CRA Competition Memo

Collective Dominance and Capacity Coordination

A significant development has recently taken place in the European Commission's approach to collective dominance in merger analysis: for the first time, a detailed assessment has been carried out of the economics of capacity coordination, in the parallel cases of *UPM-Kymmene/Haindl* and *Norske Skog/ Parenco/Walsum.*[1]

Allegations of coordination over capacity have been made by the Commission in a number of previous collective dominance investigations (including *Airtours/First Choice*). In these cases, however, the main focus remained rather more conventional arguments about coordination of prices or output decisions. But suppose coordination of prices (or output) was unlikely, given market circumstances. This raises an intriguing question: could firms then succeed in coordinating the installation of new plants, and ensure that capacity remains tight – and prices high – even in the absence of direct coordination of these more conventional variables? The lesson to be drawn from the cases of *UPM-Kymmene/Haindl* and *Norske Skog/Parenco/Walsum* is that collective dominance arguments based on coordination of capacity is extremely difficult to sustain for industries that require irreversible investments.

Why collude over capacity expansion?

The question of whether a merger facilitates the coordination of prices or output has now become a routine issue in European merger control. However the possibility of coordination of investments, for example in capacity expansion, is less frequently raised. Consider for example an industry that operated most of the time close to its capacity constraint. Collusion in prices or output is typically not relevant. When firms produce up to capacity, they are by definition not holding back production. Even if they are only *close* to the capacity constraint, collusion is hard because retaliation (price wars) generally will not be severe enough: there is not sufficient spare capacity available to expand production and flood the market.

But could the capacity constraints result from coordination of investments in *new* capacity? If firms could coordinate in keeping their capacity 'tight', they would not need to worry about coordinating their price or output decisions because they could achieve high prices anyway. How plausible is such a scenario?

[1] Cases No COMP/M.2498 – UPM-Kymmene/Haindl, and No. COMP/M.2499 – Norske Skog/Parenco/Walsum. Lexecon acted as economic advisor to Norske Skog.

This question was at the core of the Commission's investigation of the recent sale of the newsprint and magazine paper assets of the German manufacturer Haindl to its Scandinavian rivals UPM-Kymmene and Norske Skog (in separate but linked transactions). In the market for newsprint, where concern was most acute, the target's share of total sales was below 10%, while both UPM-Kymmene and Norske Skog were below 15%. Post-merger the combined share of the top four firms still would have been below 70% (with the top firm below 25%, and number four about 10%). A 'fringe' of several substantial firms and imports would have supplied more than 30%.

The Commission acknowledged that coordination of prices or output was difficult in this industry, where capacity utilisation has been frequently high. However it alleged that competitors in newsprint and magazine paper could achieve effective coordination of capacity expansion decisions. The case quickly became about collusion on capacity installation and capacity management.

Formal analysis of capacity coordination

A major problem in assessing the Commission's claim was that there is very little economic literature dealing with the feasibility of capacity coordination. While coordination of short-term variables such as prices or output has been extensively studied, and the mechanisms involved are well understood, there are only very limited contributions on coordination of longer-run decisions. There is an explanation for this disparity. Short-term decisions fit neatly into the well-understood analytical framework of 'repeated games'. However, when investments and other long-term decisions are involved, the environment that firms face changes over time and the theoretical analysis becomes much more complicated.

On the one hand, coordination of capacities makes sense only if capacity decisions are to some extent *irreversible*. If not, then a strategy of keeping capacity tight would simply not be credible as a commitment to soften competition. Any firm would have the incentive to cut prices because it could add capacity quickly, and win over market share. But then there is no material difference between this scenario, and collusion in prices or output. Thus for coordination of capacities to make any sense as a distinct concept, there must be some degree of irreversibility. On the other hand, irreversibility itself undermines the credibility of coordination. Why? Because irreversible capacity (typically in industries with large sunk investments, where the equipment cannot be easily re-sold, and has a long life) makes it difficult to punish a 'cheating' firm credibly.

Irreversibility and 'punishments'

To see this, suppose the 'deviator' built a new plant 'out of rota', with large capacity. Once the plant is built, the firm is committed to the new capacity and will be willing to produce as much as possible as long as it can procure enough demand. Rivals have in principle two options: they can either 'punish' the deviator through an 'investment war', by also investing in new capacity (which would add to the capacity overhang and bring prices crashing down); or they could defer investments in order to stay profitable.

But in practice, they have no incentive to retaliate. Once the deviator has made its 'out of rota' investment, he is irreversibly committed to this capacity and will compete intensely for market share in order to fill it up. The 'best response' will always be for rivals to 'sit tight' and accommodate the deviator.[2] Of course, those currently in the industry would prefer that no one built new plants. They see the point that if they could somehow restrain capacity installation they could avoid price competition. But no one can rein in the individual incentives to persistently increase market share.

Why irreversibility matters

Why is this so different from a standard coordination model? The reason is the link between irreversibility and the economics of *pre-emptive investments*. In the usual collusion models (without irreversibilities) the incentives to deviate arise from the prospect of achieving a short-term increase in market share. With irreversible investments there is however a second incentive: not only can the deviator appropriate market share for a good period of time; but it can also use the well-established effect of pre-emptive investments, and pre-emptively expand capacity before others do – thus gaining a first-mover advantage, and a 'claim' to a proportionately greater market share.

The worst the rivals can do is to seek to recover more of their market share as the market grows in the future. But if the new plants are also large relative to demand growth, it will take years before a cheating firm starts to get 'punished' – over which period it can enjoy higher profits (which matter more than punishments far off in the future). The strong incentive to cheat will therefore tend to undermine any attempts to tacitly collude.

Capacity installation in the paper industry

The history of the paper industry shows a close link between prices and capacity utilisation. When capacity is tight, suppliers can insist on higher prices and refuse discounts. The Commission postulated that if suppliers could somehow restrict the capacity available at any one time, they could achieve a cartel-like outcome.

However, the paper industry also offers an almost perfect example of an industry in which retaliation in capacity is highly implausible. Paper plant and machinery represent massive investments. In the newsprint segment of the market, a €300-500 million machine is needed only about once every three to four years, and machines have very long lives (in excess of thirty years). An oligopoly would need to find some 'rota' system, as a way of deciding which firm is to build the next machine. Then if anyone was to build a machine 'out of rota', rivals would have to 'punish' – i.e. designate someone to bear the investment cost of meting out the punishment, inducing low profits for the whole industry.

Relative to the size of the capacity increments efficiently put into place, demand growth is slow in the paper industry. It would take at least six to eight years before a cheating firm would effectively be punished. As a result, this industry is very close to a situation of irreversible investments, and low demand growth. This is precisely the type of industry where coordination of capacity building would be implausible.

Indeed, the empirical evidence clearly revealed the persistent attempts by firms in this industry to pre-empt others' investment. Pre-emption is a sign that coordination of capacities is not taking place. The parties provided copious material that demonstrated how competition in the industry is characterised by efforts to pre-empt others' plant-building decisions. After much debate the Commission accepted the parties' theoretical analysis and the supporting evidence, and unconditionally cleared the transaction.

Conclusion

It is significant that the Commission sought support for its presumption that coordination of capacity was feasible in a theoretical economic model, developed on an *ad hoc* basis for the case at hand. Ultimately the Commission was persuaded that the theoretical support for their coordination theory was not robust. But it is of concern that, in the limited timeframe of a Phase II investigation, so much of the debate centred on abstract theoretical modelling.

The key conclusion from *UPM-Kymmene/Haindl* and *Norske-Skog/Parenco/Walsum* is that tacit coordination of capacities is unlikely whenever an industry is characterised by large and irreversible investments. This includes most important industries producing commodities, such as steel or chemicals among many others. In the light of this case, competition authorities need to tread very carefully in putting forward collective dominance concerns based on claims about the coordination of capacity decisions.

31 January 2002

[2] This has been formally shown in a model developed for these proceedings by Professor Kai-Uwe Kühn of the University of Michigan and Lexecon.

London: 99 Bishopsgate, London EC2M 3XD
Tel +44 (0)20 7664 3700, Fax +44 (0)20 7664 3998
Brussels: Tel +32 (0)2 627 1400, Fax +32 (0)2 627 1444
Amsterdam: Tel +31 (0)20 521 9326, Fax +31 (0)20 521 9333
Paris: Tel +33 (0)1 70 38 52 78, Fax +33 (0)1 34 29 67 40

For more information please contact:
Dr Hugh Wills, Principal *(hwills@crai.com)*
www.crai.com