

Illinois Walls*

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Abstract

In its landmark ruling in *Illinois Brick Co. v. Illinois*, the U.S. Supreme Court restricted the right to sue for private damages suffered from violations of section 4 of the Clayton Act to direct purchasers. Despite the fact that typically antitrust injury is, at least in part, passed on to firms lower in the production chain and ultimately to consumers, *Illinois Brick* has since stood as a binding legal constraint. This paper considers the strategic use that upstream firms can make of *Illinois Brick* to shield themselves from private damages claims. In a repeated game setting, we find that *Illinois Brick* may facilitate upstream firms in engaging horizontally in an overt collusive arrangement, with concealed side-payments to their direct purchasers that discourage them from filing suit. An example is given of such an ‘Illinois Wall’, in which downstream firms are given part of the upstream cartel profits through a symmetric rationing of their inputs at low prices. The Illinois Wall is found to be resilient to entry, imperfections of the legal system and leniency programs. In fact, the wall is particularly stable when competition is relatively strong at both the up- and the downstream level.

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1 Introduction

Under section 4 of the Clayton Act, individuals or firms injured in their business or property by companies in breach of the competition law can bring private treble-damages suits to be made whole. Since the production of goods or services often

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involves a number of intermediate firms, any upstream anti-competitive behavior, such as price-fixing, is likely to spill-over into several markets, causing larger and smaller monetary injury in the production chain, before ultimately falling in part on the consumers. The precise breaking-down of such vertically spread antitrust damages is complicated, involving applied general equilibrium analysis and sophisticated econometrics.

Twin Supreme Court rulings, the first in 1968 in *Hanover Shoe Co. v. United Shoe Machinery Corp.*, the second in 1977 in *Illinois Brick Co. v. Illinois*, have significantly reduced the potential complexity of private punitive damages claims, however.¹ In the *Hanover Shoe* ruling—in which the defendant, United Shoe Machinery Co., which was earlier found to have monopolized the machinery market through long-term leasing contracts, claimed that the plaintiff, Hanover Shoe Co., a direct purchaser, was not injured by these anti-competitive contracts, because it had been able to pass the claimed overcharge on to its customers—the Supreme Court disallowed the defensive use of pass-on on the argument that failing to prevent it would unduly lengthen and complicate antitrust cases and disperse private incentives to seek antitrust injury recovery. As a result, irrespective of the question to what extent the direct purchaser indeed incurred any damages, by *Hanover Shoe* it is entitled to ask the defendant’s overcharge, trebled.

Almost a decade later, in the 1977 *Illinois Brick* decision—in which the State of Illinois claimed in conjunction with several hundred local governmental institutions to have been harmed by a fixing of concrete block prices by the defendant, Illinois Brick Co., which artificially increased the costs of the contractors via which the plaintiffs carried out their construction contracts in a complex vertical chain—the Court set a companion standard by also rejecting any offensive use of the pass-on argument. The plaintiff was denied compensation and the precedent was set that only direct purchasers of firms that have acted anti-competitively can sue for damages.

The prime legal argument for denying indirect purchasers standing to sue in *Illinois Brick* relates to a multiple liability problem created by *Hanover Shoe*. Since the direct purchaser is entitled to the full overcharge by the latter standard, allowing indirect purchasers to sue for further money as well would effectively multiply the total liability of the defendant far over the three times total damages that are specified in the Clayton Act as the appropriate remedy. *Illinois Brick* thus repairs the liability problem *Hanover Shoe* created—albeit at the expense of potentially permitting the wrong people to seek damages.

Several scholars have further defended the *Hanover Shoe-Illinois Brick* pair of rulings on economic grounds. In the seminal Landes and Posner (1979), the view is taken that the intent of Congress to allow for private damages claims in passing the Clayton Act was first and foremost to provide for an extra trust-deterrence by creating a private channel of policing, alongside public enforcement. Therefore, efficiency, rather than fairness of compensation, is the appropriate criterion to judge

¹ Cf. 392 U.S. 481 (1968) and 431 U.S. 720 (1977), respectively.

Illinois Brick by. Since direct purchasers typically have superior information on the effects of any anti-competitive acts of their suppliers, putting all monetary incentives with them is likely to reduce transaction costs compared to a situation with many fragmented indirect cases. Also, any costs involved in coordinating class action suits of various firms and individuals damaged indirectly—and therefore each possibly only a little—are reduced with the incentive to file a private damages claim placed in a single hand. Moreover, the determination of all pass-ons of artificial cost increases would require courts to perform multiple, long and complicated analyses involving a large number of interested parties, which would be prohibitively costly. All these efficiency arguments have been disputed—in fact, in *Illinois Brick* three Supreme Court judges originally dissented—and in both the House of Representatives and the Senate, bills were proposed—but never enacted—to overrule the two Supreme Court rulings.² Nevertheless, *Hanover Shoe* and *Illinois Brick* stand today as binding legal constraints.³

Despite its potential to reduce the costs of legal procedures and increase private incentives to bring anti-competitive practices to light, however, there is a detrimental effect *Illinois Brick* may have, that should be noted as well. By effectively shielding antitrust violators from all private parties but those directly involved, namely, *Illinois Brick* may potentially give upstream firms a safe-haven to engage quite overtly in collusive arrangements, as long as they can discourage their direct purchasers—and them only—from filing suit. Thus allowing potential violators of competition law to focus discouragement efforts on the sole party with standing to sue may neutralize part of the enhanced private incentive effect *Illinois Brick* is generally thought to have.

Suggestions to this effect have been made in passing in the literature, yet seem never to have inspired a thorough analysis. Harris and Sullivan (1979), for example, in closing of a lengthy exposition on determining pass-ons, only briefly note that:

“There are situations in which granting the cause of action solely to direct purchasers effectively forecloses any private suits. Often, direct purchasers pass on all or substantially all of the overcharge. (...) If the ongoing relationship between the direct purchaser and the potential defendant has any value to the direct purchaser (and it often will have), the direct purchaser will to that extent be deterred from suing.” (*op.cit.*, pp. 351-2)

² Cf. bills S. 1874 by Senator Edward Kennedy and others, and H.R. 8359 by Representative Peter Rodino and others (later modified as H.R. 11942), respectively. For some early debate on the multiple liability problem under *Hanover Shoe* without *Illinois Brick*, see LaRue and Newton (1978) and Sneed (1979). In Harris and Sullivan (1979)—on which we draw below—the force of the complexity argument of passing-on calculations is questioned.

³ Recently, for example, Microsoft escaped private damages by appealing successfully to *Illinois Brick* in *Davidson v. Microsoft Corp.* Md. Ct. Spec. App., No. 60, 2/28/02—cf. “Indirect Purchasers Barred From Bringing Claim Against Microsoft Under State Statute,” *Electronic Commerce & Law Report*, Volume 7, Number 11 of Wednesday, March 13, 2002.

After that, they do conclude, however, that judicial experience shows that direct purchasers nevertheless do bring cases.⁴

Interestingly enough, however, several empirical analyses into the effects of the two Supreme Court rulings on the number of private antitrust cases quite consistently find an increase in total cases after *Hanover Shoe* in 1968, yet a decrease after *Illinois Brick* in 1977. Directly following the *Illinois Brick* ruling, Landes and Posner (1979) reports a structural reduction from 1977 to 1978 in the total number of private cases brought in several districts—from Southern California to Northern Illinois. The authors hesitated to attribute these effects to *Illinois Brick*, however. Instead, they conjectured that the fall in cases reflected an overall downward trend in public enforcement from 1977 to 1978, on the argument that private claims often follow up on public adverse findings.⁵ But again later studies, involving more post-ruling data, in Snyder (1986) and Joyce and McGuckin (1986), found decreases in the number of private cases after *Illinois Brick* as well, suggesting a permanent negative effect. Still, however—here under reference to the fact that the decrease in the number of private cases found was judged to be only small and statistically insignificant—the authors were not willing to conclude that the effects could be due to the Supreme Court constraints to private litigation. Instead, the net effect of *Illinois Brick* was judged to be “neutral”.⁶ Yet, if indeed the total effect with both rulings in place has only been modestly negative, then still the data lend themselves to the interpretation that *Illinois Brick* more than reversed the significant increase in private cases seen after *Hanover Shoe*—and before *Illinois Brick*.⁷

One reason perhaps for why the idea that *Illinois Brick* can stabilize non-competitive relationships was so easily discarded, despite some empirical indication for it, may have been that the long-run relationships that direct purchasers were supposed not to be willing to put in jeopardy by filing suit were understood with no active involvement of the suppliers. Harris and Sullivan (1979) refer to them as issues of “continuity and goodwill.” Likewise, Snyder (1986) acknowledges the effect—which he understands as direct purchasers fearing “retaliation” by the suppliers on which they depend—yet down-plays it in a footnote by saying that although such

“..retaliation ... cannot be dismissed, its practical significance is open to question.” (*op.cit.*, p.470).

Certainly, there are market imperfections, such as lock-in situations, in which switching from one supplier to another involves some costs for the purchaser. The

⁴ Similar concern was forwarded by the proponents of bills S. 1874 and H.R. 8359. *Cf.* Sneed (1979), p.219.

⁵ *Op.cit.*, pp.632-4.

⁶ Snyder (1986), p.482; Joyce and McGuckin (1986), p.239.

⁷ Applying various estimation methods to 1963-1982 data, Snyder (1986) found a positive coefficient relating the number of private cases filed to *Hanover Shoe*, yet a larger negative coefficient relating them to *Illinois Brick*. *Cf. op.cit.*, p.479, table 4.

relationship with a software company responsible for a company's main management information systems, for example, or that with the external accounting office is likely to be of this nature. Filing against such vital suppliers would most definitely put stress on the service relationship, probably leading to a discontinuation—rather cases of embroilment than retaliation, but nevertheless. However, it is quite questionable indeed, as Snyder (1986) says, that the costs involved in overcoming these relatively minor exogenous hurdles are sufficiently high to expect them to keep direct purchasers from exercising their right to obtain treble overcharges—typically a lot of money.

A much more serious type of money foregone when downstream firms file complaint, however, is benefits forwarded by the suppliers to the direct purchasers in an attempt to keep the latter from exercising their right to recover private damages. That is, side-payments from the upstream industry behaving anti-competitively to the downstream purchasers, in exchange for not filing suit. It is in this context also that one can truly speak of 'retaliation', in the sense that the side-payments are withdrawn upon private claims, since these would lead to the breakdown of the upstream collusive arrangement—the source of the money. This kind of long-term relationship is all the more interesting, not only because it is likely to provide a substantially larger incentive for the direct purchasers, but also because it is costly to the suppliers to maintain. A question of some interest to ask, therefore, is whether such upstream-downstream collusive agreements are tacitly sustainable, and what role *Illinois Brick* can have in setting them up.

In this paper, we consider circumstances under which firms may use *Illinois Brick* to put up an 'Illinois Wall' in order to shield themselves from private damages claims. In a simple vertical chain, there is an upstream industry and a direct purchaser downstream industry, the latter selling directly to the consumers. Both industries are characterized by a variable number of firms in Cournot competition. Up- and downstream firms have repeated interaction over an infinite period of time, which captures the long-term nature of their trade relationship. The upstream industry seeks to collude and fix prices. Using *Illinois Brick*, it can concentrate its efforts to keep its customers from filing a treble damages claim solely on the downstream firms. With them it needs to work out an attractive compensation scheme, which is tacit and leaves no obvious evidence of anti-competitive behavior on the part of the downstream firms, for otherwise antitrust suits would be brought by the consumers—the direct purchasers of the downstream firms—or the people. The two industries manage to do so via a simple rationing scheme. By symmetrically selling to each of the downstream firms only a limited amount of inputs, the cartel creates a scarcity on the market for final consumer products that is beneficial to the downstream firms, yet creates a consumer detriment. This tacit vertical understanding between the industries escapes prosecution. And because of that, so does the horizontal cartel, even if that cartel is overt and the whole arrangement is common knowledge.

The potential perverse effect of *Illinois Brick* here reported on is just one aspect of a much more extensive treatment of incentives effects from private damages claims

and their contribution to efficiency in Salop and White (1986), Baker (1988), Besanko and Spulber (1990) and Briggs, Huryn and McBride (1996). The seminal Salop and White (1986) is an extensive survey of the aspects and empirics of private antitrust enforcement—in which *Illinois Brick* is only briefly mentioned as a desirable “trimming of the plaintiffs’ powers and strengthening the defendants’ powers” (*op.cit.*, p.1039). Baker (1988) and Besanko and Spulber (1990) essentially extend on the position of Landes and Posner (1979) that private antitrust enforcement provides a more direct, and therefore better informed channel, thus enhancing legal efficiency. Both papers focus on asymmetric information, arguing that in the presence thereof, private claims increase efficiency and should therefore be encouraged. In Briggs, Huryn and McBride (1996) the interplay between public cases and private follow-on suits is considered, pointing out a potential inefficiency of treble damages. As defendants invite parties to bring follow-on treble damages cases by signalling a weak position when they settle in the public case, inefficiently many full public cases are brought in equilibrium. The possibility that *Illinois Brick* may deter private damages claims, however, is not discussed in this literature.

This paper is organized as follows. In the next section, industry relations are modelled in an infinitely repeated game setting, in which the competitive benchmark situation is analyzed. Section 3 considers upstream collusion. It is established that treble damages without compensation for the downstream industry will certainly lead to private claims. Subsequently, in Section 4, some bricks for the Illinois Wall are laid. The total of profits that the up- and the downstream industry have between them is shown to increase as a result of the upstream collusion, so that there is the potential for covert side-payments. Total welfare, however, is seen to decrease in the upstream price level, so that consumers, were they given the right to sue for damages, would be likely to exercise it. In Section 5, a trigger strategy that forms an Illinois Wall is set out and analyzed. It is shown that, when downstream firms are sufficiently patient, Illinois Walls can shield upstream collusion from downstream claims. In Section 6, the Illinois Wall is shown to be quite resilient. It can withstand entry up- and downstream, for example, as well as imperfections in the legal system and leniency programs that reward the first firm to notify the arrangement with the authorities. Moreover, the more competitive both the up- and the downstream sector are, the more stable an Illinois Wall may be erected. Section 7 provides some concluding remarks, including a careful suggestion of a possible actual Illinois Wall.

2 Upstream-Downstream Competition

Consider a market in which $m \geq 2$ identical upstream firms, indexed $j = 1, 2, \dots, m$, produce a certain good, used as an input in the downstream industry, against normalized constant marginal cost $c = 0$ and no fixed costs. The sole purchasers of this input are $n \geq 1$ downstream firms, indexed $i = 1, 2, \dots, n$, which each buy the input from the upstream firms at a price p per unit, use it in a linear relation in their

production process to obtain their final commodity, which they subsequently sell to their consumers. By an appropriate choice of units in which to measure the volume of input and output, the linear production technology can be modelled as one-to-one production. There are no alternative ways of obtaining the input, nor can the downstream firms substitute away from it. For simplicity, assume that downstream production involves no costs but those of the single input.

Consumer demand for the final commodity is given by the linear inverse demand function

$$P(Q_d) = 1 - Q_d, \quad (1)$$

where $Q_d = \sum_{i=1}^n q_{i,d}$ is the sum of quantities produced by the downstream firms.

Suppose that the market exists indefinitely, without technological progress changing its supply structure, nor demographic or other changes shifting demand. As a result, the up- and downstream firms are engaged in a long-term relationship. In their production planning, they all take an infinite time horizon as basis, in which they discount future profits at a rate $\delta \in [0, 1)$, so that the interplay between the firms can be understood as Cournot competition in a repeated game framework. When both industries act non-cooperatively, the one-shot Cournot equilibrium is played in each period. Since the upstream firms control the inputs for the downstream industry, this is a sequential game, of which the subgame perfect equilibrium is found by backward induction, as follows.

Given the input price p , the downstream firms engage in quantity competition and each downstream firm i faces the optimization problem

$$\max_{q_i} (1 - Q_d - p) q_{i,d}.$$

As a result, downstream individual supply in the symmetric Cournot equilibrium is $q_{i,d}(p) = \frac{1-p}{n+1}$ and market supply

$$Q_d(p) = \frac{n}{n+1} (1 - p). \quad (2)$$

The upstream industry exploits this best reply behavior of the downstream firms, so that upstream inverse demand is given by the inverse of total downstream sales as a function of p , equation (2). That is,

$$p(Q_u) = 1 - \frac{n+1}{n} Q_u, \quad (3)$$

where $Q_u = \sum_{j=1}^m q_{j,u}$ is the supply of the m upstream firms. This upstream demand yields an individual upstream profit for firm j

$$\pi_u^c = p(Q_u) q_{j,u} = \left(1 - \frac{n+1}{n} Q_u \right) q_{j,u},$$

which it maximizes with respect to $q_{j,u}$, given the choices of the other upstream firms.

With both the upstream and the downstream industry thus in Cournot competition, the equilibrium outcome is

$$Q_u^c = Q_d^c = \frac{m}{m+1} \frac{n}{n+1}, p^c = \frac{1}{m+1} \text{ and } P^c = \frac{m+n+1}{(m+1)(n+1)},$$

where the superscripts c refer to ‘competition’—to be set against anti-competitive behavior below. Individual competitive profits materialize as

$$\pi_u^c = \frac{1}{(m+1)^2} \frac{n}{n+1} \text{ and } \pi_d^c = \left(\frac{m}{m+1} \frac{1}{n+1} \right)^2, \quad (4)$$

in the up- and downstream industry, respectively.

Notice that when the number of upstream firms m becomes very large, the input price p will approach marginal costs and individual profits of the upstream firms will go to zero. The same is true for the market price P and profits for each downstream firm when the number of downstream firms n goes to infinity. The present setup—albeit simple—thus captures all possible vertical combinations of market forms between the extremes of perfect competition and monopoly.

3 Upstream Collusion

The upstream industry now entertains the idea to conspire in collusion and fix the input prices charged to the downstream firms. Suppose it is able to do so, yet not without leaving some traces. That is, the upstream firms consider to engage in overt collusion.⁸ Let the downstream industry remain competitive. The upstream industry as a whole will then act as a monopolist on its (inverse) demand function (3) and produce

$$Q_u^a = \frac{1}{2} \frac{n}{n+1},$$

which it will sell at a price $p^a = \frac{1}{2}$ —the superscript a refers to the fact that the upstream firms now engage in ‘anti-competitive behavior’.

The formation of such a cartel is obviously profitable for the upstream industry, since aggregate cartel profits are

$$m\pi_u^a = \frac{1}{4} \frac{n}{n+1} > \frac{m}{(m+1)^2} \frac{n}{n+1} = m\pi_u^c,$$

⁸ In the following, focus is on the stability of vertical collusive arrangements between the up- and downstream industries. Horizontal cartel stability can be guaranteed under reference to the traditional cartel stability arguments—*cf.* Carlton and Perloff (2000), Chapter 5, or Motta (2004), Chapter 4. The possibility to erect an Illinois Wall allows for the upstream cartel to collude with explicit arrangements—arguably more easy than tacit collusion. The issue is dealt with more extensively in Section 6 below.

where strict inequality follows from the fact that $m \geq 2$. Hence, the upstream industries can work out a distribution of cartel profits that will make the cartel attractive to each and every member, in comparison to competition.

The firms in the downstream industry, however, are likely to be hurt by the upstream collusion, for they would—but for few exceptions, discussed below—see their input prices increase. Unless they are able to pass the entire increase in input prices on to the consumers—which, since consumer demand is elastic, would only be the case when they price at marginal costs—they see their profits decrease as a result of the increased input prices. Suppose, however, that the downstream industry knows of the upstream cartel and can obtain the available evidence to prove its existence in court. Since the upstream cartel clearly is in breach of competition law, each downstream firm, therefore, has the option to ask for reparation of the damages suffered as a result of the upstream collusion. It can do so by bringing a private antitrust injury claim. Moreover, under reference to *Hanover Shoe* and *Illinois Brick*, each downstream firm can, even if it was indeed able to pass the larger part, or all of the upstream cartel’s anti-competitive price increase on to the consumers, seek treble damages.

As is customary in antitrust damages cases, the damages suffered from anti-competitive behavior of suppliers are calculated as the overcharge, computed as the difference between the anti-competitively raised price of the downstream inputs and the input price that would have prevailed without the anti-competitive acts—sometimes referred to as the ‘but for’ price—multiplied by the quantity purchased by the claimant under the anti-competitive regime.⁹ Denote the industry-wide total overcharge suffered by the downstream firms as a function of the cartel input price by $D_d(p^a)$. Then

$$D_d(p^a) \equiv (p^a - p^c) Q_u^a = \frac{1}{4} \frac{m-1}{m+1} \frac{n}{n+1},$$

in the present setting. Since the Nash equilibria considered here are symmetric—for all firms are identical and the model is linear—the overcharge suffered by each individual downstream firm is $\frac{1}{n} D_d(p^a) > 0$.

Likewise, the overcharge suffered by the consumers from the anticompetitive activities of the upstream cartel, denoted by $D_c(P^a)$, where P^a is the downstream price that results when the downstream industry buys its inputs at the anticompetitive price p^a , is defined as

$$D_c(P^a) \equiv (P^a - P^c) Q_d^a = \frac{1}{4} \frac{m-1}{m+1} \left(\frac{n}{n+1} \right)^2,$$

⁹ Again, a precise determination of damages, or to whom they should accrue, is typically not the prime objective of the Court. Argumentation using the elasticity of demand to show that the overcharge underestimates the lost profits downstream, for it ignores profits that would have been made on the greater volume, is usually not entered, or only mentioned in passing by the plaintiffs to show their damage estimates are conservative—*cf.* Royall (1997). For a comprehensive treatment of damage calculations, see O’Brien (1998).

in the Cournot setting. Since we have a continuum of consumers, individual claims have no substance. Therefore, in the following, consumer claims are considered to be class action suits. Clearly, $D_c(P^a) > 0$.

For clarity of exposition, suppose in the following that if a private antitrust suit indeed is brought, there will be no difficulty in substantiating the claim, so that it will lead with certainty to a granting of damages. This is in line with the assumption that there is evidence available to prove the existence of the upstream cartel in court. Furthermore, let the legal costs involved in bringing an individual claim be negligible. One way of justifying the latter assumption is that the downstream firms share their legal costs, as only one initial trial, brought by a single downstream firm or as a class action suit, would be required for all downstream firms to claim their individual damages at little incremental costs in follow-on suits. Henceforth, we will assume therefore that when one individual downstream firm files suit, all others will follow and the upstream industry will be ordained to pay damages based on the industry wide overcharge. Consumer claims are also be handled collectively. Finally, we abstract from the possibility that a public case is brought against the upstream cartel. Under these assumptions, clearly the downstream industry will seek treble damages and file a claim—irrespective of the extent of their actual injury.

Although these assumptions set the stage for establishing our result that *Illinois Brick* may be instrumental in shielding the upstream cartel from private cases in a setting in which private damages cases are most likely to be brought, a minor generalizing of the trebling of the overcharge allows for tracing the effects of such imperfections as legal transaction costs, leniency programs and uncertainty concerning rulings of the court. To that end, let $\mu > 0$ be a parameter for the strength of the damage claim. Obviously, $\mu = 3$ corresponds to treble damages when the legal system is perfect. Transaction costs associated with bringing a private damages claim, coordination costs, or uncertainty about rulings would analytically take the form of a lower value of μ . Likewise, additional stimuli to file suits, such as notification bonuses or lenient treatment would be reflected in higher values of μ .¹⁰ On the net damages multiple, we have the following benchmark result.

Proposition 1 *When the downstream firms suffering antitrust damages have standing to sue, the upstream cartel will be deterred for all $\mu \geq 1$. When both the downstream firms and the consumers have standing to sue, the upstream cartel will be deterred for all $\mu \geq \frac{2}{3}$.*

Proof. The Cournot profits for the upstream industry under competition are $m\pi_u^c$. The upstream payoff under collusion, which the industry knows will invite damages claims with certainty are

$$m\pi_u^a - \mu [D_d(p^a) + \alpha D_c(P^a)],$$

¹⁰ We will return to the potential effect on our results of these alternative assumptions in Section 6.

where α is a parameter reflecting standing to sue: $\alpha = 0$ when consumers do not have the ability to bring a private damages claim, and $\alpha = 1$ when they do. Note that we can interpret values of α strictly between 0 and 1 as a situation where consumers are entitled to sue, but where the probability that they will organize a class action suit or gather sufficient information to substantiate a claim is equal to α (an interpretation similar to that given to μ above).

Comparing Cournot profits and collusion profits net of treble damages, the latter are smaller than the former when

$$\mu > \frac{m-1}{m+1} \frac{n+1}{(1+\alpha)n+1},$$

which is bounded from below by 1 when only downstream firms have standing to sue ($\alpha = 0$), and the number of upstream firms increases from $m = 2$ to infinity. It is bounded from below by $\frac{2}{3}$ when both downstream firms and consumers can bring a case ($\alpha = 1$) and m goes to infinity and $n = 1$.¹¹ ■

4 Bricks for the Wall

Clearly, and in accordance with the mainstream opinion on *Hanover Shoe* and *Illinois Brick*, in the present setting the private antitrust enforcement channel provided by the possibility to claim damages alone installs sufficient incentive to discipline the upstream industry into behaving competitively, even when the system works imperfectly—*i.e.*, if $\mu < 3$. That is, unless the upstream cartel can somehow ward off these private suits. One way to do so would be to pay those with standing to sue a sufficiently high compensation for the loss they incur when they refrain from exercising their right to claim damages. Here is where the potential anti-competitive effects of *Illinois Brick* come into play. By giving only the direct purchasers standing to sue for antitrust damages, *Illinois Brick* allows the upstream cartel to focus any such bribing efforts solely on the downstream industry. Even if the consumers know all about the overt upstream cartel, that is, they simply could not bring a claim against it, for they only deal indirectly with those in breach of competition law. *Illinois Brick* may thus create a safe-haven for overt collusion.

It is not obvious that a compensation scheme between the up- and the downstream industry, for the silence of the latter, exists, however, for it needs to satisfy several conditions. The vertical arrangement would need to be covert, for example, so that the combined up- and downstream conspiracy cannot be proven a breach of competition law. Should it be straightforward for consumers to present evidence and build a strong

¹¹ Note that the trebling of damages is surprisingly well chosen in the present setup: when consumers do not have standing to sue, $m\pi_u^a - \mu D_d(p^a) \leq 0$ for $\mu \geq \frac{m+1}{m-1}$, which decreases from three to one when m increases from two to infinity. Hence, treble damages will always lead to a loss for the upstream industry in case the downstream industry sues, and, moreover, for the special case $m = 2$, treble damages make the cartel profits vanish exactly.

private damages case, namely, they potentially could as the direct purchasers of the combined up- and downstream anti-competitive arrangement. It therefore needs to be tacit and should not leave clear evidence.

First of all, however, it needs to be at all possible for the upstream industry to profitably cartelize when the costs thereof are to reward the downstream firms each for their silence by at least the net amount they can obtain by bringing the cartel to light and filing an antitrust damages suit. That is, the cartelization upstream needs to create a surplus substantially over and above that from up- and downstream competition, which can subsequently be divided in the chain. Such extra total profit is available in an upstream conspiracy to raise prices, provided that the total number of firms involved up- and downstream is sufficiently large. This is made more precise in the following result.

Lemma 1 *If n and m satisfy*

$$n \geq \frac{m+1}{m-1},$$

it is possible for the upstream firms to increase the sum total of up- and downstream profits from the competitive profit level by increasing the input price from its competitive level p^c .

Proof. From equations (1) and (2) it follows that the consumer price is given by $P(p) = \frac{1}{n+1} + \frac{n}{n+1}p$ and each downstream firm has profits equal to $\pi_d(p) = \left(\frac{1-p}{n+1}\right)^2$. Thus, for a given p , the total profits of the downstream firms (which remain in Cournot competition) are $n\pi_d(p) = n\left(\frac{1-p}{n+1}\right)^2$. Total profits for the upstream cartel are $m\pi_u(p) = pQ_d(p) = \frac{n}{n+1}p(1-p)$. Total profits in the chain as a function of p , $\Pi^a(p)$, then are

$$\Pi^a(p) = m\pi_u(p) + n\pi_d(p) = \frac{n}{n+1}p(1-p) + n\left(\frac{1-p}{n+1}\right)^2, \quad (5)$$

which is maximized at $p^* = \frac{1}{2} \frac{n-1}{n}$. Trivially, maximum total chain profits are equal to $\frac{1}{4}$.

The sum total of profits down- and upstream under upstream Cournot competition is

$$\Pi^c = m\pi_u^c + n\pi_d^c = \frac{m}{(m+1)^2} \frac{n}{n+1} + n\left(\frac{m}{m+1} \frac{1}{n+1}\right)^2 = \frac{nm(m+n+1)}{(m+1)^2(n+1)^2}.$$

so that we have

$$\Pi^a(p) - \Pi^c = \frac{1}{4} - \frac{nm(m+n+1)}{(m+1)^2(n+1)^2} = \frac{1}{4} \left(\frac{m-1}{m+1}\right)^2 \frac{\left(n - \frac{m+1}{m-1}\right)^2}{(n+1)^2} \geq 0.$$

Note that $\Pi^a(p) > \Pi^c$ whenever

$$n \neq \frac{m+1}{m-1}.$$

Yet, $\Pi^a(p) \geq \Pi^c$ for a price equal to or higher than p^c only if $p^* = \frac{1}{2} \frac{n-1}{n} \geq p^c = \frac{1}{m+1}$, which is equivalent to $n \geq \frac{m+1}{m-1}$. ■

The Lemma restricts attention to upstream cartel prices that are not lower than the input price under competition. For those prices, the necessary scope for a tacit vertical collusion arrangement exists, as long as the number of firms involved is large enough. Yet, for a small number of firms, there can be mutual gain in an upstream cartel as well. In fact, only when either the up- or the downstream market is served by a duopoly and the other by a triopoly, is there no scope for increased profits—for then $n = \frac{m+1}{m-1}$. When the downstream market is served by a monopoly, and irrespective of the upstream market structure, or when the upstream market is served by a duopoly—or a monopoly, for that matter, but that possibility has been ruled out by assumption—and the downstream market by either a monopoly or a duopoly, the combined industry profits can be increased as well, but with *lower* input prices for the downstream industry than under competition. For those market structures, therefore, the combined profit increase is had by the downstream firms—and possibly the consumers—not the upstream firms. To get the upstream firms to ever engage in collusion under these conditions will be hard—and a compensation scheme would be brought to light right away under our assumption on the legal system. For this reason, we restrict the analysis to conditions under which the total surplus increase from upstream collusion is had upstream.

The potential to compensate downstream firms is one element necessary for sustaining an otherwise unstable upstream production cartel with the help of *Illinois Brick*. Yet, *Illinois Brick* only comes into play to facilitate any such arrangement when it is not possible to also compensate the consumers with the extra cartel profits. That is, the vertical agreement must indeed result in consumer detriment. After all, the operational effect of *Illinois Brick* that we want to bring to the fore is that, as a result of the Supreme Court standard, the upstream industry can focus its side-payments efforts solely on the direct purchasers. Without *Illinois Brick*, the upstream collusive arrangement would quickly come under pressure if consumers have an unambiguous incentive to sue for their damages. Only when indeed acting as a shield against claims that would have been made by others than the direct purchasers, if only they were given the right to do so, can *Illinois Brick* have the potential anti-competitive effects here identified.

A second brick required for the wall, therefore, is the following result on the total surplus in this market. It shows that upstream cartellization, while increasing the combined profits of the producers, indeed decreases consumer welfare more than proportionally. Hence, total welfare is lower when the upstream industry colludes,

relative to when it remains in Cournot competition, so that no compensation scheme exists that can make everyone better off with upstream collusion.

Lemma 2 *Total welfare, defined as total profits plus consumer surplus, decreases from its level under competition when the upstream cartel input price is increased from its competitive level p^c .*

Proof. First, using (2), consumer surplus as a function of p can be determined as

$$CS(p) = \frac{1}{2} (1 - P(p)) Q_d(p) = \frac{1}{2} \left(\frac{n}{n+1} \right)^2 (1-p)^2.$$

Total welfare then is defined as

$$W(p) = CS(p) + \Pi(p) = \frac{1}{2} \frac{n}{(n+1)^2} (1-p)(n+2+np),$$

where $\Pi(p)$ is taken from (5). Since

$$\frac{\partial W(p)}{\partial p} = -\frac{n(1+np)}{(n+1)^2} < 0,$$

an increase in the price reduces welfare. ■

Note that Lemma 1 and Lemma 2 combined refine the well-know result that vertical integration of up- and downstream monopolies is socially efficient when it eliminates the double monopoly markup when both the up- and the downstream industry are a monopoly.¹² In our setup, with a variable number of firms in each industry, integrating vertically involves horizontal integration as well. In our simple model of up- and downstream competition, the increased efficiency effects from taking out double marginalization outweigh the consumer detriment effect that the integration has by eliminating horizontal competition only when very few firms are incumbent in the market, so that input and consumer prices fall, and total output increases. Whenever there are originally more than just very few firms in the market, collusive practices in the production chain inevitably benefit firms only through increases in prices and reductions in output, thus going at the expense of total welfare. The efficiency enhancing effects attributed to vertical integration in the literature are very specific, that is, to markets in which there was very little or no competition to begin with.

¹² Cf. Carlton and Perloff (2000), pp.398-401, or Motta (2004), pp.306-46.

5 An Illinois Wall

Everything is in place now for an example of an Illinois Wall. The key to erecting one is for the upstream cartel to compensate the downstream firms for their actual injury plus the amount of treble overcharge they are entitled to irrespective of their true damages by *Hanover Shoe*. There are several ways in which the upstream firms can indeed pass on some of their cartel profits to compensate their direct purchasers, ranging from overt money transfers to offering CEO's all-inclusive jaunts to the Tropics. As said, however, any scheme that can complement *Illinois Brick* has to satisfy some constraints. It should, of course, be sufficiently interesting for the downstream firms not to break it—benefitting from it first, and then filing suit after all. More importantly, it should be covert, as any evidence of collusive arrangements explicitly involving the downstream firms opens up the possibility for consumers filing for treble damages, they now being the fully informed direct purchasers of firms in breach of the competition laws. Crucially, therefore, it has to be tacit in that all parties involved understand its value with little or no communication, and certainly no overt agreements are necessary.

One possible compensation scheme that satisfies these constraints amounts to a restriction on the number of inputs the upstream firms sell to the downstream firms. This creates an artificial scarcity on the downstream market, from which the downstream firms profit. Particularly this is so if the cartel distributes the limited amount of inputs evenly over the downstream firm, and charges a relatively low price per unit. When the downstream firms are 'put on allocation' in this way, it has an effect that is illustrated in the figure below.

The figure displays the individual situation of a downstream firm, which is horizontally in Cournot competition. The upstream cartel supplies the downstream industry with a restricted quantity of inputs \bar{Q}_u , which it allocates evenly over all n downstream firms, so that each receives $\frac{1}{n}\bar{Q}_u$ only, at an input price per unit of \bar{p} . Given its linear production technology—involving no further costs by assumption—and in the knowledge that all other downstream firms have been allotted the same number of inputs and therefore each produce the same amount of inputs, each downstream firm can safely expect to sell its $\bar{q}_{i,d} = \frac{1}{n}\bar{Q}_u$ units at a consumer market price of P . At equilibrium, each downstream firm therefore has a residual demand curve plotted as $q_{i,d}(P|\bar{q}_{-i,d})$, so that the individual downstream profits under this rationing scheme are represented by area $Pac\bar{p}$.

Given residual demand, the input price that would have corresponded to this sales price of P , if it were not for the upstream cartel artificially rationing the input levels, is p' , with an associated profit of $Pabp'$. Hence, the quantity-constraint-low-input-price combination increases the profits of the downstream firm by an amount represented by $p'bc\bar{p}$. This extra profit can be understood as compensation for the downstream producer awarded by the upstream firms. If the direct purchasers do understand the rationing at low prices in that way, the arrangement can act to silence the sole party

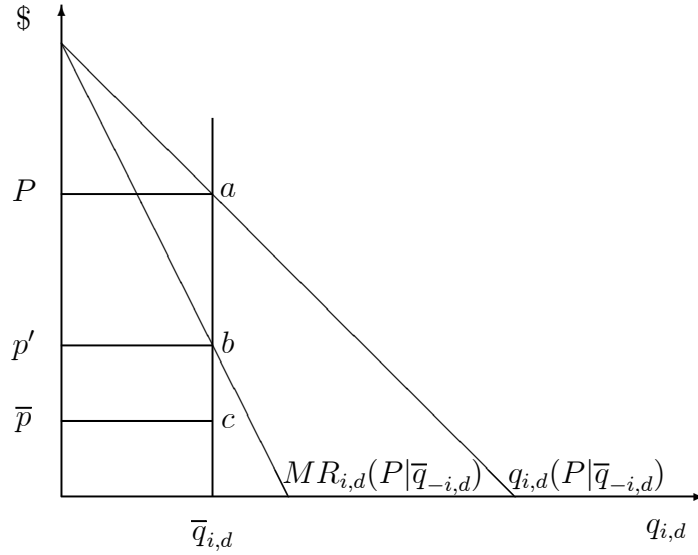


Figure 1: An individual downstream Cournot competitor ‘put on allocation’.

with power to speak up and unmask the anti-competitive arrangement. No money passes hands. The deal is tacit and simple. It requires little or no communication and therefore need not leave any evidence. It can, therefore, easily escape prosecution under the antitrust laws by consumers or government authorities, as the upstream firms can hardly be made to supply more inputs than the downstream firms are willing to buy.

As a result, the arrangement allows for a stable Illinois Wall, as follows. The upstream industry delivers its side-payments to the downstream firms by choosing a reduced price-quantity combination (\bar{Q}_u, \bar{p}) so as to maximize

$$m\pi_u^{a,r} = \bar{p}\bar{Q}_u,$$

and because of *Illinois Brick*, the upstream industry needs to do so only under the restriction that none of the firms in the downstream industry has an incentive to bring a private damages claim. To that end, the upstream industry can play a trigger strategy in which the upstream cartel rations at a low price, as long as no firm in the downstream industry sues. If any one of the downstream firms decides to claim treble damages, the upstream cartel breaks down and the upstream industry reverts to Cournot competition from then on.

Faced with this upstream trigger strategy, the profits of each downstream firm when refraining from suing and accepting the side-payments instead are

$$\sum_{t=0}^{\infty} \delta^t (1 - \bar{Q}_d - \bar{p}) \bar{q}_{i,d},$$

where $\bar{Q}_d = \sum_{i=1}^n \bar{q}_{i,d}$ is total downstream production under the rationing scheme. If a downstream firm would bring a private treble damages suit, it would receive the lucrative profit for the period in which it defects from the tacit arrangement, plus treble damages in that period. Then the arrangement breaks down and each firm in the downstream industry will receive the normal competitive Cournot profits for the rest of time. Hence, total discounted pay-off from suing for a downstream firm is

$$(1 - \bar{Q}_d - \bar{p}) \bar{q}_{i,d} + \mu \frac{1}{n} D_d(\bar{p}) + \sum_{t=1}^{\infty} \delta^t \pi_d^c,$$

in which the damages award is $\frac{1}{n}$ th of the downstream industry-wide damages $D_d(\bar{p})$ under the symmetric tacit rationing scheme. Notice that if a downstream firm decides to sue, it still reaps the benefits of the price discount in the current period. Moreover, notice that because the downstream firms are put on allocation at low input prices, the level of actual damages is relatively low, compared to when full upstream cartel prices were charged—thus reducing the incentive to notify the arrangement in two ways.

Rewriting these costs and benefits of filing suit and comparing them, the downstream industry will refrain from exercising its unique right to claim antitrust injury if

$$\frac{\delta}{1 - \delta} (1 - \bar{Q}_d - \bar{p}) \bar{q}_{i,d} \geq \mu (\bar{p} - p^c) \bar{q}_{i,d} + \frac{\delta}{1 - \delta} \pi_d^c. \quad (6)$$

This key condition is quite intuitive: for each downstream firm, the present discounted value of the downstream future payoffs under the rationing upstream cartel regime should be larger than the present damages claim—as said, under the only modestly raised cartel input prices—plus the discounted value of profits under up- and downstream Cournot competition.

When condition (6), which depends crucially on whether or not the downstream firms weigh future benefits sufficiently high—as expressed by their discount value δ —is satisfied for each downstream firm i , they will each prefer the collusive arrangement over competition amongst their suppliers. When, moreover, the upstream industry is able to raise profits above the Cournot level amongst them, the Illinois Wall is a subgame perfect Nash equilibrium. It was noted before that the latter implies that the low input price at which the downstream industry is put on allocation should at least be as high as the input price that would result under upstream competition, that is, in equilibrium $\bar{p} \geq p^c$. Note furthermore that this condition implies that the remaining potential damages claim for the downstream firms is non-negative. Since the upstream cartel determines the extent to which the downstream firms are put on rationing, as well as the price of the inputs, it will set the rationing scheme so as to make each downstream firm just indifferent between going along with the collusive arrangement and filing for damages. Although this makes the anti-competitive arrangement particularly attractive for the upstream firms, the downstream firms are

not in a position to demand more of the surplus, for they cannot credibly threaten to notify the arrangement and sue for their individual damages.

In all, this allows for our main result.

Theorem 1 *If $\delta > \delta^*$, with*

$$\delta^* = \frac{\mu(n+1)}{(n-1)m + (\mu-1)(n+1)}, \quad (7)$$

Illinois Brick sustains the upstream cartel. That is, there exists a pair (\bar{Q}_u^, \bar{p}^*) such that $m\pi_u^{a,r} \geq m\pi_u^c$ and none of the downstream firms has an incentive to exercise its right to sue for treble antitrust damages.*

Proof. First, as said, the upstream cartel will always choose (\bar{Q}_u, \bar{p}) such that (6) holds for each firm i with equality, and $\bar{p} \geq p^c$. Multiplying left and right by n , the number of downstream firms, and substituting $\bar{Q}_d = \bar{Q}_u$, returns the industry-wide constraint in terms of the upstream choice variables

$$\frac{\delta}{1-\delta} (1 - \bar{Q}_u - \bar{p}) \bar{Q}_u = \mu(\bar{p} - p^c) \bar{Q}_u + \frac{\delta}{1-\delta} n\pi_d^c.$$

Note that obviously (Q_u^c, p^c) satisfies this constraint, for under regular Cournot competition, there would be no damages. Hence, the profit maximizing cartel supply of inputs-at-low-prices needs to give weakly higher profits to the cartel than under Cournot competition, for otherwise the cartel would choose to behave honestly competitively.

Solving equation (5) for \bar{p} gives

$$\bar{p} = \frac{1}{\mu - (\mu-1)\delta} \left(\delta(1 - \bar{Q}_u) + \mu(1 - \delta)p^c - \delta \frac{n\pi_d^c}{\bar{Q}_u} \right).$$

Substituting this into the profit function $m\pi_u^{a,r} = \bar{p}\bar{Q}_u$ yields

$$m\pi_u^{a,r} = \frac{1}{\mu - (\mu-1)\delta} (\delta(1 - \bar{Q}_u) + \mu(1 - \delta)p^c) \bar{Q}_u - \frac{\delta}{\mu - (\mu-1)\delta} n\pi_d^c.$$

This function is concave in \bar{Q}_u and maximized at

$$\bar{Q}_u^* = \frac{1}{2} + \frac{1}{2}\mu \left(\frac{1-\delta}{\delta} \right) p^c.$$

Given this value of \bar{Q}_u^* , we readily find

$$\begin{aligned} \bar{p}^* &= \frac{1}{\mu - (\mu-1)\delta} \left(\frac{1}{2}\delta + \frac{1}{2}\mu(1-\delta)p^c - \delta \frac{2n\pi_d^c}{1 + \mu \left(\frac{1-\delta}{\delta} \right) p^c} \right), \text{ and} \\ m\pi_u^{a,r*} &= \frac{\delta}{\mu - (\mu-1)\delta} \left(\left(\frac{1}{2} + \frac{1}{2}\mu \left(\frac{1-\delta}{\delta} \right) p^c \right)^2 - n\pi_d^c \right). \end{aligned}$$

As said, we need $\bar{p}^* \geq p^c$. It can easily be shown that this is so for δ close to unity. Moreover, there is a unique value of δ in $[0, 1)$, given by δ^* defined in (7) in the Theorem—which is found by substituting the equilibrium value of $n\pi_d^c$ from equation (4) and the fact that $p^c = \frac{1}{m+1}$ into the expression for \bar{p}^* above—for which $\bar{p}^* = p^c$. At this value of δ^* , we have

$$\left. \frac{\partial \bar{p}^*}{\partial \delta} \right|_{\delta=\delta^*} = \frac{1}{2\mu mn} \frac{((n-1)m + (\mu-1)(n+1))^2}{(m+1)(n+1)} = \frac{\mu}{2mn} \frac{n+1}{m+1} \left(\frac{1}{\delta^*} \right)^2 > 0$$

which proves that only for $\delta > \delta^*$ the rationing price exceeds the Cournot price p^c . ■

6 Resilience of the Wall

We have thus established that Illinois Walls can exist. To determine whether they may be a concern, we need to consider their resilience to pressures so far assumed away, such as entry, information asymmetries, less than perfect legal proceedings, and the possibility of public cases. Consider entry first. Since the upstream cartel is quite overtly profitable, it is attractive for new firms to attempt to enter the upstream market. Likewise, even though the vertical compensation scheme is tacit, the profits made in the downstream industry are likely to attract entrants as well. Obviously, neither the upstream, nor the downstream firms would welcome entry into their market. Yet, potential entry upstream is no different from the classical cartel entry problem, for which a number of solutions have been offered in the literature.¹³ Downstream, however, although the pressure of entry may be less strong, new entrants do form a potential threat that is particular to the Illinois Wall arrangement. When, for example, the downstream firms pressure the upstream cartel not to allow the new entrant in, by refusing to supplying it with inputs, the potential entrant could attempt to bring a case on grounds of refusal to deal, which—although typically difficult for new entrants—as a provable infringement of competition law may threaten the stability of the wall.

Interestingly enough, however, the aid of *Illinois Brick* to sustain vertical chain collusion is greater, the more firms operate in both the up- and the downstream industry. To see that, first note that by Lemma 1 it is necessary that $n > \frac{m+1}{m-1}$ for potential side-payments to at all exist within the upstream cartel. That is, an Illinois Wall can only be erected if the level of competition in both the up- and the downstream industry exceeds that of duopoly. Second, δ^* decreases both in m , the number of upstream firms, and in n , the number of downstream firms. Moreover,

$$\lim_{m \rightarrow \infty} \delta^* = 0,$$

¹³ Cf. Carlton and Perloff (2000), Chapter 5.

so that when the number of upstream firms becomes very large, the Illinois Wall exists for all possible discount factors. Likewise,

$$\lim_{n \rightarrow \infty} \delta^* = \lim_{n \rightarrow \infty} \frac{\mu(n+1)}{(n-1)m + (\mu-1)(n+1)} = \frac{\mu}{m + \mu - 1},$$

which decreases from $\frac{\mu}{\mu+1}$ to zero, as m increases from two up until infinity, opening up the space of possible discount factors for which an Illinois Wall can be erected.

The reason why Illinois Walls are resilient to entry and are, in fact, more stable, the more competitive the horizontal layers in the production chain is two-fold. Fierce downstream competition allows the downstream firms to pass a larger part of their overcharge on to the consumers. Under *Illinois Brick*, these passed on damages escape claiming, for the consumers have no right to recover them. Consequently, the monetary incentive to sue for private damages is smaller, as a successful claim will recover the damages money, but has little long term benefits as the true injury from upstream collusion felt downstream was only small. At the same time, a larger number of competitors in the upstream industry makes the vertical collusion scheme more attractive to each of them, compared to competition, so that they can forward a larger sum in side-payments to the downstream level.

In fact, these results reveal that, although our modelling of up- and downstream competition as Cournot quantity setting allows for tracing the processes at work, this typical competitive process is certainly not driving the result. Suppose, namely, that up- and downstream producers would be in Bertrand competition instead, and therefore price at marginal costs. Then, the upstream collusive arrangement would easily increase profits far over and above the increase established in the present analysis. Moreover, the downstream industry would, as it remains in Bertrand competition, be able to pass all of the overcharge on to the consumers, thus increasing profits with only the smallest amount of side-payments. In this, total welfare certainly is reduced. Hence, the misuse of *Illinois Brick* is at least as profitable as it is under Cournot competition—which checks our finding that the more competitive the production chain as a whole, the more scope there is for setting up an Illinois Wall.

Yet, despite the fact that the Illinois Wall conspiracy can cope with entry up- and downstream, an increase in the number of participants does introduce issues of stability. For the horizontal stability of the upstream cartel an appeal to traditional stability arguments—typically building on the folk theorem—remains sufficient to ignore the matter for our main result. Yet, it should be noted that the larger the number of firms in the upstream industry, the more strain will be put on the horizontal collusive arrangement. When the number of upstream cartel members increases, namely, each individual upstream firm has an increased incentive to defect and undercut the cartel price, up to a point where it is no longer sustainable—although it is questionable whether the downstream firms are willing to accept the larger input offer, knowing that it undermines the Illinois Wall. There are, therefore, two conflicting effects of more competition upstream. On the one hand, more upstream

firms widens the space of discount factors for which Illinois Walls exist, while on the other it narrows that for which the upstream industry is able to sustain it amongst themselves. But then again, the Illinois Wall does make it possible to sustain the upstream cartel quite openly, possibly involving regular meetings, written agreements and explicit enforcement mechanisms. It is only the vertical arrangement that is tacit and therefore truly fragile.

Entry from participants to the arrangement downstream would make it harder for each of the individual downstream firms to understand that the upstream industry is indeed handing it down concealed profits via the symmetric rationing scheme at low prices. Apparently, the practice of putting downstream customer on allocation is not uncommon.¹⁴ Cigarette companies in the US used to allocate supplies with a system in which wholesalers were limited to small increases over previous purchases—unless they could show that they had acquired new retail customers. Nevertheless, the tobacco wholesalers sued the manufacturers for price fixing. Clearly the wholesalers had not understood that the vertically installed symmetric rationing scheme may well have been to the benefit of all of them. The more downstream firms are to be involved in the tacit collusion, the more difficult it would probably become to make each of them understand the arrangement. The effect that the ‘putting on allocation at low prices’ reduces the individually known actual damages, on the other hand, would still apply. Moreover, since δ^* in the Theorem is established by making the incentive constraint for the downstream firms just bind in equilibrium, it really is an upper-bound value for which the Illinois Wall exists. Typically, there is surplus cartel profits over and above the level of side-payments handed down to the downstream firms to make them just indifferent between participating in the anti-competitive arrangement and filing for damages, that the upstream industry could share in case the downstream firms need a little more encouragement to remain in the arrangement. Yet, even though one would expect the downstream firms to be educated over time in the repeated game, it seems reasonable to expect Illinois Walls in markets were the number of competitors is limited.

Next, consider the assumptions made sofar about the availability of public information and the related efficiency of the legal system. We have shown that Illinois Walls exist, even when the existence of the upstream cartel is common knowledge and the legal system is perfect in the handling of private damages cases. As a result, bringing a private damages claim—provided one has standing to sue—would result in the awarding of treble damages with certainty and at no legal transaction costs. If information is less perfect, or if the judicial system involves non-negligible costs, or if the eventual conclusions of law, even when a case does in fact have merit, *a priori* are uncertain, then the bringing of private cases would only be hindered further. The

¹⁴ We are indebted to Franklin Fisher for providing the following example, possibly of an Illinois Wall that came down and into the open when downstream firms filed suit nevertheless. *Cf. Holiday Wholesale Grocery Co., et al., v. Philip Morris Incorporated, et al.*, Civil Action No.1:00-CV-0447-JOF.

reason for this is that then the eventually awarded net damages money and thereby the private incentives to bring cases, would be reduced. This would enhance the scope for erecting an Illinois Wall. Analytically, it corresponds to a reduction in μ , which decreases the value of δ^* —eventually to zero when μ approaches zero—thus stabilizing the walls. This is particularly so, if, in line with the literature attributing efficiency gains to *Hanover Shoe* and *Illinois Brick*, we assume that information about the existence of the upstream cartel is asymmetric, with the downstream firms, as direct purchasers, having evidence about the arrangement that is superior to that of the consumers.

The same is not true for the introduction of public antitrust enforcement into the picture. Where those advocating *Hanover Shoe* and *Illinois Brick* would typically consider private enforcement superior over public enforcement, the latter turns out to be a desirable complement to the former when Illinois Walls are a possibility. Public cases will, no different from private ones, put stress on both the horizontal and the vertical cartel arrangements, thus potentially undermining them. Although the incentive for public officials to bring anti-competitive practices to light may indeed be smaller than that of private parties themselves affected in their well-being by the cartel prices, obviously, under our assumptions on the ready availability of information of law breaching, the upstream cartel would be a sitting duck for the government. And should government still miss it, the *parens patriae* provision for consumers and indirect purchasers to file a complaint on the anti-competitive behavior of upstream firms that are out of their reach by *Illinois Brick* with their state antitrust enforcers or the Department of Justice would clearly provide an incentive—albeit without being rewarded damages money—to notify cases to the authorities, in an attempt to reduce consumer prices.¹⁵ Yet, under reference to the previous observation that imperfect and asymmetric information would fortify Illinois Walls, we believe that in a world with less than perfect information the presence of a public enforcement channel is no guarantee against their presence.

Finally, consider programs designed to increase the private incentive to notify infringements of competition law, such as leniency programs, which offer protection from remedies to those firms involved in anti-competitive arrangements that report them to the antitrust authorities first, and possibly put premiums on notification. In the present setting, this would be the equivalent of the direct purchasers being entitled to a larger sum of damages money than treble what they have been overcharged. Analytically, this takes the form of an increase in μ . It is, therefore, worth noting that from the remedy perspective, the potential to erect Illinois Walls vanishes only when the impact of the private damages claims is increased to infinity. In most of the existing literature on incentive effects from private antitrust enforcement, such as Baker (1988) and Besanko and Spulber (1990), multiple damages are applauded.

¹⁵ A related issue arises from the 1981 Supreme Court decision in *J. Truett Payne Co., Inc. v. Chrysler Motors Corp.* 451 U.S. 557 (1981) that indirect parties can ask in private cases for injunctions to break up the upstream cartel in state courts.

The point of Besanko and Spulber, for example, is that private antitrust enforcement effectively increases social welfare, yet only for a sufficiently large damage multiple. Our result goes in the same direction. In the present analysis, for any finite damages multiple—and certainly for the treble damages for which the upper-bound to δ^* is $\frac{3}{4}$ —there remain reasonable discount factors for which Illinois Walls exist.

7 Concluding Remarks

We have identified a potential anti-competitive effect of the influential twin Supreme Court rulings in *Hanover Shoe* and *Illinois Brick*, so far largely ignored in the literature, despite some empirical indication for its existence. Several aspects important for understanding the full effect of private damages claims have been set aside above in order to offer an unobstructed view on the strategic role that *Illinois Brick* can play in stabilizing chain collusion in our example. As a result, the setup of our model is simple. Yet, we believe it captures the nature of the anti-competitive effect *Illinois Brick* may have. Moreover, we have shown that extensions in a number of directions that would need to be covered in a more complete treatment of the issues involved in private antitrust enforcement make our example of an Illinois Wall more resilient. Also, variations to our analysis such as the introduction of non-linearity in demand, production technology or cost structures, we expect not to change our qualitative findings. And Illinois Walls can surely be erected in longer vertical chains.

Nevertheless, we do acknowledge that we have not dealt more than in passing with the larger part of the potential for efficiency gain attributed to *Illinois Brick* in the existing literature. We have abstracted from these potential gains to focus on contributing just a single new argument to the debate—which is that *Illinois Brick* may create efficiency losses as well. Obviously, for a full understanding of the complex incentive issues that play in antitrust enforcement, a fair weighing of all the arguments is essential. Such a comprehensive analysis, we leave for further research.

Pointing out a theoretical possibility, as we do, raises the question as to whether there is any indication that Illinois Walls are indeed a real possibility. The easy answer to this is that by their nature, Illinois Walls escape direct observation. They are tacit, hidden and silent. Only through specifically directed antitrust investigations may they perhaps be found. This is not sufficient answer, of course. And there are, in fact, industries in which a certain amount of dominance amongst producers is seen in combination with scarcity of products at the retail level, against which little protest is heard from the retailers, despite a common grumbling, maybe—but no legal action—amongst consumers. Such seems to be the case with children’s toys in the days before Christmas, for example, with the latest CD’s of popular artists, or box office tickets for feature films in their opening week. Likewise, it is rumored that computer chips are artificially rationed when new models come out.

All such examples are sketchy, though, and not very convincing perhaps. The following suspicion of an Illinois Wall may be more compelling though. In Lopatka

and Page (2003) an argument against a repeal of *Hanover Shoe* and *Illinois Brick* at the federal level is build on the observation that for the vast majority of cases in which the indirect purchasers sued, also the direct purchasers sued, particularly in price-fixing prosecutions. Many of these indirect cases were follow-on actions. From this, they infer that “experience shows that direct purchasers are not reluctant to sue,” which to them substantiates their over-all conclusion that *Hanover Shoe* and *Illinois Brick* rightly put the incentive to bring cases with the party most likely to do so.¹⁶ They discuss, however, one striking exception they found to this rule, which is the *U.S. v. Microsoft Corp.* follow-on litigation. Although indirect purchasers have filed class action suits against Microsoft wherever state law gives them standing to sue, original equipment manufacturers (OEMs) such as Compact, Dell and Gateway have sofar not sued Microsoft for damages. More importantly, despite the fact that as direct purchasers, the OEMs are likely to have had superior information on Microsoft’s anti-competitive practices, they have not been instrumental in the instigation of the public case either.

Lopatka and Page believe that it is not likely that the OEMs did not bring a private damages case out of fear of retaliation. Microsoft frequently deals with firms, like Apple, they say, that have sued the company. Also, according to them, courts may require Microsoft to maintain relationships—as Judge Motz did in the Sun Microsystems litigation. Why then did the OEMs not file against Microsoft? Well, possibly the OEMs benefited from Microsoft’s exclusionary practices, as well as the company’s attempts to maintain its dominant market position, by levying it through predatory pricing from the OS market to the browser market. In fact, there is clear indication that Microsoft may well have reduced prices to the OEMs. Lopatka and Page say that:

“[S]ome OEMs may have received compensation in return for cooperating in restrictive practices, compensation that would in principle reduce the amount of damages.” (*op.cit.*, p.39)

Moreover, by restricting the OEMs principle input, Windows OS, to install before shipping on their computer systems, Microsoft may on top of that have been instrumental in restricting the supply of computers on the final consumer market, thus raising the PC price above its competitive level, and maintaining a substantial profit for the OEMs that was large enough for them to refrain from seeking treble damages. If this kind of input-rationing-at-low-prices indeed took place, it may well be an example of an Illinois Wall.¹⁷

¹⁶ Lopatka and Page (2003), p.37.

¹⁷ In Hall and Hall (2000) an upstream-downstream model of Cournot competition among computer manufacturers is developed, in which the OEMs have a derived demand for Windows OS as the vital input for producing complete PC’s, that allows for studying the benefits for the OEMs of this type of an Illinois Wall arrangement.

Yet, all this remains anecdotal evidence. A serious empirical study into the matter is called for. As discussed in the introduction, however, the empirical approach to the issue in Landes and Posner (1979) and Snyder (1986), in which the total number of private damages cases brought over time is checked for structural breaks around the *Hanover Shoe* and *Illinois Brick* ruling, has remained largely inconclusive. A related further Supreme Court ruling, however, from 1989 in *California v. ARC America Corp.*, may provide grounds for a different approach.¹⁸ *ARC America* leaves it to the discretion of the individual states to allow indirect purchaser suits or not. As a result the practice varies from state to state, with states allowing indirect purchasers to claim antitrust damages being referred to as ‘*Illinois Brick* Repealers’.¹⁹ To identify the possible presence of Illinois Walls, one approach could, therefore, be to compare the number of direct purchaser suits in states that followed *Hanover Shoe* and *Illinois Brick* with those that repealed—which is roughly half of them. Although this seems to be a promising approach, it is potentially quite troublesome.²⁰ We therefore leave it for further research.

Finally, we want to point out a possible strategy of industry organization opened up by *Illinois Brick*. The analysis above departed from an exogenously given market structure, in which the upstream cartel engages in a collusive arrangement with the existing downstream purchasers. Suppose, however, that the vertical production chain is more simple, in that initially the producers are dealing directly with the final consumers. In such a setting, it may be a profitable strategy for the producers to establish seemingly independent downstream purchasers through which to trade. That is, the upstream firms may engage actively in installing a competitive layer of downstream firms to act as a shield against otherwise direct purchaser claims. The same logic applies in a longer vertical chain. Illinois Walls, therefore, potentially involve a vertical disintegration with legal corporations, otherwise empty. To expect firms to indeed register such fake competitive ‘Bahama’s-firms’ to act as an Illinois Wall is a little farfetched perhaps. Surely, however, *Illinois Brick* may keep firms from vertically integrating parts of the production chain, thus blocking the potentially welfare enhancing effects thereof.

In all, it seems that the possible misuse of the twin Supreme Court positions in *Hanover Shoe* and *Illinois Brick* to construct Illinois Walls in vertical production chains merits notification, and cannot be as easily discarded of as the early literature did. Its negative welfare effects need to be taken into consideration and weighted against the potential efficiency gains of *Illinois Brick* and *Hanover Shoe* that have so far been forwarded. Despite of its relevance to many prominent antitrust cases since the late 1970’s, and some indication that Illinois Walls may indeed exist, the

¹⁸ Cf. 490 U.S. 93 (1989).

¹⁹ Cf. Davis (1997) and Page (1999).

²⁰ We are indebted to William Page and Robert Lande for pointing out a number of differences in judicial conditions in the various repealer states, that would potentially interfere with finding unbiased results in the approach proposed.

potential defense strategy that *Illinois Brick* offers upstream firms to ward off private antitrust cases is not yet sufficiently well understood.

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