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ABSTRACT

The Icelandic Competition Council recently ruled that a cement supplier with 75% market share is not dominant. The ruling was based on countervailing power of local concrete producers. To test the economic arguments for the ruling, we present a simplified model of the industry and apply and adapt some recent work on bilateral oligopoly. We show that it may be rational for buyers, given that some buying firms have switched to an entrant, to stay with a less efficient incumbent. Contracts negotiated with the incumbent are not as advantageous as those the entrant offers, but better than those that would prevail in monopoly of the entrant.

Keywords: Bilateral Oligopoly, Countervailing Power, Cement Industry

JEL classification: L13, D43

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Introduction

Icelandic competition authorities recently ruled that a local cement producer with 75% market share did not enjoy a dominant position in Iceland, which was considered to be the relevant market in the case. This is a deviation from traditional rulings, both in Iceland – which has a competition law similar to that of the EC – and in the EC/EEA, where market shares between 70-80% have usually been deemed to be so high as to not require further corroboration of a firm's market power.

The parties to the case are Iceland Cement Producers hf. (ICP) and Aalborg Portland Iceland hf. (API). The companies, ICP and API, have accused each other of unfair competition practices and have brought cases to Icelandic competition authorities. ICP accused API of predatory pricing and API accused ICP of abuse of dominant position. In neither case did the authorities find reason for taking action. ICP has brought its case to the EFTA surveillance authority, ESA. In its letter to ESA, ICP accuses Aalborg Portland A/S of offering its subsidiary in Iceland lower prices than Danish buyers get, thereby breaking European trade regulations. That case is still in process, but according to news reports, ESA does not see grounds for action on its behalf. The latter case, filed by API against ICP, is the case of interest here.

In its ruling in API vs. ICP the Icelandic Competition Council found that ICP does not enjoy market dominance in Iceland.[1] The Competition Appeals Committee later confirmed this ruling.[2] The argumentation was the following:

> "It is clear that, in special circumstances, large buyers can exert considerable competitive pressure in the market under consideration. This applies mainly in those cases where buyers are few and can easily and at low cost get the product in question from another supplier. A consequence of such buyer power may be that a supplier with a large market share is not considered to be dominant."

Two thirds of cement sold in Iceland is purchased by three buyers, which we shall call A, B and C. Two of these, say A and B, buy from ICP, whereas one, C, now buys

[1] Icelandic Competition Council, Ruling no. 32/2002.
[2] Icelandic Competition Appeals Committee, January 20th 2003.

from API. If, say, B decides to switch over from ICP to API the market shares of API and ICP will be approximately equal. The Competition Council found that in these circumstances buyer power was considerable, but also pointed out that it is created by the entry of API in the Icelandic cement market. Indeed, it is documented that A got ICP to match any offers they received from API for cement at lower prices than those A had paid at ICP. A and ICP even signed an agreement on this. The Council took this as a confirmation of buyer power and that neither supplier could act without due consideration of their customers or their competitors (the definition of market dominance). The final ruling, that ICP was not dominant in the Icelandic market for cement, was based on this premise.[3]

ICP is now a corporation wholly owned by the Icelandic state, but all the shares were recently put up for sale and attracted five groups of bidders. API is a wholly owned subsidiary of Aalborg Portland A/S, a Danish cement producer. Before ICP was put up for sale, API had expressed their interest in buying ICP, probably with intent to shut it down.[4] Aalborg Portland is not among the current bidders, at least not directly.

There are many interesting aspects to this case. The ruling that Iceland is the relevant market, rather than a part of the Danish market – as the CEO of Aalborg Portland A/S says in a recent interview (see footnote 4) – is a matter that could be discussed. However, the focus of this paper will be on countervailing power, i.e. the market power of the downstream producers, which was the basis for the ruling of the Competition Council that ICP was not dominant in Iceland.

In this paper we ask whether the decision and the arguments behind it can be supported by economic theory and put the case in context of recent work in industrial organisation. In particular, we want to gain a better understanding of the current

[3] Interestingly, in the Icelandic ruling a reference was made to the decision of the EC Commission in the case of the proposed merger of two paper producers, Enso, a Finnish firm and Stora, a Swedish firm (case no. IV/M.1225) where the Commission first observed that the share of the merged firm in the relevant market for liquid packaging board would be 50-70%. However, in the end the Commission ruled that "In conclusion, the merger will result in a market structure with one large and two smaller suppliers facing one large and two smaller buyers. This is a rather exceptional market structure. On balance, the Commission considers that the buyers in these rather special market circumstances have sufficient countervailing power to remove the possibility of the parties' exercising market power."

[4] In a recent interview with Søren Vinther, CEO of Aalborg Portland A/S ("Portland har sat sig tungt på Island", Nordjyske stiftstidende), he says, *inter alia*, that he regards Iceland as part of the Danish market; that in the long run there will not be space for both ICP and API in Iceland and, after

situation, where two of the largest buyers of cement prefer to purchase from the incumbent, rather than the entrant who took the initiative in offering lower prices than had prevailed historically in Iceland. This implies that the incumbent still has market share of 70-75%, but does it mean that he dominates the market in sense of the competition law? Does the situation imply that buyers expect prices to rise if the incumbent goes out of business? If this is the case, it would seem to indicate that the buyers view the entrant as a predator, even if the Competition authorities – in accordance with current practice in competition surveillance and enforcement – do not agree.

In an attempt at gaining some insights into the questions raised above we present a highly simplified model of the industry and apply and adapt some recent work on the theory of bilateral oligopoly, in particular the bilateral bargaining approach of Horn and Wolinsky (1988a). Whereas Horn and Wolinsky used their model to analyze incentives for horizontal merger on both sides – upstream and downstream – we are primarily interested in possible incentives for a buyer to stay with an incumbent supplier, even if the entrant offers a better price.

The paper is organized as follows. We begin by giving an overview of the Icelandic cement industry. We then briefly review the literature on countervailing power and related theories of bilateral oligopoly. We next present our model and analyze it. The paper concludes with a discussion.

Background: The Icelandic Cement market

The Danish cement producer Aalborg Portland A/S supplied Iceland with cement until 1958, when the Icelandic state established ICP. From the outset until year 2000, the ICP produced virtually all cement that was consumed in Iceland with the exception of special varieties, such as colored cement. In the years 1990-1999 its share of the market for cement in Iceland was 97-99%.

considering acquiring the Icelandic factory, Aalborg Portland's view was that it could not be run with profit.

ICP is based in Akranes, around 50 kilometers north of Reykjavik – the capital and population center – and usually the main market for concrete in Iceland.[5] The factory is very small, with production capacity of 200 thousand tons of gray cement a year. However, its production has never exceeded 160 thousand tons a year, and its average production in the years 1980-2000 was a little over 110 thousand tons per year. In comparison, Aalborg Portland, a rather small producer on an international scale, can produce up to 2,8 million tons of cement a year. Size is quite important in this case, since there are big economics of scale in cement production.[6] Production costs of ICP are higher than those of most other producers of cement, and cement prices have long been high in Iceland compared to other Western European countries. In the middle of 2001 the off factory price of the most common type of cement was between 55 and 75 euros per ton in most countries in Western Europe , while in Iceland the price was well over 100 euros (International Cement Review, June 2001).

Transportation costs of cement are high, a fact that together with the economies of scale in production explains why cement markets are characterized by local monopolies. Since 1975 the Icelandic cement market has been open for import from other European countries. However, even if ICP is a very small producer, transportation costs do give it some protection from foreign competition. Import of unbagged cement requires both specialized tank-ships and investments in cement silos. In 1996 it was estimated that import to Iceland would require at least 50% market share, if it was to be profitable (Skandia, 1996). Apparently that was believed to be too high a threshold to overcome until year 2000, when Aalborg Portland, Iceland (API) entered the market.

Figure 1 shows in euros, from above: list prices per ton of gray cement in Iceland, as reported from ICP, the second line from above shows the market price on gray cement in Iceland, estimated by dividing ICP's income, according to its annual statements, with production figures from ICP, in tons of cement,[7] the third line from above shows domestic prices on gray cement in Denmark and the lowest line shows fob prices on

[5] The exceptions are when there are large-scale investment projects such as power plants in areas outside the capital area.
[6] A rule of thumb for the industry is that total long term production costs increase with the square root of production (Skandia, 1996).

gray cement exported from Denmark. Although ICP did not have any competitors until recently, there seems to be some vague correlation between the listed price of cement in Iceland and in Denmark. The contemporaneous correlation between ICP's and Danish domestic market prices of gray cement in the years 1981 to 1999 is 0.39 (the correlation between logarithmic changes in cement prices in these years is, however, only 0.007). The ratio between domestic cement prices in Denmark and Iceland varied between 1.1 and 1.9 during those years. One possible explanation of the apparent correlation could be fluctuations in international energy prices, which have an effect in both countries. Another explanation could be that the threat of cement import created a contestable market situation for the ICP.

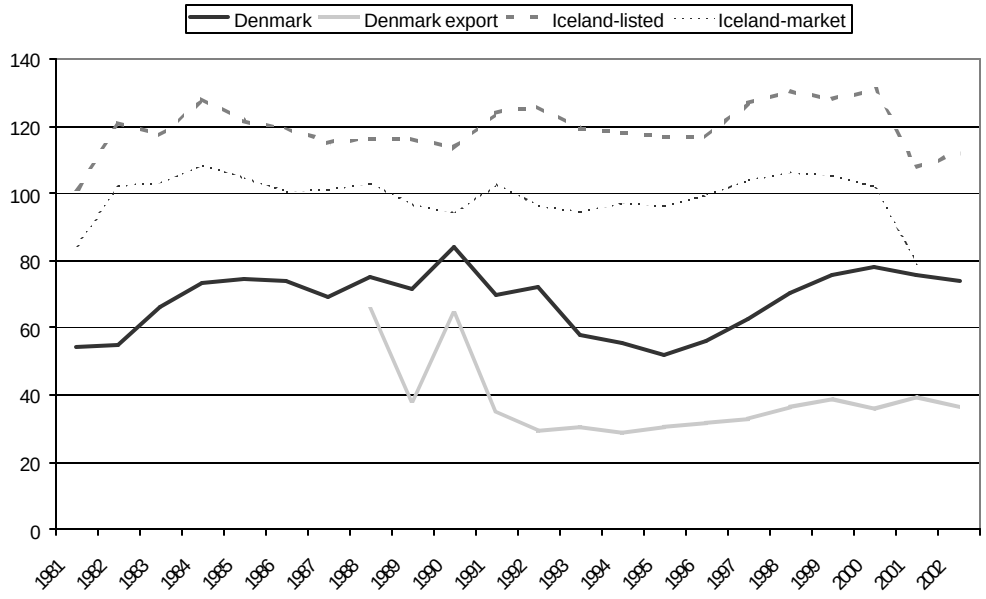

Figure 1. Prices of gray cement per ton in Iceland and in Denmark, ecus/euros. Sources: Iceland: ICP, direct information (listed price) and annual statements (market price). Denmark: La Cour and Møllgaard (2002).

The virtual monopoly of ICP in the Icelandic cement market ended in year 2000 when API built a cement silo near Reykjavik, the main market, with capacity of 5,000 tons, and started imports from Denmark. API's market share grew to 30 thousand tons in year 2002 (see Fig. 2), and that year the company built another silo, doubling its capacity. API can now import up to 70,000 tons per year, over half of the normal

[7] Income figures include sales of other products than cement, and the estimated cement prices are thus

cement consumption per year in Iceland. ICP's share of the market for cement in Iceland shrunk to around 80,000 tons in 2002 (see Fig. 2).

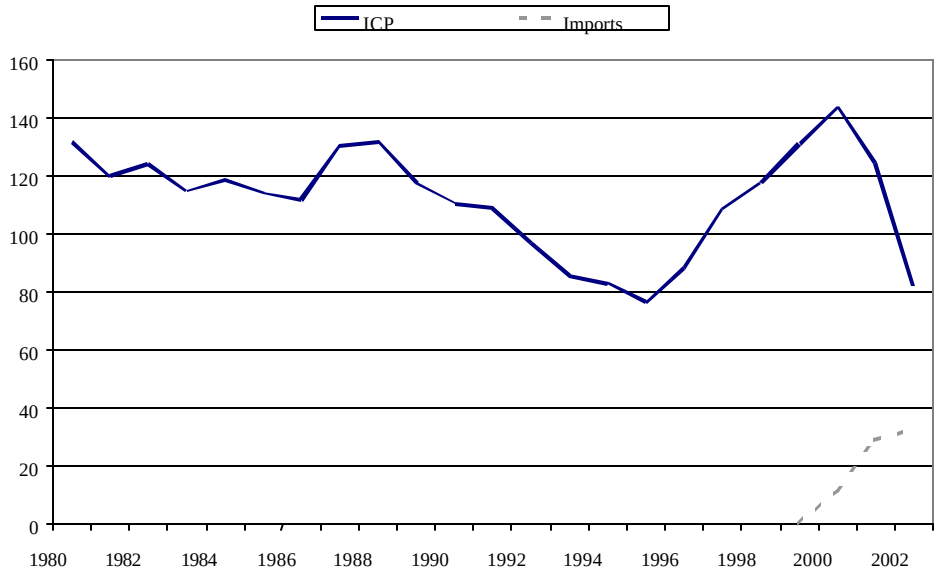

Figure 2. Consumption of cement in Iceland, thousand tons per year. Special imports, such as that of colored cement, not included.

The Icelandic cement market is at the moment a bilateral oligopoly. There are two providers of cement, but there are also very few buyers. Three concrete makers buy 60-65% of all un-bagged cement which is sold in Iceland. At the moment the smallest of those three firms buys cement from API, but the other two buy cement from ICP. If one of those two biggest buyers moves from ICP to API, the basis for ICP's operations appears questionable. Indeed, a fall in prices and reduced market share has led to considerable losses for ICP.[8] If the third buyer moves from API, its market share will be negligible. The market power of each buyer is thus considerable.

ICP's average cement prices fell by around 15% from 1999 to 2001, according to inexact calculations, made from information given in its annual reports. In 2001, the price of gray cement, excluding VAT, was around 6,800 kronur per ton or around 77 euros (see Fig 1).

slightly overvalued.

[8] In year 2001 the company's operating losses were, 230 million kronur, a little over 2½ million euros. At the end of that year the companies net worth was 950 million kronur, or over 10 million euros.

Apparently, ICP will continue to be run with considerable losses at the present price level for cement and the current market position of ICP. A model of API's costs leads us to a similar conclusion, when it is supposed that the importer pays the price Danish customers have to pay. However, considering the price Aalborg Portland, Iceland now pays in Denmark (which appears similar to the general export price on cement from Denmark), the importer apparently can sell cement in Iceland at the current sales price without running losses.

Countervailing power and bilateral oligopoly

Countervailing power is a concept that goes back at least to Galbraith (1952) who wrote (p. 119):

> Competition which, at least since the time of Adam Smith, has been viewed as the autonomous regulator of economic activity and as the only available regulatory mechanism apart from the state, has, in fact, been superseded … in the typical modern market of few sellers, the active restraint is provided not by competitors but from the other side of the market by strong buyers.

Galbraith's benign view of countervailing power was more or less dismissed by George Stigler (1954), who did not see the trend towards bilateral oligopolies Galbraith claimed and, in the cases countervailing power was created, saw it primarily as a means for redistributing monopoly profits.

It is not the purpose of this paper to give a historical overview of the theory of countervailing power.[9] Suffice it to say that there are several recent papers that present theories and evidence on countervailing power and bilateral oligopoly relevant to this paper. There are essentially two competing classes of theories. In the papers by Horn and Wolinsky (1988a, 1988b), Stole and Zwiebel (1996), Dobson and Waterson (1997) and Chipty and Snyder (1996), a monopoly supplier bargains with buyers

[9] Dobson and Waterson (1997) and Ellison and Snyder (2001) review the literature on countervailing power.

under symmetric information. In these papers larger buyers can achieve lower prices in equilibrium, even with a monopoly supplier.

In an alternative theory, Snyder (1996, 1998) presents a supergame framework where tacitly-colluding suppliers compete more aggressively for sales to large buyers and must set lower prices to large buyers to sustain collusion; the intuition is similar to that of the Rotemberg and Saloner (1986) theory of price wars in booms – the large buyers create the "booms". In this type of model, multiple competing suppliers must be present for the oligopolistic demand side to get lower prices – monopoly on the seller side will not do.

Empirical evidence, supporting the thesis of competing sellers rather than the models based on bargaining is presented for the pharmaceuticals industry in Ellison and Snyder (2001). Interestingly, in Engle-Warnick and Ruffle (2002) experimental support is offered for a polar opposite, called the "cautious monopolist theory" by the authors. In this behavioral theory of buyer countervailing power, a monopolist, restricted to posting prices, so no bargaining takes place, will set prices cautiously so as not to provoke withholding of demand on behalf of buyers. This would imply that the mere presence of concentration on the buyer side will lower input prices, even in monopoly and in the absence of bargaining between monopolist and buyers.

Björnerstedt and Stennek (2001) provide a non-cooperative foundation for the reduced Nash-bargaining form used, *inter alia* by Horn and Wolinsky (1988a), and Dobson and Waterson (1997). Their setting is that of bilateral oligopoly with multiple firms on the supply and demand side. In the model suppliers and buyers meet and negotiate contracts in simultaneous Rubinstein-Ståhl bargaining.

A model

None of the theories described above adequately catches the dynamic interaction of firms we are studying. However, as a first step, we start by setting up a model similar to that of Horn and Wolinsky (1988a). This should be seen as a point of departure for further work which allows us to gain some insights into the forces at play.

Downstream

There are two firms, say A and B, who produce a homogenous final product (concrete) for sale in a local market. Interaction between firms takes place in two stages. In the first stage, firms bargain with suppliers of the input (cement) over input prices. In the second stage, each firm sets the quantity of output it intends to produce in a Cournot game. The firms face an inverse market demand curve,

$$p = a - X^D \tag{1}$$

where X^D is the total demand for the product. Supply is given by

$$X^S = x_A + x_B \tag{2}$$

where x_a is the output of producer $a \in \{A, B\}$. In equilibrium in the product market demand and supply are equal and therefore

$$p = a - [x_A + x_B]. \tag{3}$$

There is only one input (cement) to the production of the final product and we choose units such that one unit of input results in one unit of output. The input is homogenous. However, there are two potential sellers (suppliers) of the input, Seller 1 and Seller 2, who may sell at different unit prices, say c_1 and c_2. Seller 1 is the incumbent – in a monopoly situation to start with – and Seller 2 is the entrant. Let us assume that buyers must choose between sellers on an all-or-nothing basis.[10]

Suppose Producer $a \in \{A, B\}$ chooses to buy the input from Seller $j \in \{1,2\}$. His profits are then given by

$$\Pi_a^P = \left[p - c_j^a \right] x_a = \left(a - c_j^a - [x_A + x_B] \right) x_a . \tag{4}$$

[10] This is what is observed in the case under consideration – the Competition Council in their ruling (see supra note 1) even takes it implicitly as a given for some reason and talk of producers of concrete "moving their business from ICP to API".

Taking production of Producer b as given, where $b = B$ if $a = A$ and vice versa, profits of a are maximized by choosing $x_a = \frac{1}{2}\left[\frac{a - c_j^a}{b} - x_b\right]$. Solving for x_A and x_B, we get the Cournot solution,

$$\begin{aligned} x_A &= x_A\left(c_i^A, c_j^B\right) = \tfrac{1}{3}\left[a - 2c_i^A + c_j^B\right], \\ x_B &= x_B\left(c_j^B, c_i^A\right) = \tfrac{1}{3}\left[a - 2c_j^B + c_i^A\right]. \end{aligned} \tag{5}$$

The corresponding profits are given by

$$\begin{aligned} p_A &= p_A\left(c_i^A, c_j^B\right) = \tfrac{1}{9}\left[a - 2c_i^A + c_j^B\right]^2, \\ p_B &= p_B\left(c_j^B, c_i^A\right) = \tfrac{1}{9}\left[a - 2c_j^B + c_i^A\right]^2. \end{aligned} \tag{6}$$

Upstream

The incumbent, Seller 1, and the entrant, Seller 2, supply the input at prices c_1 and c_2, respectively. The costs to Seller j of supplying the amount y_j of the intermediate good are given by

$$C_j\left(y_j\right) = f_j + v_j y_j \tag{7}$$

where f_j are fixed costs and v_j are variable costs per unit.

Monopoly

Suppose we are in the situation prior to entry of Seller 2 where Seller 1 enjoys a monopoly position in the market for the input. Setting prices at c_1^A and c_1^B, his profits are given by

$$\Pi_1^S = \left(c_1^A - v_1\right) x\left(c_1^A, c_1^B\right) + \left(c_1^B - v_1\right) x\left(c_1^B, c_1^A\right) - f_1 \tag{8}$$

(recall that the production technology requires one unit of input for each unit of output). As in Horn and Wolinsky (1988a) we now assume prices of the input are decided in bilateral bargaining with each producer. The result is determined by the symmetric Nash bargaining solution where we assume negotiations are separate, but simultaneous and symmetric.

Consider the bargaining of Seller 1 and Producer *A*. The latter has no outside option (i.e. no alternative supplier), so his disagreement point is zero. Seller 1, however, can, in principle, choose to supply only Producer B if negotiations with A break down. [11] His disagreement point is therefore given by his profits were he to do that. In that case it would seem logical to assume that Producer B becomes a monopolist in the product market. However, admittedly mostly due to analytical convenience, we shall follow Horn and Wolinsky (1988a) and assume that firm B would operate at the level anticipated in the negotiations and be supplied at the anticipated price. The profits of Seller 1 under such circumstances are $\left(c_1^{B*} - v_1\right) x_B\left(c_1^{B*}, c_1^{A*}\right) - f_1$, where c_1^{a*} denotes the equilibrium input price to Producer a.[12] The Nash product to be maximized over c_1^A is therefore given by

$$N_1^A = p_A\left(c_1^A, c_1^B\right)\left[\Pi_1^S - \left(c_1^{B*} - v_1\right) x_B\left(c_1^{B*}, c_1^{A*}\right) + f_1\right], \tag{9}$$

where Π_1^S is given by (8). The first order condition for maximization of N_1^A is

$$\begin{aligned} &\frac{\partial p_A\left(c_1^A, c_1^B\right)}{\partial c_1^A} x_A\left(c_1^A, c_1^B\right)\left(c_1^A - v_1\right) \\ &+ p_A\left(c_1^A, c_1^B\right)\left[x_A\left(c_1^A, c_1^B\right) + \frac{\partial x_A\left(c_1^A, c_1^B\right)}{\partial c_1^A}\left(c_1^A - v_1\right) + \frac{\partial x_B\left(c_1^B, c_1^A\right)}{\partial c_1^A}\left(c_1^B - v_1\right)\right] = 0 \end{aligned} \tag{10}$$

and a corresponding condition obtains for sales to *B*. This expression can be simplified using equations (5) and (6). Furthermore, using the symmetry of *A* and *B*, it

[11] It is a question of the nature and enforcement of competition law to what extent Seller 1 could do this in practice.

[12] Here we implicitly assume non-negative profits. If sales to B were not sufficient to sustain non-negative profits, then the disagreement point for Seller 1 would be zero.

is clear that in equilibrium we must have $c_1^{A*} = c_1^{B*}$. Substituting this identity in equation (10) we get the equilibrium input prices and output levels:

$$c_1^m = c_1^{A*} = c_1^{B*} = \frac{5v_1 + a}{6}$$
$$x_A^* = x_B^* = \tfrac{5}{18}[a - v_1] \qquad (11)^{13}$$

Note that if the entrant (Seller 2) becomes a monopolist, then exactly the same results apply with the subscript 1 replaced by 2.

Entry

Horn and Wolinsky (1988a) study the incentives for horizontal merger, upstream as well as downstream. What we are, however, aiming at in this paper is to study the following observed sequence of events:

0. The incumbent Seller 1, is monopolist and sets price c_1^m.
1. The entrant, Seller 2, appears on the scene. He first approaches Producer *B* and offers a "low" price, $c_2^e < c_1^m$. Let us assume for now that firm *B* switches over to the entrant.[14] There may be a contract that ensures *B* the low price for some time, but we do not have information on this.
2. Firm *A* is now offered the same deal as *B* and now considers whether to switch as well. What happened in the case under consideration is that *A* took this offer to Seller 1 and asked for a matching offer. We do know that *A* got a substantial reduction in price (as well as other "sweeteners" such as a guarantee on loans etc.). We do not have enough information to say whether the deal *A* got matched *B*'s deal perfectly.
3. Producer *A* does not switch and continues buying from the incumbent.

[13] These formulas differ from their counterparts in Horn and Wolinsky (1988a), but we have not been able to come to a different conclusion.

[14] This is in fact what happened, as one of the three largest producers switched. There can be many reasons why such a sequence actually occurs. For example, the capacity of the entrant may have to be expanded to accommodate all producers. The producer who switched actually utilised the capacity of API fully and further investments – taking time – would be needed to service another producer.

We have not been able to take the analysis to a point where we have a satisfactory model of this dynamic process. It is, however, possible within the static Horn-Wolinsky model to analyze a "snapshot" of Stage 2, where a bilateral monopoly exists, and look at incentives for Producer *A* to abandon the incumbent. For this purpose, take it as a given that *A* buys from 1 and *B* buys from 2 and assume that interaction in the intermediate goods market is purely bilateral. The two pairs then only interact indirectly, through the final product market.

We still work under the assumption of Nash bargaining, but we assume that the two pairs of firms are permanently locked in bilateral contracts and have no outside options. Since Producer *A* does in fact have the option to switch over to the entrant, this will not lead to the "correct" bargaining solution. Taking this into account would strengthen the bargaining position of *A* and lead to a lower equilibrium price for the input. We can, however, get an indication of what incentives *A* will have to make the move to the entrant this way and it has the merit of lending itself to a simple linear solution.

To derive the price of cement for Seller 1 vs. Producer *A* with these assumptions we maximize the product $p_A\left(c_1^A, c_2^B\right)\left[\left(c_1^A - v_1\right) x_A\left(c_1^A, c_2^B\right) - f_1\right]$ with respect to c_1^A. To complete the equilibrium, a similar product must be maximized for Seller 2 vs. Producer *B*. With $f_i > 0$, c_1^A and c_2^B are jointly determined as solutions to a pair of quadratic equations. Unfortunately, this problem does not have a convenient solution, so let us start with assuming all costs are variable. The more general case may be analyzed numerically.

Taking $f_1 = 0$, the first order equations for the joint Nash bargaining problem reduce to

$$\begin{aligned} -8c_1^A + c_2^B + 6v_1 + a = 0 \\ -8c_2^B + c_1^A + 6v_2 + a = 0. \end{aligned} \tag{12}$$

and from these we get the equilibrium prices for the input prices in this system of bilateral contracts without outside options:

$$\begin{aligned} c_1^{b,A} &= \tfrac{1}{21}\left(2v_2 + 16v_1 + 3a\right) \\ c_2^{b,B} &= \tfrac{1}{21}\left(2v_1 + 16v_2 + 3a\right) \end{aligned} \tag{13}$$

Suppose $a > v_1 \geq v_2$ (these are natural conditions on these parameters). Recall that if Seller 2 is a monopolist, then he will set his equilibrium price in an analogous fashion to equation (11), but with v_1 replaced by v_2, i.e. at $c_2^m = \frac{1}{6}\left(5v_2 + a\right)$. The production of Producer *A* in these two regimes, i.e. at the pair of input prices $c_1^{b,A}$ and $c_1^{b,B}$ on the one hand and c_2^m (to both producers) on the other, is given by

$$\begin{aligned} x_A^b &= \tfrac{1}{63}\left(18a - 30v_1 + 12v_2\right), \\ x_A^{m,2} &= \tfrac{5}{18}\left(a - v_2\right) \end{aligned} \tag{14}$$

respectively. Since profits of *A* and *B* are given by the production squared (cf. equation (5)), we can compare x_A^b and $x_A^{m,2}$ and conclude that

$$p_A^b > p_A^{m,2} \quad \Leftrightarrow \quad a > \tfrac{1}{19}\left(90v_1 - 71v_2\right). \tag{15}$$

Therefore, as long as the scaled difference between the incumbent's costs and the entrant's costs are not too great (the condition can with some impunity be approximated by $v_1 - v_2 < 0.06a$) Producer *A* actually does better by sticking with the incumbent, rather than by creating a monopoly condition for the more efficient entrant.

Discussion and concluding remarks

We have shown that it may be rational for firms to stay with an incumbent rather than move their business to a more efficient entrant who, in principle, can offer lower prices. This, however, requires that firms expect the entrant to raise prices if the incumbent goes out of business. In this model firms do in some sense have

countervailing power whenever there is oligopoly on the buyer side. Thus, two or three buying firms will push prices set by suppliers below ordinary monopoly levels. However, this power is strengthened by the presence of two or more firms on the supply side. This can lead to a sustainable equilibrium where first some buyers switch their business to an entrant, but those who haven't switched then find it in their best interests to stay with the incumbent while at the same time negotiating contracts that may not be as advantageous as those the entrant offers, but better than those that would prevail in monopoly of the entrant.

We have made some simplifying assumptions in our analysis which imply that we do not utilize the model employed fully. One simplification was to rule out the outside option for *A* of switching to monopoly of the entrant. Intuitively, this should strengthen *A*'s bargaining position and narrow the price difference between the incumbent and the entrant. Another simplification was to ignore fixed costs in production of the input. This is especially relevant for the incumbent whose ratio of fixed and variable costs should be higher than that of the entrant. Fixed costs work like a threat point (corresponding to the outside option of exit) for the incumbent. His bargaining position is therefore strengthened which should push the negotiated price up. These two features therefore work in opposite directions. Their combined effect would appear to depend on parameter values. However, it does not seem likely that the qualitative result that *A* may be better off by staying with the incumbent would be changed.

The model employed is not really satisfactory for modeling the dynamic process of entry and interaction observed. How should we proceed here? Models like those of Snyder (1996, 1998) require multiple suppliers to create countervailing power. This is also one of the premises of the ruling of the Icelandic Competition Council. However, intuitively, in a model with that feature the incentive of *A* staying with the incumbent would be strengthened, given that *B* has switched. The buyers really then in some sense implicitly collude to "divide and rule" the suppliers.

This is the theoretical argument. The question now has to be raised whether the argumentation that ICP is not market dominant due to the countervailing power of concrete producers be justified by economic reasoning? Further work, including a

parameterization of the model is, however, necessary to answer this question with any degree of certainty. What we have shown is that the answer *may* be in the affirmative and that the presence of multiple firms on the supply side certainly strengthens the countervailing power of buyers. From the historical evidence it seems clear that entry of API has helped bring prices down in Iceland.

Conceptually, the result that it may be in the best interests of *A* to stay with the incumbent after *B* has switched is based on a predatory pricing argument; it relies on the notion that if *B* switches to the entrant then this will create a monopoly of the entrant who will subsequently raise prices. It also relies on the assumption that credible long-term contracts are not available or cannot be enforced. Thus, it could be maintained that the reluctance of the concrete producers to switch their business to API is in itself an indication that API is engaged in predatory pricing. In fact, fixed costs in cement production and imports are so high that must be difficult for two companies to survive in the small Icelandic market. It therefore seems likely that the ongoing price war will result in one of the companies giving up. The concrete producers probably look towards the Faroe Islands, where prices are higher than at present in Iceland, for an estimate of future price developments if ICP goes out of business.

Epilogue

It is an interesting epilogue to the story of this paper that the Icelandic state in October 2003 sold the ICP to a group of investors that includes one of its customers, B.M. Vallá (BMV) – the largest single buyer of cement in Iceland. The price is approximately 15% of the annual revenues of the factory. Furthermore, the State takes over most of its fixed assets not related to the production of cement for a price that is approximately equal to revenues and also approximately equal to losses of ICP accrued from the year 2000. Although this sale does not integrate buyer and seller perfectly it creates a credible commitment for BMV (corresponding to "*A*", in our model), to buy from ICP. Considering our model, this essentially eliminates the outside option of *A* (BMV) to make the switch over to the entrant (API). Moreover, the deal eliminates most of the fixed costs of ICP. Furthermore, the second largest customer of ICP, Steypustöðin, has moved its business to API, leaving the companies with approximately equal market share. The situation after the sale is therefore even

closer to our model than previously. Of course it remains to be seen whether the present situation is sustainable in the longer term.

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