

# WORKING PAPERS



## PREDATION FIRM-SPECIFIC ASSETS AND DIVERSIFICATION

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WORKING PAPER NO. 171

January 1989

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BUREAU OF ECONOMICS  
FEDERAL TRADE COMMISSION  
WASHINGTON, DC 20580

Predation, Firm-Specific Assets and Diversification

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January 1989

I would like to thank Alan Fisher, John Hilke, Philip Nelson and David Reiffen for comments on a previous draft. The analysis and conclusions set forth are those of the author and do not necessarily reflect the views of other members of the Bureau of Economics, other Commission staff, or the Commission itself.



## Predation, Firm-Specific Assets and Diversification

### I. INTRODUCTION

Discussions of the relationship between predation and diversification have focused on the "long-purse" or "multimarket reputation."<sup>1</sup> According to the long-purse argument, access to internal sources of finance enables the diversified firm to outlast rivals in a price war, and thus increases the likelihood of predation. Multimarket contact may also encourage predation because the informational benefits of a reputation for predation spill over to other markets. This paper has a somewhat different focus, the role of the firm's investments in sunk cost assets.

Recent literature on the nature of the firm suggests that firm-specific assets are crucial in understanding the firm [see especially Williamson (1985)], and particularly the diversified firm [see Levy and Haber (1986) and Teece (1980, 1982)]. Sunk cost assets have also been recognized in recent years to be central to the existence of anticompetitive behavior. However, the role of sunk cost, firm-specific assets in affecting predation strategies by diversified firms has been largely overlooked.

Unlike the single product firm, the diversified firm may use certain firm-specific assets that are not sunk to the product. The ability to transfer these assets among uses or locations may lower the cost and thereby encourage predation by the diversified firm. The "long-purse" and

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<sup>1</sup> On these views of diversification and predation, see the classic paper by Edwards (1955) or more recent discussions by Scherer (1980, pp. 345-50) or Tirole (1988, pp. 376-379). For counterarguments, see McGee (1958) and Telser (1966).

"multimarket-reputation" arguments can be viewed as special cases of this phenomenon. Diversification may also affect the likelihood that a firm will be a target of predation. The ability of a diversified firm to transfer assets back into an industry when the predator raises price may discourage predation.<sup>2</sup> Before discussing these possibilities, we first examine the relationship between predation and sunk costs investments.

## II. PREDATION AND SUNK COSTS

Predatory pricing involves reducing price in the short-run to raise price above the competitive level and thus increase profits in the long-run. Predation can only be effective if a firm can discipline rivals (competing firms or entrants) or drive their assets out of the industry. Since at least McGee's study of the Standard Oil case (1958), economists have appreciated the costs of these strategies to predators. Recent literature on entry deterrence and contestability have made more explicit the underlying conditions necessary for predation, particularly the role of sunk cost investments.<sup>3</sup>

The conditions for a successful predation strategy are initially examined in the context of an industry in which all firms and potential entrants produce a single product, so that actual and expected sunk cost investments

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<sup>2</sup> Hilke and Nelson (1988) also examine the response of the diversified firm to predation. They rely on capital market imperfections and reach a different conclusion about the effects of diversification on predation. Their argument is discussed in more detail below.

<sup>3</sup> For further discussion of predation and sunk costs, see Salop, eds. (1981). One of the conditions necessary for predation, the existence of imperfect (asymmetric) information, is not specifically discussed below, but see Milgrom and Roberts (1981).

are specific to the product. These investments are also assumed to be specific to the firm, in order to rule out merger with a rival.<sup>4</sup>

For predation to be successful, the predator must not only be able to drive out rivals, but also keep them from reentering the industry once price is raised. In the absence of sunk (illiquid) costs, markets are contestable and firms will reenter in response to profit opportunities once the predator raises price. In fact, unless assets depreciate rapidly, existing firms can simply shut down when price is low and immediately start up when price increases (see e.g., Telser (1968)). Consequently, predation is only viable if reentry by rivals necessitates sunk cost investments.

Successful predation also requires that the predator be able to expand, so that rivals can be driven out by lower prices. While it may be desirable to employ liquid assets for a temporary increase in output, sunk cost investments may be more efficient even for short-term expansion.<sup>5</sup> Furthermore, when competitors can at least partially observe a predator's sunk assets, a greater threat is imposed upon rivals attempting reentry once prices have been increased when the predator has made irrecoverable investments that enable low cost future expansion; rivals are more likely to

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<sup>4</sup> Extending the analysis of predation to consider merger is not expected to affect the conclusions. See e.g., Saloner (1987).

<sup>5</sup> Firm-specific assets often involve managerial inputs, marketing channels, and specialized components, that are fixed in nature but are also specialized to the firm. They take time and resources to develop, but are often an important part of the production process [see Williamson (1985) and the discussion below]. Furthermore, when the production process does not involve sunk cost assets, a predation strategy would be unlikely since reentry by rivals is likely to be easier (see above).

believe that predatory pricing is a credible future threat.<sup>6</sup> Thus, in an industry composed entirely of single product firms, sunk cost investments may increase the viability of predation by lowering a predator's costs of expanding output and by increasing rivals' reentry costs.

### III. DIVERSIFICATION

Panzar and Willig (1979) show that sharable, quasi-public inputs generate economies of scope.<sup>7</sup> Hence, leaving strategic considerations aside, firms diversify because the sharing of assets lowers their costs of producing more than one product. Teece (1980,1982) and Levy and Haber (1986) discuss the firm-specific nature of these assets<sup>8</sup> and show that the ability to simultaneously share common assets across processes or to transfer certain (nonproduct-specific) assets among processes can create a cost advantage for a diversified firm. The analysis here is confined to the diversified firm's ability to transfer firm-specific assets, because it is more directly relevant to strategic considerations discussed below.<sup>9</sup>

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<sup>6</sup> The threat of predation becomes more credible because the cost of predation is lower. Therefore, fixed costs become sunk to the firm if the credibility of future predation requires that the firm have these assets on hand.

<sup>7</sup> In their analysis, certain fixed inputs are simultaneously used in more than one production process.

<sup>8</sup> Unless the value of the assets are specific to the firm, the advantages of the multiproduct can be replicated by single product firms employing short-term or long-term contracts. These assets are developed through a firm's efforts and are nontransferrable to other firms.

<sup>9</sup> The simultaneous sharing of assets may also affect the likelihood of predation when diversified firm invests in a greater percentage of firm-specific, sunk cost investments than would a single product firm.

Firm-specific assets that may be transferred between production processes include technological, marketing, organizational or managerial knowledge embodied in human capital (especially benefits of learning-by-doing). For example, the limited managerial assets available to a firm at a given point in time [as described by Penrose (1959)] can be transferred between uses. Physical assets to produce components may also be specialized to the products of a particular firm (e.g., due to a technological process protected by patent or trade secret), but transferrable between uses. Both human capital and physical assets may be transferred between the production of different goods or between different locations (see e.g., de Menza and van der Ploeg (1987)).

Benefits to diversification accrue when the value of the nonproduct-specific assets is specific to the diversified firm, i.e., their value is greater in the firm than when liquidated.<sup>10</sup> In other words, these assets are to some extent sunk to the firm. Further, the assets can be transferred at lowered cost internally than over markets (i.e., between firms).<sup>11</sup> When the firm-specific asset is transferrable between uses, the diversified firm may place the input into higher valued uses in response to changing market conditions or strategic needs. This capability may, under some

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<sup>10</sup> Note that if the firm's assets were fully marketable (i.e., liquid), then their alternative uses would be the same for the diversified or single product firm.

<sup>11</sup> Note that the inputs are assumed to be nonjoint, i.e., the inputs can be used in only one production process or location at a time. Otherwise, the diversified firm need not exit the base industry to employ its assets in a higher valued use elsewhere. This distinction is described at greater length by Levy and Haber (1986), where the diversified firm acts as a collection of inputs that minimizes transactions costs of acquiring information, and of negotiating and enforcing contracts.



circumstances, enable a firm to avoid bankruptcy and the costs associated with losses in the value of illiquid assets. The nondiversified firm lacks this flexibility and would lose up to the illiquid value of the asset as market opportunities changed.

#### IV. THE IMPLICATIONS OF DIVERSIFICATION FOR PREDATION

The greater flexibility provided by transferrable firm-specific assets may increase efficiency in the face of shifts in demand or supply. However, since these assets are sunk costs, the likelihood of predation may also be affected. In examining predation, any efficiencies of multiproduct organization are ignored to highlight strategic effects of diversification. For simplicity, I also initially assume that the costs of transferring assets between any two production processes are trivial and symmetric. In contrast, a de novo single product entrant would face higher costs or delays until it could develop firm-specific assets.

Diversification may encourage predation by a potential predator. A diversified firm may be able to transfer inputs from another production process or location to temporarily increase output. When rivals are driven out of the industry, the firm-specific assets could be transferred back to more productive uses. Furthermore, the sunk cost nature of these assets may also act as an implied future threat to rivals, since it enables the diversified firm to expand output easily and quickly whenever rivals attempt entry or reentry in response to higher prices. The ability to quickly transfer firm-specific inputs, in effect, acts as excess capacity which lowers the firm's cost of predating. In contrast, a nondiversified predator would be

relegated to employing any increased investments in illiquid assets in lower (perhaps zero) valued uses once it drives out rivals.

The incentives to engage in predatory behavior may be blunted when the rival is diversified. With insignificant costs of transferring assets, the diversified target can employ its assets in other uses during the predatory period and immediately reenter when price increases. The predator would never be able to raise its price above its initial level (prior to predation) and, thus, the predatory strategy would be undermined. In contrast, during periods of predatory behavior a single product firm must leave the illiquid assets in lower valued uses, or leave them idle and possibly incur start-up costs of reemploying the assets. Therefore, the single product firm may face greater losses during the predatory period and greater difficulty in reentering the industry when price is increased.

Even when transferring firm-specific assets is costly, diversification of rivals may discourage predation. The diversified firm can often transfer firm-specific inputs to reduce the time and expense of reentry or de novo entry. Managers may more readily learn of profitable opportunities, or be able to transfer a ready supply of firm-specific knowledge (e.g, embodied in a team of employees) or specialized physical assets.<sup>12</sup>

The assumption that the costs of transferring firm-specific assets are symmetric is crucial to this analysis. When the prey is diversified but costs

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<sup>12</sup> When there are costs of transfer, it is possible that the predator may find the diversified firm a better target than a single product firm (even when transfer costs are symmetric). The more likely exit of the diversified firm during the predatory period may more than compensate for increased likelihood of entry once prices increase. However, this type of result would require significant costs of reentry. Otherwise, the predatory strategy would be doomed from the start, since reentry of the diversified firm would keep the predator from increasing the post-predation price above its pre-predation level.

are symmetric, the results may change. Indeed, when the exit costs are low but reentry costs are high, diversification of the prey may encourage predation. For example, an exiting firm may obtain a reputation as being unreliable and, consequently, be unable to reestablish its brandname in the industry upon reentry.

## V. PREVIOUS LITERATURE

This analysis parallels a large literature that evaluates the effects of capital market imperfections on predation by diversified firms. The "long purse" view seems to imply that internal sources provide the diversified firm greater access to financial capital than the single product firm. If these limitations exist (which is an open question), limited capital can be viewed as one type of firm-specific asset that can be transferred between uses. Thereby, a diversified firm is better able to affect large changes in output. The analysis here broadens the analysis to suggest other, perhaps more plausible firm-specific assets.

A "multimarket-reputation" for predation would require that the diversified firm can expand output in each of the markets. The existence of transferable firm-specific assets would increase the credibility of the threat to predate in the different markets. Thus, the multimarket contact argument is also more plausible when the diversified firm can transfer sunk assets.<sup>13</sup>

A further problem with the long-purse and multimarket reputation arguments is that they do not adequately consider the nature of rivals. If there are cost advantages from diversification, rivals may be just as likely to

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<sup>13</sup> Multimarket reputation may also occur when the diversified firm is able to communicate that it has a larger percentage of simultaneously sharable sunk cost assets or lower costs than rivals.

be diversified as the predator. Then, any offsetting effects of diversification by rivals on predation should be considered.

Previous research has largely ignored the effects of diversification by rivals on predation. One exception is a recent paper by Hilke and Nelson (1988). They argue that diversification increases a firm's likelihood of exiting in response to predation. A diversified rival "has already sunk the costs of search outside of the entry industry and can shift the cash or other assets realized from disinvestment (into another markets) without undertaking additional search (p. 109)." Since a diversified rival has better alternative uses for its capital than nondiversified rivals, it is more likely to exit in response to a lower product price. However, this argument implicitly relies on two assumptions: the target firms face limited internal capital sources,<sup>14</sup> and asset mobility is asymmetric in the sense that the diversified firm has knowledge of profit opportunities only in industries in which it is currently producing.<sup>15</sup> As shown above, abandoning the asymmetry assumption in favor of symmetric mobility yields the conclusion that diversification may instead discourage predation by making markets more contestable.<sup>16</sup>

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<sup>14</sup> With unlimited capital sources or no firm diseconomies in managing capital, firms would already be producing greater amounts in those industries where it is aware of better profit opportunities. The introduction of predatory behavior would then make no difference.

<sup>15</sup> The goal of predatory behavior is to raise price once rivals are gone. A predator risks encouraging entry once it increases price. Hilke and Nelson's argument thus implies that the diversified firm faces lower (search) costs of exiting an industry than nondiversified rivals, but faces similar costs to a diversified entrant once it ceases producing in the industry.

<sup>16</sup> Others have suggested that entry and exit costs are symmetric. In summarizing the notion of sunk costs as an entry barrier in the contestability literature, Waterson notes, "In effect, the barrier to entry is caused by there being a barrier to exit."(p.73) See also arguments by Tirole (1988, p. 328) and evidence provided by Shapiro and

## VI. CONCLUSIONS

Assets which are sunk to a single product firm need not be sunk for a diversified firm. Once this is recognized, diversification is a two edged sword from an antitrust perspective. Diversification of the dominant firm may very well increase the likelihood of predation when that firm's production process involves transferrable, firm-specific investments. However, when rivals also employ transferrable, firm-specific assets and reentry is easy, antitrust concerns are lessened. The underlying cost conditions and organization of firms should be carefully considered in drawing policy conclusions.

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Khemani (1987). In theory, however, both symmetric and asymmetric costs are plausible (see above).

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