). The assumptions that follow ensure that \( g(c_E) \) is well-behaved so that the interval over which condition (1) is satisfied is unique. More precisely,

(ii) linear demand implies that the monopoly price \( p^m(c_E) \) is weakly concave in \( c_E \). In turn, this is a sufficient condition for \( g(c_E) \) to be concave:

\[ \frac{d^2g(c_E)}{dc_E^2} = q(p^m(c_E)) \frac{dp^m(c_E)}{dc_E} + \left( \frac{dp^m(c_E)}{dc_E} \right)^2 q'(p^m(c_E)) + q(p^m(c_E)) \frac{dp^m(c_E)}{dc_E} < 0 \]

if \( \frac{dp^m(c_E)}{dc_E} < 0 \).

(iii) by assumption A2, at \( c_E = c_I \), condition (1) is not satisfied \( (f < g(c_I) = CS(c_I) - CS(p^m(c_E)) - \pi^m(c_I)) \).

Note that if assumption A2 was not satisfied, for \( f \) large enough either there would exist an additional interval over which condition (1) is satisfied or condition (1) would be satisfied for any \( c_E \).

Note also that for our main result to hold the existence of an interval over which condition (1) is satisfied is not crucial at all. What is crucial to make our analysis interesting is to avoid
that condition (1) is always satisfied. In such a case the merger would always occur irrespective of ED and ED would always be welfare neutral. However, this situation cannot arise if $f$ is low enough.

Proof of Lemma 2

The threshold $c^*_E(\beta)$ is the value of $c_E$ that solves the following equation:

$$
\pi^m(c_I) + \beta [\pi^m(c_E) - \pi^m(c_I)] = CS(c_I) - CS(p^m(c_E))
$$

(8)

By linear demand and $c_I = 1/2$, equation (8) boils down to:

$$
\frac{1}{16} + \beta \left[ \frac{(1 - c_E)^2}{4} - \frac{1}{16} \right] = \frac{1}{8} - \frac{(1 - c_E)^2}{8}
$$

which has the (admissible) solution

$$
c_E = 1 - \frac{\sqrt{2 + 6\beta + 4\beta^2}}{2 + 4\beta} \equiv c^*_E(\beta).
$$

Recall that $c^*_E(f) = \frac{1}{3} - \frac{1}{3}\sqrt{1 - 24f}$ and $c^d_E(f) = 1/2 - 2f$. Moreover, recall that assumption (A2) requires $f \leq 1/32$. Simple algebra shows that $c^*_E(0) > c^*_E(\frac{1}{32})$. Since $c^*_E(\beta)$ is increasing in $\beta$ and $c^d_E(f)$ is increasing in $f$, it follows that $c^*_E(\beta) > c^d_E(f)$ for any $\beta \in [0, 1]$ and for any $f \leq 1/32$.

Simple algebra also shows that $c^*_E(1) < c^d_E(\frac{1}{32})$. Since $c^*_E(\beta)$ is increasing in $\beta$ and $c^d_E(f)$ is decreasing in $f$, it follows that $c^*_E(\beta) < c^d_E(f)$ for any $\beta \in [0, 1]$ and for any $f \leq 1/32$.

Appendix B

This Appendix assumes that at the contracting stage, the incumbent and the buyer cannot perfectly anticipate the entrant’s marginal cost. They just know its distribution function. After they decide on the ED, Nature chooses the realization of the entrant’s marginal cost, which becomes common knowledge. Then, the entry decision and the price decisions are taken. For simplicity, we assume the entrant’s marginal cost to be uniformly distributed over $[0, 1]$.

The entry pattern at date 2 is summarized by Figure 3.

When independent entry is profitable, Lemma 1 applies. When independent entry is not profitable (i.e. $c_E \geq c^d_E$) the alternative to the merger is “no entry” irrespective of whether the ED is signed. Hence, the decision on exclusivity does not affect the entry pattern: as long as the entrant is more efficient than the incumbent ($c_E \in [c^d_E, 1/2]$), entry by merger occurs both with and without exclusivity; if the entrant is instead less efficient than the incumbent ($c_E \geq 1/2$), there exists no scope for the merger and no entry occurs in both cases. For this reason, the buyer is indifferent between accepting and rejecting the contract (he ends up paying the same price) and the incumbent does not gain from having the contract signed.
If ED signed

<table>
<thead>
<tr>
<th>0</th>
<th>( c_E^r )</th>
<th>( c_E^d )</th>
<th>1/2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>merger</td>
<td>merger</td>
<td>merger</td>
<td>No entry</td>
<td></td>
</tr>
<tr>
<td>( p=p^m(c_E) )</td>
<td>( p=p^m(c_E) )</td>
<td>( p=p^m(c_E) )</td>
<td>( p=p^m(c_I) )</td>
<td></td>
</tr>
<tr>
<td>( \pi'_i=\pi^m(c_I)+\beta[\pi^m(c_E)-\pi^m(c_I)]x )</td>
<td>( \pi'_i=\pi^m(c_I)+\beta[\pi^m(c_E)-\pi^m(c_I)]x )</td>
<td>( \pi'_i=\pi^m(c_I)+\beta[\pi^m(c_E)-\pi^m(c_I)]x )</td>
<td>( \pi'_i=\pi^m(c_I) )</td>
<td></td>
</tr>
</tbody>
</table>

If ED rejected

<table>
<thead>
<tr>
<th>0</th>
<th>( c_E^r )</th>
<th>( c_E^d )</th>
<th>1/2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>merger</td>
<td>merger blocked independent entry</td>
<td>merger</td>
<td>No entry</td>
<td></td>
</tr>
<tr>
<td>( p=p^m(c_E) )</td>
<td>( p=c_I )</td>
<td>( p=p^m(c_E) )</td>
<td>( p=p^m(c_I) )</td>
<td></td>
</tr>
<tr>
<td>( \pi'_i=\beta[\pi^m(c_I)+\epsilon(c_I-c_E)q(c_I)+f] )</td>
<td>( \pi'_i=0 )</td>
<td>( \pi'_i=\pi^m(c_I)+\beta[\pi^m(c_E)-\pi^m(c_I)]x )</td>
<td>( \pi'_i=\pi^m(c_I) )</td>
<td></td>
</tr>
</tbody>
</table>

Figure 3: Entry pattern when the realization of \( c_E \) belongs to \([0, l]\)

At date 1, the buyer computes the *expected* compensation required to accept exclusivity, which is given by:

\[
x_B = \int_{c_E}^{c_E^d} [CS(c_I) - CS(p^m(c_E))] \, dc_E > 0
\]

In turn, the incumbent computes the *expected* gain from eliciting acceptance:

\[
x_I = \int_{c_E}^{c_E^d} \{\pi^m(c_I) + \beta[-\pi^m(c_I) + (c_I - c_E)q(c_I) - f]\} \, dc_E + \int_{c_E}^{c_E^d} \{\pi^m(c_I) + \beta[\pi^m(c_E) - \pi^m(c_I)]\} \, dc_E > 0 \tag{9}
\]

We now show that \( x_I > x_B \) for any \( \beta \in [0, 1] \), so that it is profitable for the incumbent to have the contract signed.

**Proof of Proposition 3**

First, let us consider the case where \( \beta = 0 \) and \( x_I = \pi^m(c_I)c_E^d = \frac{1}{16} \left( \frac{1}{2} - 2f \right) \). It is easily verified that

\[
x_I - x_B = \frac{1}{16} \left( \frac{1}{2} - 2f \right) - \frac{1}{8} \int_{\frac{1}{2} - \frac{1}{4}\sqrt{1 - 24f}}^{\frac{1}{2} - 2f} (2c_E - c_E^d) \, dc_E > 0
\]

for any \( f \leq 1/32 \).

We now show that \( x_I \) is increasing in \( \beta \). Note that when independent entry is profitable and the merger occurs anyway (i.e. when \( c_E < c_E^d \)), the value of the merger differs depending on
whether the ED is signed or rejected. In particular, if the contract is signed, the merger creates a more efficient monopoly whereas if it is rejected, the merger creates a monopoly instead of an efficient duopolist. The increase in industry surplus can be either smaller or larger in the latter case, depending on the cost difference between the incumbent and the entrant and the cost of entry. However, in this model, it turns out that for \( c_E < c_{E}^{r} \) the duopolistic market is more profitable than the inefficient monopoly and the merger creates a larger surplus when the ED is signed. Hence, the sign of the squared bracket in the first integral of (9) is positive and the incumbent’s benefit from the contract being signed increases with \( \beta \). The incumbent’s benefit from the contract being signed is increasing in \( \beta \) also when exclusive deals make the merger occur instead of independent entry (i.e. when \( c_E \in [c_{E}^{r}, c_{E}^{d}] \)), since the incumbent’s payoff is nil if the contract is rejected.

As a result, \( \frac{\partial x_{I}}{\partial \beta} > 0 \). Since \( x_{B} \) does not depend on \( \beta \), it must be that \( x_{I} > x_{B} \) for any \( \beta \in [0, 1] \).

Let us now analyze the welfare effects. When the ED does not change the entry pattern (i.e. either when \( c_E < c_{E}^{r} \) or \( c_E \geq c_{E}^{d} \)), it has no effect on total welfare (recall that when the merger occurs irrespective of exclusivity, it is the distribution of total welfare which is affected). It is only when the ED triggers the merger instead of independent entry that total welfare is reduced, since the socially optimal entry mode entails the set up of an independent plant. Hence, banning exclusive deals would strictly increase total expected welfare, as shown by Proposition 4.

**Proof of Proposition 4**

Forbidding exclusive deals causes the following expected welfare change (where \( W^{i} \) with \( i = f, a \) denotes total welfare when exclusive deals are, respectively, forbidden and allowed):

\[
E[W^{f}] - E[W^{a}] = \int_{c_{E}^{r}}^{c_{E}^{d}} [CS(c_{I}) + (c_{I} - c_E)q(c_{I}) - f] dc_{E} + \int_{c_{E}^{d}}^{c_{I}} [CS(p^{m}(c_{E})) + \pi^{m}(c_{E})] dc_{E} > 0
\]

by the definition of \( c_{E}^{r} \).

**Appendix C**

**Proof of Proposition 5**

When \( \beta = 0 \), \( x_{I} = \pi^{m}(c_{I}) \geq CS(p^{m}(c_{E})) - CS(c_{I}) + \pi^{m}(c_{I}) = x_{B} \) by \( p^{m}(c_{E}) \geq c_{I} \) for any feasible value of \( c_{E} \).

When \( \beta = 1 \), \( x_{I} = \pi^{m}(c_{I}) - \pi^{m}(c_{E}) + (c_{I} - c_{E})q(c_{I}) - f < CS(p^{m}(c_{E})) - CS(c_{I}) + \pi^{m}(c_{I}) = x_{B} \) by \( c_{E} < c_{E}^{r}(f) \).

Since \( x_{I} \) is continuous and strictly increasing in \( \beta \), there exists a threshold \( \beta^{*} \) such that \( x_{I} > x_{B} \) if (and only if) \( \beta < \beta^{*} \).
References


Notes


2 See Director and Levi (1956), Posner (1976) and Bork (1978). For a more formal explanation of their arguments see below. See also Motta (2004: 363-4) for a textbook presentation.

3 Aghion and Bolton (1987) is distinct from the other papers because entry is only deterred by the incumbent “by mistake”. The incumbent uses the exclusive contract, which includes a price commitment and a penalty to be paid in case the buyer switches to the entrant, to extract rents from the entrant. If the incumbent knew the costs of the entrant with certainty, it would always prefer to set the contract terms so as to allow the entrant into the industry and collect the rents created by its more efficient technology through the penalty. Under uncertainty, a penalty which is optimal ex-ante might turn out to be too high for an entrant and entry might therefore be involuntarily deterred. Spier and Whinston (1995) show that in the presence of noncontractible relationship-specific investments, the inefficient use of stipulated damages identified by Aghion and Bolton emerges despite the buyer’s and seller’s ability to renegotiate the initial contract.

4 Hence, U.S. courts now try to assess case by case whether the anti-competitive harm exists and whether it dominates the potential efficiency-enhancing benefits. Instead in the EU, the use of ED by a dominant firm is, by and large, prohibited per se. However, this formalistic approach is now under revision and many antitrust experts suggest that one should move to an “effects-based” approach also in Europe. Recent policy discussions of exclusive contracts include Whinston (2001), Jacobson (2002) and Farrell (2005).

5 Another mechanism would be to allow for the ED to be renegotiated. We deal with renegotiation of exclusivity and its interaction with mergers in Section III.iv.


7 In terms of our discussion, micro brewers could be likened to an efficient entrant with superior technology (product) but no access to buyers because of exclusive contracts which link the latter to the incumbents.

8 See Bizjournals “Beer brothers eye bigtime: Widmer Brothers Brewing hopes to take its
brand national”, 8th November 1999.

9 See World Investment Report (2000) and its reference to different studies of cross-border M&As.

10 To our knowledge, the only paper that studies the interaction between mergers and exclusive contracts is Chen and Riordan (2007). However, they focus on vertical mergers and address a different issue. In particular, they consider two buyers that compete (vigorously) in a downstream market, and show that an upstream supplier which is vertically integrated with one of them is able to induce the other buyer to accept exclusivity, thereby foreclosing an equally efficient upstream rival and monopolizing the downstream market. Under vertical separation, gaining compliance on exclusivity by both downstream firms would instead be too costly.

11 This is precisely what happens in the US and in Europe. Note that antitrust agencies do not only monitor mergers, but also horizontal agreements (i.e., agreements between competing firms), such as licensing agreements.

12 Of course, this result should not be read as an implication that ED should be banned: by construction, our model does not take into account possible pro-competitive effects of exclusive contracts (such as the fostering of relation-specific non-contractible investments), which may be important in the real world. On ED and investment promotion see Segal and Whinston (2000b), DeMeza and Selvaggi (2007), Che and Sakovics (2004).

13 Considering a single buyer is not a limitation of the analysis. When the merger option is not taken into account, assuming multiple buyers rather than a single one is crucial for the anti-competitive effect to arise. Indeed, the main insight of the literature mentioned in the Introduction is that the incumbent can profitably deter entry by exploiting the externality that a buyer exerts on others by signing the exclusive contract. (In particular, see Rasmusen et al. 1991, Bernheim and Whinston 1998, Segal and Whinston 2000a, Fumagalli and Motta 2006.) Instead, when mergers are possible, the anticompetitive effect of exclusive deals arises also with a single buyer. Considering multiple buyers would only reinforce our results.

14 The restrictions we impose do not sacrifice generality. The specific value of $c_I$ allows us to economize with the parameters of the model. Linear demand simplifies the algebra and facilitates the comparison between the compensation required by the buyer to agree on exclusivity and the highest offer the incumbent is willing to make. The upper bound on entry costs simply limits the different cases we must analyze (see footnote 21 for a clarification on this issue). In Fumagalli, Motta and Persson (2006), Appendix A, we discuss at length that the threshold levels of the entrant’s marginal cost which characterize the entry pattern require very mild assumptions on the demand function to exist. Hence, the effects of exclusive deals that we identify are quite
robust.

15 The case of price commitment highlights an additional reason why exclusive deals can be welfare detrimental, i.e. the fact that they can lead to a distortion of the contractual price (details can be required from the authors).

16 Specific performance is an order of the court which requires the breaching party to comply with exclusivity.

17 In most of the contract theory literature, contracting costs are assumed either to be sufficiently high to preclude certain forms of contracting or sufficiently low to permit any contract to be written. Similarly, researchers usually treat renegotiation as either costless or prohibitively costly. See Schwartz and Watson (2004) for a recent paper where costs of contracting and renegotiation can take intermediate values and the contracting parties can themselves influence these costs.


19 As already highlighted by footnote 13, our model assumes a single buyer for the sake of simplicity, but considering multiple buyers would only reinforce our results.

20 For a discussion of contract renegotiation under asymmetric information, see Dewatripont (1988).

21 Since both the l.h.s. and the r.h.s. are decreasing in \( c_E \) it is not obvious that condition (1) is satisfied for \( c_E \) low enough. Appendix A discusses the properties of our model that guarantee this to be the case. Also, the discussion clarifies the role of assumption A2: allowing for larger values of \( f \) would imply that there exist also cases where either the fixed costs saving is so relevant that the merger is always allowed, or the equation identified by (1) admits two solutions, thereby leading to an additional interval over which the merger is allowed. These cases do not deliver any new insight into the analysis.

22 The entrant’s payoff would be higher if the exclusive deal were rejected: \( \pi_{r,m}^{E} - \pi_{r}^{E} = \beta [(cI - cE)q(cI) - f] + (1 - \beta) \pi_{m}^{E}(cI) > 0 \).


24 In this paper, there is an interaction between two successive decisions - on exclusive dealing and on a merger - that the Antitrust Authority could take. Another strand of literature which is somewhat related to this issue is the one dealing with successive mergers. Motta and Vasconcelos (2005) show that a myopic Antitrust Authority may prohibit mergers that would be welfare beneficial once taken into account that other mergers would follow. Nocke and Whinston (2007)
instead identify a model where the behaviour of a myopic AA would be optimal also in a dynamic perspective.

25 Fumagalli, Motta and Persson (2006) fully develop the case of costly mergers and identify the exact threshold levels of the merger cost and of the entrant’s marginal cost mentioned in this discussion.

26 Note also that in the standard setting where mergers are not feasible, there is no scope for entry deterrence by mistake. The incumbent and the buyer anticipate that only two situations may arise. Either the realization of the entrant’s marginal cost will make independent entry profitable (i.e. \( c_E < c_E^d \)): in this case, exclusive deals altogether deter entry; or the realization of the entrant’s marginal cost will make independent entry unprofitable (i.e. \( c_E \geq c_E^d \)). In this case, exclusive deals have no impact on the entry pattern: the incumbent’s monopoly persists in either case. Hence, the incumbent benefits from having the contract signed (and the buyer suffers a loss) only in the former case. In expected terms, the maximum compensation that it is willing to offer amounts to \( x'_I = \pi^m(c_I)c_E^d \), while the minimum compensation required by the buyer amounts to \( x'_B = [CS(c_I) - CS(p^m(c_I))]c_E^d \). Due to the monopoly deadweight loss, the latter is larger.

27 See Motta (2004: 19-22) for a discussion. See also Fridolfsson (2007), Neven and Roeller (2005) and Lyons (2002) for recent papers which provide a theoretical underpinning to a consumer surplus standard.

28 Expectation damages are probably the most standard way of modeling breach. In Civil Law countries, the Courts do typically not enforce penalties that are higher than the expectation damages. The idea is that the victim of breach should be compensated for the actual loss suffered. So, if contractual damages are too high, they will be considered as punitive and not enforced. See Macalay et al. (1995), Hatzis (2002), Cooter and Ulen (2004) for a legal discussion.