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Entry and Deterrence in British Satellite Broadcasting

The first three case studies in this book focused on models of competition with fixed product characteristics and production technologies.¹ The next two featured, respectively, competition over new products and processes. This final detailed case study fixes on an even more fluid situation: competition to monopolize a new product market made possible by a process innovation in broadcasting technology.

To be more specific, the analysis in this chapter is motivated by a war of attrition between British Satellite Broadcasting (BSB) and Sky Television over the market for satellite TV in the United Kingdom. Like the two preceding cases, this one could be read as yet another instance of incumbent failure: BSB entered the market first, with an up-to-date broadcasting technology, was surprised by Sky's fast-second entry with an older but cheaper technology, and eventually collapsed into Sky's arms on less-than-equal terms. That is not, however, the principal point of this chapter. Rather, it is to probe, with the case as an anchor, two foundational questions about game theory: Can firms be treated,

1. This chapter is a substantially rewritten revision of Brandenburger and Ghemawat (1994). I am solely responsible for all changes.

as per usual practice, as unitary players out to maximize their own payoffs, and if so, should their interactions be expected to lead to Nash equilibria?

I begin by describing the BSB-Sky interaction and then work backward (as is customary in game theory) through these two questions in the context of product-market wars of attrition. The implications for game theory turn out not to be innocuous; for researchers in strategic management, there are also nontrivial implications concerning the content of effective competitor analysis.

7.1 Case Background

Satellite television involves the transmission of television signals from the ground to a satellite and back down to receivers. The satellite serves as a giant television tower, and the greater its power, the smaller is the size of the receivers required.

The World Administrative Radio Conference of 1977 reserved for each country several high-powered television broadcast channels that could be picked up by satellite dishes small and inexpensive enough to be installed at individual homes. In April 1986 the British government invited applications to provide a commercial service on the U.K. channels and received five serious bids. In December of that year, it awarded a fifteen-year franchise for high-powered direct broadcast by satellite (DBS) to British Satellite Broadcasting (BSB), a consortium of five companies formed to bid on the project.

By July 1987 BSB had completed a first round of equity financing that raised a total of £222.5 million from eleven companies. The bulk of this money was earmarked for buying and launching two high-powered satellites (one for redundancy). BSB estimated that it would install 400,000 satellite dishes by the end of

its first year of broadcasting (fall 1990), 2 million by 1992, 6 million by 1995, and 10 million by the year 2001. Operating breakeven was expected at the 3 to 4 million mark in 1993, but the cost structure would continue to be dominated by mostly fixed (per-period) costs, such as program production and acquisition, marketing, and overhead. As a result the venture's economics would be very sensitive to the size of its customer base and its total start-up costs to its rate of market penetration. Total start-up costs were estimated at approximately £500 million and a second round of financing was scheduled for close to the commencement of broadcasting operations.

BSB's pursuit of these plans was disrupted in June 1988 by News Corporation's announcement that it would launch its own DBS venture in the United Kingdom, to be called Sky Television. News Corporation was a conglomerate, mostly in English-language media, that had recorded sales of about £3 billion and a return on sales of 7.8 percent in the preceding year. Its DBS service, Sky, was meant, like BSB, to be multichannel but was to be broadcast via a medium-powered satellite, Astra. Because of technological improvements, Astra could be received by acceptably small and inexpensive satellite dishes (although they would have to be somewhat larger than the dishes required to receive BSB's high-powered broadcasts).

The target launch date for Sky was in February 1989. News Corporation forecast that if this schedule could be met, Sky would install 1 million satellite dishes by the end of its first year of broadcasting and 5 to 6 million by the end of 1994. Operating breakeven was expected in late 1991 or early 1992 and total start-up costs, which would be shouldered by News Corporation, were estimated to be approximately £100 million. This estimate was substantially smaller than the corresponding figure for BSB because Sky did not need to launch its own satellites and

because it was counting on cheaper programming, lower overhead, and a quicker roll-out.

In response to Sky's entry announcement, BSB revised its sales projections to 5 million satellite dishes by 1993 and 10 million by 1998. It planned to accelerate sales by increasing advertising and promotion levels, mostly closer to its planned launch date. More immediate in its effects was the bidding war that broke out between BSB and Sky for exclusive British television rights to Hollywood films, which were seen as key to each service's economics because of their ability to generate significant subscription revenues. By the end of 1988, BSB and Sky had committed a total of about £670 million to Hollywood film rights, including up-front payments of about £150 million. Both figures appear to have been more than twice as large as anticipated.

Sky went on the air first, in February 1989, as planned. Dish sales proved disappointing, however: Sky's cumulative total at the end of its first year of broadcasting was less than 600,000 and was not increasing nearly as rapidly as had been projected. Reasons that were invoked included shortages of receiving equipment, Sky's patchy programming, negative advertising by BSB, rising interest rates, and atypically nice weather.

This period proved, in many respects, even more difficult for BSB. Higher-than-expected costs necessitated a supplementary first round of financing in January 1989 that raised £131 million and a second supplementary later that year involving £70 million. In May 1989, BSB announced that it would miss its fall launch date because of delays in developing a complicated new semiconductor chip required for its satellite dish receivers. Finally in February 1990, it concluded a second round of financing that ensured £450 million in debt from banks, conditional on the timely achievement of operating targets and a matching £450 million from shareholders. This money was meant to fund

"Operation Fastburn," which involved increasing marketing expenditures to levels unprecedented in Britain. By then, BSB's billion-pound-plus capitalization made it the second costliest start-up in British history, behind the Channel Tunnel.

BSB finally went on the air in April 1990, with the target of installing at least 3 million dishes in its first three years. BSB's cumulated sales between April and October 1990 came to 175,000 dishes. Sky out-installed BSB two to one over that period, adding more than 350,000 dishes and bringing its total to 950,000. But BSB beat it by roughly the same margin in the last three months of the period, installing 125,000 dishes to Sky's 58,000. At the end of October 1990, BSB was losing money at the weekly rate of £6 to £7 million and Sky at a rate of about £2 million. Sky's parent, News Corporation, was facing a cash crunch and renegotiating several billion dollars of debt with bankers, who were insisting, among other things, that something be done to staunch the cash outflows from Sky.

On November 2, 1990, BSB and Sky announced that they would merge into BSkyB, with control to be split fifty-fifty between BSB's shareholders and Sky's parent, News Corporation. As an apparent response to News Corporation's cash constraints, it was supposed to receive its "half" of the first £1.2 billion of positive operating cash flow from the merged entity somewhat earlier than BSB's financial successors. It would also shoulder less than half of any immediate cash transfusions that the merged entity might require. Another implication of the merger was emphasized by its official description as "a combination of Sky's commercial acumen with the financial resources of BSB's major shareholders." In practical terms, top managers from Sky Television/News Corporation took charge of the merged entity and fired most of its employees, most of whom had been inherited from the old BSB operation.

7.2 Theoretical Background

BSB and Sky collectively lost £1.25 billion in their war of attrition before they decided to merge; they then suffered several hundred million pounds of additional losses before reaching break-even. These are large numbers, especially in light of the much smaller start-up costs initially envisaged for both operations. Is such a bitter fight consistent with the use of Nash equilibrium strategies by players out to maximize their respective profits?

This broad question has been addressed the most explicitly in the context of labor strikes. By the end of the 1980s, a consensus seemed to be emerging that the observed length of strikes could not entirely be accounted for by received game-theoretic models of bargaining over a shrinking pie (e.g., Hart 1989). Since then, however, theorists have managed to figure out better ways of explaining the delayed resolution of strikes (e.g., Cramton 1992). These divergent conclusions are due to differences in informational conditions and, by implication, to uncertainty. Instead of probing strikes at greater length however, these informational issues will be pursued in the context of product-market wars of attrition, with the BSB-Sky case affording an anchor.

Received theory tells us that whatever the context, fighting in wars of attrition has to be fraught with uncertainty: that with perfect and complete information, the pure strategy equilibria in a duopolistic context, for example, involve immediate concession by one of the two players. Of course there are also mixed-strategy equilibria that involve fighting even when all else is certain, but they are subject to several problems. First, arbitrarily long fights occur with arbitrarily small probability. Second, each player is expected to be indifferent in every phase of the war between fighting and conceding because its expected payoff is invariant to that choice. Third, the idea of conscious randomization by