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Profit-increasing asymmetric entry

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ABSTRACT

Despite conventional wisdom that firm profits decrease with competitive entry, the empirical literature finds a number of situations where the entry of an equivalent-quality competitor into a market led to higher profits for the incumbents. Our paper uses a standard linear Hotelling (1929) market to study how location choices affect the possibility that profits increase for the incumbents with competitive entry by a new rival. We show that profits of all incumbents can increase after competitive entry even if the new competitor is located such that it competes directly with only one of the incumbents. This asymmetric entry demonstrates two separate mechanisms that can lead to profit increases: first, profits can increase because a rival's pricing incentives have changed, causing the rival firm to increase its price. Second, entry can change a firm's own pricing incentives, which in turn cause the competitor to increase its price anticipating a higher-priced equilibrium. Either of these effects on their own can be sufficient for profits to increase. Of course, increased prices do not imply increased profits. Rather, profits only increase in scenarios where the higher prices offset the lost sales. As such, we note that profits for a monopolist are always higher than profits for firms facing any level of competition. Further, we show that average industry profits must eventually go to zero. Thus, the relationship between profits and the number of firms in the market for industries *with profit-increasing entry* follows a down–up–down shape. We discuss the implications this has on interpreting results from the empirical entry literature.

1. Introduction

The literature in economics, industrial organization and marketing relies on the assumption that increased levels of competition lead to lower average prices, reduced profits, and higher levels of total welfare. In fact, competition policy is designed to reduce market concentration and ensure healthy levels of competition within categories. Similarly, conventional wisdom states that in order to protect above-normal levels of profit, incumbent firms should erect "barriers" that make it difficult for new firms to enter the market.[2]

Empirical observation, however, paints a more-complicated picture about the relationship between entry and profits. For example, it has been observed that the opening of a new Starbucks may lead to higher profits for existing coffee shops that serve a market.[3] Profits have also been observed to increase after the entry of new competitors in the energy, soap and fashion industries. One can often explain profit increases after competitive entry by complementarities or by increased levels of marketing within a category (for example, Lipitor's entry in the statin market led to significantly higher levels of category marketing spending).[4]

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[2] Bain (1956) notes that incumbents can act together to create barriers to entry and thereby maintain their profitability in the face of potential entry.

[3] See Clark (2007).

[4] For further details, see *Lipitor (A)* by Reinhard Angelmar, INSEAD published case 2006.

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However, in many observed cases of entry leading to increased profits for incumbents, there are no complementarities and the new product is clearly a substitute for the incumbent products.

In this paper, we analyze the potential for profit-increasing entry using a model of horizontal differentiation. The new firm enters at a location where it only competes with one of the incumbent firms. We show that profits can increase for both incumbents. The basic intuition for why profits can increase with entry is that competitive entry can lead to increased, rather than decreased, prices, and that the increase in prices sometimes offset the losses from having fewer customers post-entry.

Several papers show that prices can increase with entry (Chen & Riordan, 2008; Hauser & Shugan, 1983; Perloff, Suslow, & Seguin, 1996; Thomadsen, 2007), but price increases are not equivalent to profit increases. In fact, in the above papers, firms that raise their prices all experience declining profits. This obtains because the papers consider models where the market moves from monopoly to duopoly. In fact, firms are always better off as a monopolist than as a firm facing competition. This result can be stated as a theorem: *Under any standard choice model, a monopolist has weakly lower profits after the entry of a second firm in the absence of a complementarity or market-size externality*. The essence of the theorem is that a monopolist makes more sales at any price than a duopolist would make at the same price. Further, a monopolist must make more profits by charging the monopoly price than it would obtain as a monopolist charging the price that would be set under a duopoly by revealed preference.[5]

The same reasoning, however, does not extend to entry in a market where there are two or more incumbents. In such an environment, each firm's optimal price is affected by their competitors' prices as well as their own demand conditions. Entry by a new competitor in a range of locations can increase the incumbents' profits through two mechanisms. First, the presence of a new entrant can change the incentives of an incumbent, causing that firm to charge a higher price, which allows the other incumbent to raise prices without losing many customers. We call this the direct effect. Second, the presence of a competitor can act as a commitment device by a focal firm to be soft on pricing, which then can result in the competitor raising price enough to offset the customers that the focal firm loses to the new entrant. We call this the indirect effect. We are able to illustrate and separate these two effects by looking at asymmetric entry.

Thus, we find that profits of an incumbent firm can increase with entry, but never from the entry of a second firm in the market. Combined with the fact that profits eventually decrease with entry in any model where there is a maximum number of potential customers, we find that profits can exhibit a down–up–down relationship with respect to the number of firms in the market.

Our results have important and surprising implications for empirical researchers and managers. For example, we show that profits can increase for a firm even if it is the only firm that competes directly with the new entrant. Thus, a manager deciding on how to respond to a new entrant may prefer to accommodate entry and raise prices versus taking action to prevent entry. In general, incumbents often work to obstruct entry by competitors, expending costly resources lobbying politicians, retailers or other groups to make entry difficult for new rivals. Our results identify conditions under which firms should not only avoid the costs of spending these resources, but where they would be better off encouraging the entrant.

Further, the finding that profits can go up, and that the relationship between profits and the number of firms in the market can have a down–up–down shape is important for academic researchers studying the impact of competition. For example, the down–up–down shape of profits changes the interpretation of Bresnahan and Reiss (1991)-style tests of competitiveness. It also has implications for the reasonableness of functional forms used in empirical entry games, where the functional forms of existing models preclude the identification of profit-increasing entry, even in those industries where such phenomena occur.

1.1. Related research

To our knowledge, there are only two papers that identify profit-increasing entry using standard product differentiation models.[6] The first, Chen and Riordan (2007), looks at the Spokes model, which is an address-based model of global competition. In this model, each firm competes symmetrically with every other firm. Thus, profits increase in Chen and Riordan from a combination of the direct and indirect effects we mentioned earlier. However, Chen and Riordan cannot isolate the two effects, so we cannot assess whether entry acting as a commitment device or entry acting to soften the pricing incentives of the incumbents drives the increase in profits. Similarly, Ishibashi and Matsushima (2009) show that entry by a low-quality firm (a vertically differentiated entrant) that competes symmetrically with the incumbents can increase the profits of high-quality incumbents. The mechanisms here are the same as in Chen and Riordan.

In contrast to the Spokes model and the model of Ishibashi and Matsushima, real markets are characterized by asymmetric competition: new entrants often compete head-on with some firms and indirectly with others. In these scenarios, only the direct or only the indirect effects may apply to each firm. We demonstrate that either of the two effects can be sufficient for profits to increase.

[5] We use duopoly in this sentence, but the logic applies to any number of firms.

[6] There are some papers which demonstrate profit-increasing entry through alternative mechanisms. Most of these papers show that profits can increase when entry creates a positive externality on incumbent firms or brings new customers to the market that were not attainable before the presence of the new entrant, even at very low prices. For example, the literature on geographic agglomeration shows that firms may choose to locate near competitors due to the fact that consumers prefer shopping where there is a cluster of stores (e.g. Dudey, 1990; Gauri, Sudhir, & Talukdar, 2008). Zhu, Singh, and Dukes (2011) show that some supermarkets located near a Walmart or a Target can experience increased traffic in their grocery items. Alternatively, Thomadsen (2012) demonstrates that profits for all firms can increase when existing incumbent firms offer new products because the desire to avoid intra-firm cannibalization enforces a commitment by incumbents to be softer competitors.