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Optimal pricing of a conspicuous product during a recession that freezes capital markets ☆

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ABSTRACT

This paper considers the problem of how to price a conspicuous product when the economy is in a recession that disrupts capital markets. A conspicuous product in this context is a luxury good for which demand is increasing in brand image. Brand image here means the ability of a consumer to impress observers by conspicuously displaying consumption of the good. Brand image is built up when the good is priced high enough to make it exclusive, and eroded if the good is discounted.

Recession is modeled as having two effects: it reduces demand and it freezes capital markets so borrowing is not possible. In pricing the conspicuous product the firm faces the following trade-off. Reducing price helps maintain sales volume and cash flow in the face of reduced demand, but it also damages brand image and thus long-term demand.

The paper analyzes the firm's pricing policy facing scenarios of mild, intermediate and severe recessions, while taking the threat of bankruptcy into account. For an intermediate recession the optimal solution is history-dependent. The results have implications for policy interventions in capital markets and for timing of mergers and acquisitions.

1. Introduction

Standard recessions are a routine part of the business cycle. From a firm's perspective, they are periods of reduced demand. The 2008/2009 recession was non-standard inasmuch as it also involved widespread dislocation in capital markets; even firms with healthy fundamentals had difficulty borrowing. Firms were forced to maintain positive cash flow even if doing so required sacrifices to long-run profitability that might otherwise have been avoided, such as laying off employees with firm-specific capital, slashing R&D, or not investing in plant maintenance. All of these responses can be seen as drawing down a capital stock – be it human capital, technological know-how, production capacity, or brand image – more sharply than might have been optimal if borrowing were possible under terms available during normal times or

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even during standard recessions. This paper explores the example of firms sacrificing long-run brand reputation by lowering prices to improve short-term cash flow.

In particular, we consider the problem of how a firm should price a conspicuous product during a recession in which there is limited ability to borrow today based on the value the product's brand reputation will generate after the recession is over. We use the term "conspicuous product" to mean one for which demand is increasing in brand reputation and brand reputation in turn is increasing in price. This might be the case, for example, if the product's reputation for being expensive allows consumers to signal their wealth to observers and thereby enhance the reputation of the consumer. Examples of conspicuous products are fashion goods, luxury hotel rooms, and luxury cars. Indeed, our curiosity about this problem was piqued by articles in the New York Times describing the conundrum faces by luxury hotels (October 28, 2008; June 28, 2009).

Such so-called Veblen effects have fascinated economists for more than a hundred years (Bagwell and Bernheim, 1996), and a variety of models have been developed to explain why it may be advantageous for consumers to behave this way (e.g., Bikhchandani et al., 1992; Coelho and McClure, 1993; Bagwell and Bernheim, 1996; Frijters, 1998; Corneo and Jeanne, 1999; Bianchi, 2002).

More recently there has been growing interest in looking at the phenomenon from the perspective of the firm that produces the good, rather than the consumers who buy them. Pricing conspicuous products is challenging even during normal times, so it has generated a modest literature (Amaldoss and Jain, 2005a,b; Kort et al., 2006; Caulkins et al., 2007). The brand image of a product is typically built up over time, and for a conspicuous product charging a high price raises the brand image. Setting the price optimally is thus a non-trivial issue since price has both a short-term direct effect on the quantity demanded today and a long-term indirect effect on the entire demand curve in the future via its influence on the dynamic's of brand image.

To be specific, we imagine that for every price point there is a corresponding level of exclusivity. Actual brand image has inertia, like any capital stock. If the current price is raised to imply a level of exclusivity that is higher than the current brand image (which has been built up by past prices), then over time the brand's reputation will move up to reflect this more exclusive pricing. Conversely, discounting prices below those associated with the current brand image will erode that image. In other words, brand image is a stock or state variable that follows adjustment dynamics, always moving toward the level of exclusivity implied by the current price.

The present paper extends past research by considering how to price a conspicuous good during an economic recession like the one that started in 2008. In addition it broaches the general question of how firms might wish to draw down some capital stock – in this case a reputational stock – when the recession-induced reduction in demand is exacerbated by capital markets that do not function, so firms need to self-finance their operations.

Such recessions are uncommon, but by no means unprecedented. There were many panics in the 19th century, and the Asian financial crisis of 1997 is a more recent example, albeit on a regional not a global scale.

The self-financing constraint requires the firm to generate enough sales revenue to cover current operating costs. During a recession demand declines, particularly at the high end of the market (New York Times, October 28, 2008), creating pressure on sellers of conspicuous products to reduce price to improve cash flow. However, for exclusive brands such as the Four Seasons hotel, the first priority may be preserving the sanctity of the brand, so it would not want to reduce prices (New York Times, June 28, 2009).

We describe this problem by setting up a two-stage dynamic model. During Stage 1 (the recession), the firm has to price so that its operations are self-financing despite a recession-induced reduction in demand. The firm takes into account that the recession's duration is unknown and beyond the firm's influence because the crisis is too big for any one firm to bring it to an early end. In Stage 2 the recession is over, demand returns to its normal level, and there are normal (perfect) capital markets, implying that the firm can borrow and lend as much as it wants at a fixed interest rate.

The results, in brief, are as follows. When the recession is mild, price is positively related to brand image and over time the brand image converges to a constant value. However, the moment the recession is over, the optimal price jumps upwards.

When the recession is severe, the firm has to lower its price to keep demand at a sufficiently high level. This erodes brand image, which in turn leads to reduced demand so that the price needs to be reduced even further. This process cannot continue indefinitely. At some point brand image is so low that no price exists such that the resulting revenue covers the firm's operating costs. At that point the firm must go bankrupt since, by assumption, it cannot borrow during the recession. Whether bankruptcy actually occurs depends on what happens first: the end of the recession or reaching the level of brand image at which maximized current net revenue falls below operating costs.

A special case occurs when the recession is so severe or the initial brand image is so low that insolvency happens immediately. Otherwise, whether the firm goes bankrupt is in part a matter of luck, even if the firm is managed optimally.

In case of an intermediate recession the firm's optimal behavior is history dependent. Where the firm ends up in the long term depends on the initial brand image. If initial brand image is low, the resulting price path is qualitatively similar to the severe recession case, price decreases over time, and the firm will go bankrupt if the recession lasts too long. If the initial brand image is high enough, the price path is qualitatively the same as in the mild recession case; there is no bankruptcy, price is increasing with brand image, and both price and brand image will approach stable levels as the recession continues.

The paper is organized as follows. Section 2 presents the model, while Section 3 contains the analysis and the results. Section 4 contrasts these results with the outcome if the duration of the recession is known and then if capital markets