How Do Capital Markets Influence Product Market Competition?

MICHAEL H. RIORDAN
Department of Economics and Graduate School of Business, Columbia University, New York, NY 10027, USA. E-mail: mhr21@columbia.edu

Abstract. This article is the written version of the author's keynote presentation to the inaugural International Industrial Organization Conference held in Boston on April 4-5, 2003. It summarizes selectively a literature on the interaction between the capital and product markets at the nexus of industrial organization and corporate finance, and develops two key insights. First, capital market constraints on an individual firm are determined at the level of the industry and depend on product market competition. Second, capital markets constrain the product strategy of firms and thereby influence product market performance.

I. Introduction

My title question is a topic at the nexus of industrial organization and corporate finance that deserves more attention. Industrial organization mostly has ignored corporate finance, and *vice versa*. But the question undoubtedly is important for understanding how product markets perform when firms participating in a market are constrained financially, and for understanding how capital structure and corporate governance contribute to product market strategy.

My goal mainly is to spark interest in the topic. Toward this end, I develop a few key ideas, and comment on some related economics literature. One idea is that capital market constraints on an individual firm are determined at the level of the industry and depend on product market competition. Another idea is that capital markets constrain the product strategy of firms and thereby influence product market performance.

Rather than attempt a comprehensive literature survey, I focus on a handful of articles and papers. For this I apologize to neglected authors. My literature review is selective, perhaps idiosyncratic, and certainly egotistical as it includes a recent paper of mine. I hope it at least provides some introduction to the literature.

I begin with a story about the PCS industry. PCS stands for personal communication services – mainly wireless voice telecommunications. The story, while based on a public record, draws on my experience as Chief Economist of the Federal Communications Commission. It is intended to motivate the idea that firms compete both in product markets and in capital markets. The story may also illustrate how government service can lead to interesting research questions.

The next item on my agenda is a simple theoretical example that sets the stage for the literature discussion that follows. The example illustrates how product market competition can tighten capital market constraints on the scale of operation of a firm. It shows that agency problems between an entrepreneur/manager and the creditors of a firm can matter for industrial organization analysis.

The example leads to a discussion of Michael Jensen and William Meckling's (1976) theory of the firm and some related recent works concerned with how agency problems can limit the scale of operation of a firm. I then turn to three particular works studying the interaction of product markets and capital markets: Joseph Williams' (1995) model of how agency problems can distort technology decisions, Patrick Bolton and David Scharfstein's (1990) theory of "deep pockets" predation, and my and Eslyn Jean-Baptiste's (2003) model of how agency problems can constrain the scale of an industry.

Then I contrast James Brander and Tracy Lewis' (1986) well-known argument that the "limited liability effect" of debt can cause the expansion of an industry.

I cap this review of relevant economic theory by discussing Judy Chevalier's (1995a, 1995b) empirical evidence on how increased leverage in the supermarket industry influenced product market competition. And I close with a few remarks on the evolving economics literature relating industrial organization and corporate finance.

II. C Block Story

My story is about the C block. A reporter wrote, "This is a story about people who lost control: a tale of businessmen, politicians and bureaucrats who lost sight of economic fundamentals because of ego, politics and the seductive but pernicious combination of new technology and easy money" (Harbert 1998).

In the period between December 1994 and January 1997, the Federal Communications Commission (FCC) auctioned six blocks of broadband PCS spectrum. Broadband PCS services include digital mobile voice telephony, and advanced services such has photograph messaging. The six blocks of spectrum were labeled A through F. The A and B blocks were licenses for large metropolitan areas, while the C block licenses were for smaller geographic areas. The D, E, and F blocks were licenses for smaller chunks of spectrum.

The auctions raised almost $20 billion. Almost half of that came from the C block, and almost half of that from a single bidder, NextWave. The big winners, measured by population coverage, included large, well-known companies like AT&T and Sprint, and also small, obscure companies like NextWave and Omnipoint, who later

merged with Voicestream and was absorbed by T-Mobile. After obtaining the FCC licenses, PCS companies required substantial additional financial capital to build-out their networks.

The A and B blocks were auctioned together, as were the D-E-F blocks. The C block licenses were auctioned separately, in between the other two auctions. NextWave arrived at the C block auction not having participated in the A and B block auctions. In contrast, Omnipoint already had an A block license for the New York metropolitan area under the FCC's pioneer's preference program.[1]

The rules of the C and F block auctions allowed eligible small businesses (or "entrepreneurs") to pay in installments. The preferential treatment of designated entrepreneurs effectively excluded the large firms, like AT&T and Sprint, except to the extent that they formed alliances with entrepreneurs. NextWave and Omnipoint qualified as entrepreneurs. NextWave bid particularly aggressively in the C-block auctions, winning 63 licenses, and agreeing to pay almost $5 billion.

Whether they understood it or not, the C block participants were bidding for options. If things turned out well, a winning bidder could make its installment payments to the FCC and go about its business of raising financial capital and building a network. If things went badly, the firm could default on its payments, and try to renegotiate its obligation to the FCC, or declare bankruptcy.[2]

Things went badly. Wall Street cooled on wireless telephony, and the cost of capital to the PCS industry rose sharply. Soon after the close of the C block auctions,

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[1] The FCC's pioneer's preference program gave preferential treatment in the licensing process to companies who the FCC determined had developed new services and technologies. Omnipoint was awarded a broadband PCS preference in 1993. Under the terms of the program, Omnipoint was required to pay 85 percent of the average price of comparable licenses.

[2] NextWave declared bankruptcy in June 1998, and has not emerged as of this writing.

financial market conditions changed for the worse and it became increasing difficult to finance PCS business plans. The D-E-F licenses sold at much lower prices per potential customer, even after adjusting for the smaller-sized chunks of spectrum.

The FCC suspended payments on the C and F block licenses, while it considered adjusting the financial terms of the licenses. Meanwhile, PCS firms, including NextWave and Omnipoint, petitioned the FCC for debt relief, taking different positions. NextWave sought significant debt relief.

I had recently arrived as chief economist of the FCC. It struck me that NextWave understood well that it had purchased an option, and was executing a brilliant, if opportunistic business strategy. Senator John McCain described NextWave as "a company whose only contribution to the American economy has been to manipulate, for private gain, the results of an improperly designed auction" (Vaughn 2001). At this stage of the game, NextWave appeared to understand the rules better than did the rulemaker – the FCC.

Omnipoint seemed concerned that substantial debt relief for NextWave would make it more difficult for Omnipoint to raise financial capital to build out its own network. Omnipoint apparently saw itself not only as a potential competitor to NextWave in the product market, but also as a competitor in capital markets. Here is a quote from Doug Smith, Omnipoint's CEO: "The vast majority of us never asked for any changes; the entire debate is about a very small number of companies. We're all waiting to get a resolution so we can get on with it" (Guley and Mehta 1997).

Omnipoint's arguments were puzzling to me. Why should debt relief for a firm raise the cost of capital to its product market competitors? The idea suggested an upward

sloping supply curve for financial capital specifically for the PCS industry. This seemed to conflict with my presumption of a competitive capital market. I was not accustomed to thinking that capital markets were segmented by industry.

III. Theoretical Example

The C-block story suggests that firms compete both in product markets and capital markets. A theoretical example develops this idea.

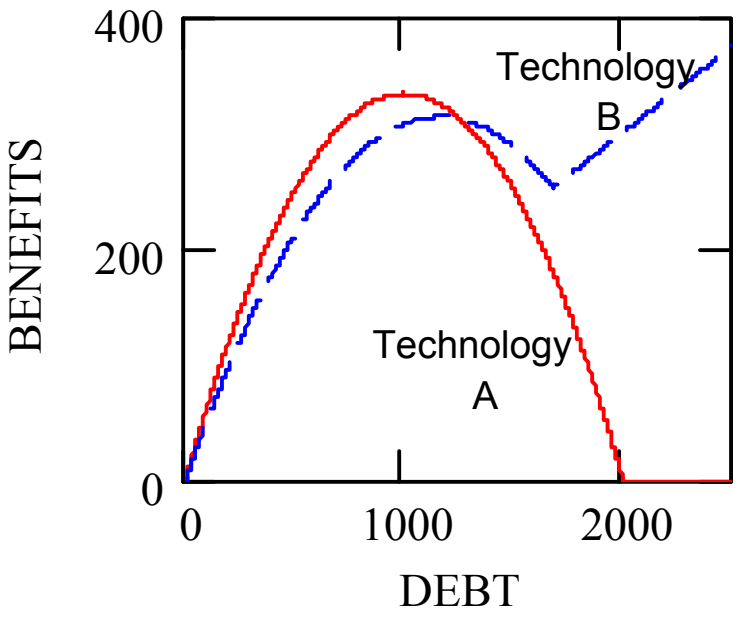
Consider an entrepreneur who is seeking to launch a new product or service. The entrepreneur is penniless and must borrow from the capital market in order to finance production in advance of sales. Outside investors require a rate of return of 20 percent ($\rho = .20$) for every dollar lent. Anticipated revenues are $R(Q) = (100 - Q)Q$ if the quantity sold is equal to Q. There are two possible technologies for producing the product. With Technology A the cost of each unit produced and shipped is equal to $a = 50$. Technology B has a unit cost that is 20 percent greater, i.e. is equal to $b = 60$. From the entrepreneur's perspective, however, Technology B has the advantage of providing private benefits with a monetary-equivalent value of $U(Q) = 9Q$. Thus, for each extra dollar that Technology B costs to produce a given quantity, the entrepreneur gains 90 cents in private benefits.

Clearly, B is the less efficient of the two technologies. But that is not the end of the story. On the one hand, the private benefits of the entrepreneur are just that – private. They are not shared with the outside investors. On the other hand, if the entrepreneur has limited liability for the financial performance of the firm, then outside investors bear the cost if the enterprise fails to return a profit. Therefore, if the entrepreneur controls the

choice of technology, then the entrepreneur may have an incentive to enjoy the private benefits of Technology B at the expense of investors.

The entrepreneur's incentive to choose the inefficient technology depends on the magnitude of the firm's debt. Suppose that the capital market were to lend to the firm an amount K. Using Technology A, the entrepreneur could produce K/a, and would earn an end-of-period profit equal to the minimum of 0 and $[R(K/a) - (1+r)K]$. Using Technology B, the entrepreneur would enjoy a total benefit of $U(K/b) + \min\{0, R(K/b) - (1+r)K\}$. Figure 1 graphs these end-of-period benefits to the entrepreneur as a function of the level of debt.

FIGURE 1



For a given level of debt, the entrepreneur chooses whichever technology is more beneficial. The curve marked Technology A is a standard neoclassical profit function up to the point where it hits the axis and become flat. At this point, the entrepreneur's limited liability kicks in and investors fail to earn a competitive return. Rational

investors naturally would focus on the region to the left of this point. The maximum of the curve indicates the level of debt that supports a profit-maximizing scale of production. The curve corresponding to Technology B rises more slowly initially because it is a less efficient production technology. This curve has a kink at the point where the entrepreneur defaults on the loan. The rise in the curve beyond this point reflects only the private benefits of the entrepreneur, and incorporates the assumption that these private benefits are protected in bankruptcy. The shape of the curve to the left of the kink reflects profits plus private benefits. The intersection point of the two curves marks the point where the rational entrepreneur/manager would switch from Technology A to Technology B if the capital market were to advance additional funds.

In this example, the capital market confidently can finance a profit-maximizing level of output, knowing that the entrepreneur has an incentive to elect the efficient technology. The reason is that the profit maximizing point happens to be to the right of the intersection point. It is of course possible to construct other examples such that the switch point is the left of the level of finance that would fund the profit-maximizing output. In such alternative cases there is a conflict of interest between the entrepreneur and the outside investors. The entrepreneur would elect the inefficient Technology B rather than produce the profit-maximizing output level with Technology A. Such a choice would provide private benefits to the entrepreneur, while depriving the investors of a competitive return.

Now consider how competition impacts the agency problem between outside investors and entrepreneurs. Continuing the same example, assume that $P(Q) = 100 - Q$ is the market inverse demand curve, where Q denotes industry output. If there are five

symmetric competitors using Technology A, then each firm produces the quantity $6\frac{2}{3}$ in a symmetric Cournot equilibrium.[3] Thus a representative firm expects its rivals to produce $26\frac{2}{3}$, perceives the residual demand curve $p(q) = 73\frac{1}{3} - q$, and anticipates revenue of $r(q) = (73\frac{1}{3} - q)q$ if it produces the quantity q.

FIGURE 2

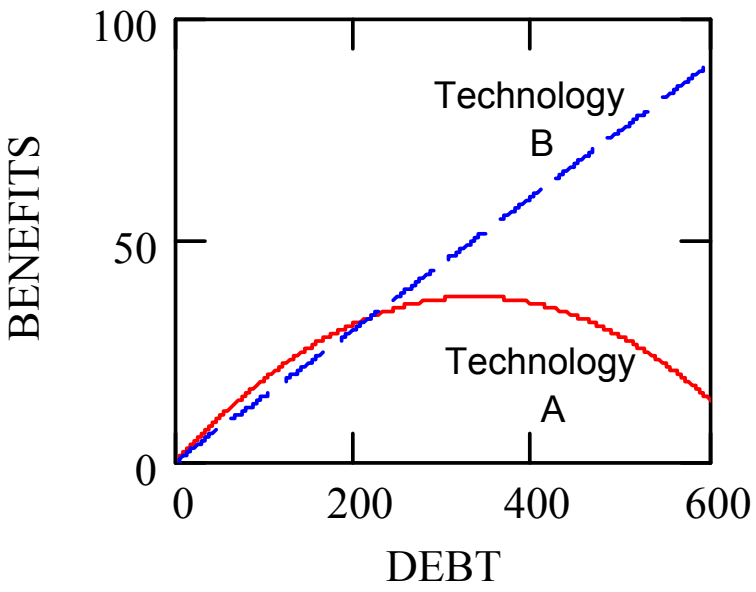


Figure 2 illustrates the representative firm's incentives as function of its level of debt. Note that the curves are drawn on a different scale than those in Figure 1. The maximum of the Technology A curve corresponds to the Cournot equilibrium when all firms adopt Technology A, while the rising Technology B curve mainly reflects the private benefits of producing with the inefficient technology. Notice that the point where the two curves cross is to the left of the Cournot equilibrium point. This means that, if the capital market were to finance the industry sufficiently to achieve the Cournot

[3] This calculation reflects the fact that unit costs measured at the end of the period are $(1+\rho)a = 60$.

equilibrium outcome, then an individual firm would have an incentive to deviate by adopting the inefficient Technology B. Thus the standard Cournot equilibrium is inconsistent with a competitive capital market.

IV. Agency Problems

The example illustrates a conflict between entrepreneurs and outside investors that is similar to "agency problems" studied in the corporate finance and economics literatures. The choice of the inefficient technology delivers perquisites at the expense of maximizing the value of the firm. It amounts to "stealing" from outside investors. Outside investors would like to control the entrepreneur's incentive to steal, but have limited instruments. All the capital market can do is withhold funds.

Jensen and Meckling (1976) argue that outside equity, by reducing the entrepreneur's residual claim on profits, could prompt the entrepreneur inefficiently to consume perquisites. They also recognize that the substitution of debt for outside equity would improve the entrepreneur's incentive to maximize the value of the firm. They argue, however, that there are additional agency problems and transaction costs that limit the use of debt. These include efficiency losses from a conflict of interest between equity-holders (with limited liability) and debt-holders on investment risk, and bankruptcy costs. Jensen and Meckling (1976) fail to note that lenders also have reason to worry about excessive managerial perquisites. If the entrepreneur drives the value of the firm below zero by the consumption of perquisites, then the loss is born entirely by debt-holders. Essentially this is the problem that lenders confront in my example. [4]

[4] The perquisites-related agency problem for debt-holders is illustrated in the appendix of Jean-Baptiste and Riordan (2003).

Jensen and Meckling (1976) argue that the scale of the firm is determined jointly with its capital structure. A number of important papers build on this idea. Bolton and Scharfstein (1990) show that rational investors rely on staged financing to control an entrepreneur's incentive to steal funds. Rui Albuquerque and Hugo Hopenhayn (2003) solve a dynamic optimal contracting in which a rational investor limits the scale and growth of a firm in order to control agency problems.

V. Agency and Competition

Williams (1995) is noteworthy for recognizing that capital market constraints are determined at the level of the industry, and can impact industry performance adversely by distorting technology choices. As in my example, the featured agency conflict involves a technology choice controlled by the managers of firms. There is a low-cost technology with a positive fixed cost that must be financed in advance of production and sales. Alternatively, there is a high-cost technology with zero fixed costs but significantly higher variable costs. The agency problem for outside investors is that the manager of a firm is able to squander working capital on perquisites and resort to the high-cost technology. The capital market response is to limit the number of firms that are able to invest in the more efficient technology.

Williams (1995) focuses on cases for which the industry equilibrium supports a mix of high- and low-cost firms, and concludes that inefficiently few firms adopt the low cost technology because of agency problems. The distortion derives from a financial market incentive compatibility constraint mandating that a manager of a low-cost firm must retain enough inside equity to discourage the manager's diversion of working

capital to perquisites. A free-entry condition essentially determines the equilibrium number of high-cost firms, while the capital-market incentive-compatibility constraint essentially determines the number of low-cost firms. Capital market constraints impact industry scale only to the extent that integer constraints on the number of firms matter for price determination. But industry output is produced inefficiently.

The Bolton and Scharfstein (1990) theory of predation also illustrates how capital market constraints derived from agency problems influence product market structure.[5] The theory builds on a foundational model of staged financing due to agency problems, while treating product market competition in a reduced form manner. An outside investor requires repayment of an initial loan out of operating profit before advancing additional promised financing,[6] and the option of future expected rents provides the entrepreneur the incentive to repay the loan rather than to steal free cash.[7] But if market conditions take a turn for the worse, and there is insufficient operating profit to repay the loan, then the firm is liquidated. This creates an opportunity for an incumbent firm with deep pockets to compete aggressively to reduce the new entrant's profit and force the entrant's liquidation. Moreover, the credible threat of predatory actions might deter entry in the first place.[8]

Jean-Baptiste and Riordan (2003) is similar in spirit to Bolton and Scharfstein (1990) and Williams (1995). In these models, the capital market responds to possible managerial malfeasance by limiting the amount of financial capital advanced to the

[5] See also Fudenberg and Tirole (1986) for a predecessor model of predation based on capital market imperfections.
[6] Snyder (1996) extends the model to pay more attention to possible renegotiation of the financial contract.
[7] Albuquerque and Hopenhayn (2003) push this idea further by showing how the agency problem diminishes as the entrepreneur builds equity value.
[8] Bolton, Brodley, and Riordan (2000) imbed the Bolton and Scharfstein (1990) theory in a general framework for evaluating predation claims, and apply it to a case of new entry into a market for cable television service.

industry. The Jean-Baptiste and Riordan (2003) model shows how financial constraints blunt product market competition and limit the scale of an industry.

The basic structure of the Jean-Baptiste and Riordan (2003) model follows similar lines as the example, except that the agency problem is based on a simple stealing technology. There are a given number of entrepreneurs with a property right to operate in a particular product market, in contrast to Williams' (1995) free entry assumption. Production must be financed in advance of sales, and total working capital is equal to inside equity capital plus loans from outside investors. The inside equity capital of a firm is the initial contribution of the entrepreneur. Loans are repaid with revenues from sales.

The Jean-Baptiste and Riordan (2003) model has two stages. At Stage 2, each entrepreneur allocates working capital between production and perquisites. This choice determines the quantity of production. An entrepreneur who diverts working capital to perquisites can default on debt obligations and enter bankruptcy. At Stage 1, each entrepreneurial firm augments its working capital by borrowing from the capital market. Industry equilibrium satisfies two conditions that link industrial organization and corporate finance perspectives. First, quantity choices at Stage 2 form a Nash equilibrium given financial capital constraints. Second, loans at Stage 1 satisfy capital market incentive compatibility and individual rationality constraints. If these constraints are satisfied, then entrepreneurs have no incentive to divert working capital to perquisites, and investors break even.

The case of symmetric firms yields an invariance result that demonstrates the consequences of capital market constraints for industry equilibrium. In a range of circumstances, the capital market incentive compatibility constraint binds, and

equilibrium industry output is constrained below the Cournot level, (similar to the suggestion of Figure 2 of the example). In such circumstances, industry scale is determined by the total amount of inside equity capital and not by the number of competitors. Thus, holding industry inside equity capital constant, industry scale is independent of market structure.

In the asymmetric case entrepreneurs arrive on the market with different amounts of inside equity capital. In industry equilibrium some firms are constrained by the capital market and others are not. Unconstrained firms operate on their Cournot best response curves. The operating scale of constrained firms is determined by the binding capital incentive compatibility constraints. The number of unconstrained firms, and the total inside equity of the constrained firms determine industry scale.

These results from Jean-Baptiste and Riordan (2003) illustrate two new perspectives on industrial organization and corporate finance. First, debt forgiveness can be interpreted as an increase in inside equity capital that increases industry scale. This helps explain the Omnipoint puzzle. Debt relief for NextWave would cause an expansion of industry scale, a lower product price, and reduced debt capacity for Omnipoint and other constrained product market rivals. No wonder Omnipoint didn't like the idea, and no wonder its expansion plans were on hold while the FCC pondered what to do. In contrast, from a traditional industrial organization perspective, debt reduction has no effect on industry scale, except possibly by preventing exit. For a given market structure, industry scale is determined by the marginal cost of capital, and not by the total amount of debt. Second, the model suggests a re-orientation of the usual corporate finance perspective. An increase in the inside equity capital of a market participant might tighten

capital market constraints on rivals. Thus, in contrast to the traditional corporate finance perspective, capital market constraints are determined at the level of the industry rather than at the level of the firm.

VI. Limited Liability Effect

Brander and Lewis (1986) were among the first to study theoretically the interaction of capital markets and product markets.[9] As noted above, Jensen and Meckling (1976) argue that the agency costs of debt arose from a conflict between equity-holders and debt-holders over the riskiness of projects. The conflict is due to the limited liability of equity-holders, which shields them from some of the downside risk. Brander and Lewis (1986) argue that a firm might exploit this conflict to gain a strategic advantage over rivals. If demand is uncertain, then a larger scale of operation is more risky. Thus an increase in debt gives managers an incentive to produce more output. In this way capital structure commits the firm to a more aggressive product market strategy. The firm may benefit to the extent that this commitment chastens its rivals.

The Brander and Lewis model has two parts. The front-end is a standard model of symmetric Cournot competition with fixed costs and demand uncertainty. Firms choose quantities before the demand realization is known. If demand is low, then the market ends up being unprofitable, but the losses are at least partly born by debt-holders. The back-end of the model is a competitive capital market that enables the firms to fashion their capital structures strategically. Because the entrepreneur/manager has limited liability when things go badly, debt effectively commits the firm to a more

[9] See also Brander and Lewis (1988) for a further elaboration.

aggressive reaction curve. The equilibrium effect is to reduce industry profits and make default more likely.

It is important to note that the Brander-Lewis firm is *not* financially constrained. For any given level of debt, the firm is able to choose whatever quantity it wishes at Stage 2. Debt is simply a mechanism to credibly commit the firm to a larger output level. Implicitly, the owners of the firm stand ready to supply an unlimited amount of inside equity. The Brander-Lewis model requires an investor rationality constraint, i.e. outside creditors expect a competitive rate of return on their investments in the industry. But there is no capital market incentive compatibility constraint that prevents the firm from expanding the quantity of output. The absence of this constraint is a crucial feature that distinguishes the Brander and Lewis (1986) model from the Jean-Baptiste and Riordan (2003) model.

Uncertainty is an important ingredient of the limited liability effect in the Brander and Lewis (1986) model. In good states of the world the firm flourishes and owners profit. In bad states of the world creditors insure owners against losses. If uncertainty were introduced into the Jean-Baptiste and Riordan (2003) model, and if debt were observed publicly prior to production decisions, then the relevant benchmark presumably would be the Brander-Lewis equilibrium rather than the Cournot equilibrium. Agency problems would constrain industry scale below this benchmark. In this way, the two theories are complementary. While the limited liability effect potentially expands industry scale, agency problems are a constraining factor.

Vojislav Maksimovic (1988) also concludes that the limited liability effect of debt can toughen product market competition, but for different reasons. Firms participating in

a repeated oligopoly may try to tacitly collude with trigger price strategies that threaten a price war in response to any defection. The limited liability effect of debt can increase the incentive of equity-holders (who control the firm) to defect from a tacit collusion, and thus interfere with an industry's ability to coordinate on a monopoly outcome.

VII. Empirical Evidence

Chevalier (1995a, 1995b) studies empirically the effect of leveraged buy-outs (LBOs) on the supermarket industry. These recapitalizations replaced equity with debt. Her results for the most part show that supermarket LBOs softened product market competition. The stock value of firms went up when a rival firm undertook an LBO. New entry was more likely in local markets where competitors were highly leveraged due to recent LBOs. Firms that underwent a recent LBO were more likely to close stores. And prices rose after an LBO in markets where rival firms were also highly leveraged.[10] Chevalier (1995a) interprets the evidence to contradict the prediction of Brander and Lewis (1986) that increased leverage is a credible commitment to tougher competition.[11]

That interpretation seems too simple. The Brander-Lewis prediction is based on a model of quantity competition. But supermarkets compete on price. Dean Showalter (1995, 1999) shows that the theoretical effects of debt on product market competition depend on how firms compete and on the nature of uncertainty. If price-setting firms face demand uncertainty, then a strategic increase in debt can soften price competition.[12]

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[10] Prices tended to fall after an LBO in markets where rivals were not highly leveraged. Chevalier (1995b) interprets this to be consistent with a theory of predation in the spirit of Bolton and Scharfstein (1990).

[11] The level of debt is determined endogenously in the Brander and Lewis (1986) model. Under the Brander-Lewis hypothesis, debt is chosen strategically based on product market conditions. In contrast, Chevalier (1995a) suggests that debt is determined exogenously by incentives for empire building.

[12] To derive this result, Showalter (1995) assumes that profit-maximizing prices are higher when demand is high. If marginal costs are constant, then this means that a positive demand shift decreases the firm's

Thus Chevalier's (1995a, 1995b) evidence appears broadly consistent with the theoretical idea that firms increase debt strategically to influence product market competition. More detailed empirical work is necessary to sort out alternative theories.

Chevalier's results also appear to be consistent with the Jean-Baptiste and Riordan (2003) model. That model predicts a negative relationship between debt-equity ratios and market shares.

VIII. Industrial Organization and Corporate Finance

Industrial organization and corporate finance have progressed by and large as distinct fields of inquiry. Brander and Lewis (1986) remarks on this: "The literature on financial structure and the literature on oligopoly have at least one common feature: they both place relatively little emphasis on the strategic relationships between financial decisions and output market decisions." Milton Harris and Artur Raviv (1991) subsequently identifies the industrial organization effects of capital structure as one of four important topics for the theory of capital structure. But of the fifty-four pages of text contained in their survey, only four are devoted to the topic. Half of this space is devoted to interactions between capital and product markets, and half to corporate finance influences on customer and supplier relationships. The discussion on capital and product market interactions focuses on the Brander and Lewis (1986) and Maksimovic (1988) models of the limited liability effect. Add a few footnotes citing a handful to related working papers, and that's about it! According to Harris and Raviv (1991), that was the

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elasticity of demand given the prices of rival, i.e. the firm's reaction curve in price space shift upward. An increase in debt leads the manager to weigh high demand states more heavily in setting price because of the limited liability effect. If a positive demand shock increased the price elasticity of demand, then the result would be opposite.

economics literature on the theory of capital market and product market interactions at the end of the 1980s. The authors appropriately summarize that theorizing about the corporate finance – industrial organization nexus was in its infancy.

There are a few important additions to the theoretical literature. The Bolton and Scharfstein (1990) predation model is especially noteworthy. And Chevalier and Scharfstein (1996) joined a switching-cost model of product market competition model to the basic Bolton-Scharfstein agency model to develop testable implications of the cyclical behavior of price-cost markups. While economic theory linking capital and product market competition is no longer in its infancy, it still has barely reached early adolescence.

There is still much room for growth and development. Chevalier (1995a, 1995b) and related works establish empirically that there is a link between capital markets and product markets.[13] These empirical findings should spawn further theory and more refined empirical tests to distinguish alternative theories. Thus the economics literature is poised for further theoretical and empirical advances on how capital markets influence product market competition.

[13] See for example Phillips (1995), Kovenock and Phillips (1997), and Busse (2002).

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