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On the strategic use of debt and capacity in rapidly expanding markets

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ABSTRACT

We exploit the 1996 telecommunications deregulation as a quasi-natural experiment to investigate whether incumbents alter debt and capacity tactics when facing new rivals. We find that incumbents increase leverage after deregulation, even when controlling for traditional determinants and market conditions. Consistent with a new post-deregulation benefit, a higher leverage is positively related to market shares. This behavior appears only in telecommunication segments most affected by the deregulation. We find weak evidence for increased use of capacity tactics. Our findings for incumbents facing an influx of rivals in a rapidly expanding market differ from those of earlier studies considering mature markets.

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1. Introduction

The 1996 deregulation of the U.S. telecommunications industry provides a unique opportunity to investigate the relationship between capacity, debt, and product market competition. In this quasi-natural experiment, deregulation discretely and exogenously lowers entry barriers and introduces potential and actual rivals to a rapidly expanding product market. Facing a pool of new rivals, we expect incumbent firms to choose debt and capacity strategies to promote, or at least not diminish, their leadership positions in the post-deregulation market. By investigating adaptations to a deregulation event in an expanding market, we re-examine the relationship between debt, capacity, and the product market.

There has been an ongoing effort to deregulate the telecommunications industry. The watershed deregulation event came with the 1996 Telecommunications Act that removed significant barriers to providing telecommunications access in U.S. homes. The number of U.S. COMPUSTAT telecommunication firms grew from 369 in 1995 to 447 in 2000, compared to a 0.4 percent increase for all COMPUSTAT firms over the same time period.[3] According to the Federal Communications Commission, only 8.8% of US households at the end of our sample period in December 2001 were living in a zip code having only one wireline incumbent operating and no entrant.[4] The data suggest that the telecommunications industry has experienced significant entry since

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[3] Based on COMPUSTAT's sample of firms with positive asset values (data mnemonic AT).
[4] Federal Communications Commission's "Local Telephone Competition: Status as of December 31, 2001," Table 13.http://transition.fcc.gov/Bureaus/Common_Carrier/Reports/FCC-State_Link/IAD/lcom0702.pdf.

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deregulation. Nevertheless, many incumbents increased leverage and maintained leadership positions. In our sample, incumbents preserved an average of 83.46% of the market share post-deregulation.

In the industrial organization literature, a traditional notion of deterrence is keeping a potential entrant from actually entering. As the telecommunications industry has experienced widespread entry since deregulation, it is clear that incumbents' debt and capacity adaptations to the deregulation did not result in this strong type of deterrence. Equally importantly, it is clear that incumbent debt increases did not, on average, entice lethal predatory behavior by new well-funded rivals. Many incumbents increased leverage and still maintained leadership positions.

Rather than characterizing the impact of debt and capacity decisions on the extremes of entry and exit behavior, we consider a more general notion that incumbent debt and capacity choices can act as strategic positioning to influence a rival's production (positively or negatively) in a context where entry occurs and exit is not the typical outcome. Given that the post-deregulation telecommunications industry experiences a rapid expansion, we can investigate the open question of whether debt and capacity have potentially different product market implications for a growing industry.

Our empirical analysis indicates that, after deregulation, leverage increases above and beyond change due to traditional capital structure determinants. This increase is consistent with the introduction of a new benefit of debt when the product market opens to competition. Market shares reflect this new benefit of debt, suggesting that debt strengthens the firm's competitive position after deregulation.

The analysis focuses on the four-digit SIC codes most affected by the 1996 deregulation, comprising of the wireless, wireline, messaging and cable segments. Our results are robust to controlling for the easy-credit period of the late 1990's using the broader sample of telecommunication firms and alternatively using the software firms which were at the center of the tech bubble. We also demonstrate robustness by excluding the easy-credit period from the sample altogether.

Although capacity is generally associated with market share in the deregulated marketplace, there is no strong evidence that incumbent firms have increased their capacity intensity. In a robustness check, when we measure capacity by growth in property, plant and equipment, we can detect a significant increase, but only for telecommunication incumbents in the wireline segment, i.e., the baby bells. For the wireless, messaging and cable firms which are also affected by the deregulation, we do not find any significant capacity increase under all measures of capacity.

The paper proceeds as follows: Section 2 discusses the hypotheses to be tested. Section 3 presents the data provided by the quasi-natural experiment. Section 4 shows that incumbents adapt to the deregulated marketplace through a higher leverage, with a positive effect on market shares. Section 5 concludes.

2. Empirical hypotheses

When a firm builds capacity, it can influence not only its own production level but also those of rivals. Since the influential work of Spence (1977), it is well known that capacity and other forms of investment act as deterrents to potential entrants. Dixit (1980) analyzes how capacity predisposes an incumbent to producing aggressively. Because an incumbent's capacity costs are paid before production time, the “sunk” costs effectively lower the relevant marginal cost of production compared to rivals. Benefiting from a cost advantage, the incumbent produces at a level higher than its rivals. Other papers discussing the effect of a firm's capacity on its product market include Haruna (1996), Kirman and Masson (1986), Kulatilaka and Perotti (1998), Leach et al. (2013), Reynolds (1991), Rosenbaum (1989), and Zhang (1993).

It is also a well-known theoretical notion that debt can affect production levels. For example, in Brander and Lewis (1986) and Maksimovic (1988), debt precommits the firm to be more aggressive through the incentive of equityholders who later choose how much to produce. Due to the limited liability of equityholders, increasing production enhances the firm's equity payoff in good states more than it decreases the equity payoff in bad states. However, other papers investigate whether debt has the exact opposite effect on product market competition. Carrying a high debt burden may be perceived as a sign of weakness by rivals. Altogether, papers discussing the various effects of a firm's debt on product market competition include Bolton and Scharfstein (1990), Campello (2003, 2006), Chevalier (1995), Dasgupta and Titman (1998), Faure-Grimaud (2000), Fudenberg and Tirole (1986), Fulghieri and Nagarajan (1996), Khanna and Tice (2000), Kovenock and Philips (1997), Leach et al. (2013), Opler and Titman (1998), Phillips (1995), Poitevin (1989), Povel and Raith (2004), Rotemberg and Scharfstein (1990), Showalter (1999), and Zingales (1998).

With these concepts in mind, we turn to an empirical investigation of the response by incumbents to deregulation in the rapidly expanding telecommunications industry with the following hypothesis on leverage: All else equal, allowing entry should influence an incumbent's leverage; and post-entry market shares should be related to leverage. We also investigate the following capacity intensity hypothesis, where capacity intensity is understood to measure fixed assets as a proportion of total assets: All else equal, allowing entry should influence an incumbent's capacity intensity; and post-entry market shares should be related to capacity intensity.

To investigate the possible role of leverage and capacity intensity when facing a new rival, we specifically choose an environment providing a powerful test. The telecommunications deregulation offers a clear demarcation point for observing incumbent positioning in the face of predictable increased competition, entry, and industry expansion. The experiment provides us with well-defined incumbents (firms operating both before and after the deregulation) and entrants (new firms entering after the deregulation). Irrespective of whether leverage and capacity intensity become more costly or more beneficial, we would expect some evidence of incumbents' changed reliance on debt funding and capacity intensity if leverage, assets in place, and product market behavior are related.

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